THE T. & R. BULLETIN

OFFICIAL ORGAN OF THE INCORPORATED

RADIO SOCIETY OF GREAT BRITAIN

Vol. 12. No. 8

CONTENTS

BREAK-IN AND DUPLEX.

ANY system of communication which will reduce interference by even a small degree is to be recommended, therefore we make no apologies for presenting in this issue two contributions dealing with "break-in" operation. For many years certain members have been interested in this subject and numerous articles have appeared from time to time. For the 10-watt man "break-in" is an attractive proposition because it enables him to conserve power, besides giving the amateur he is working a better chance of copying his signals.

The historical review put forward by Mr. Hamilton contains references to earlier as well as the more modern methods of achieving "break-in." Members will do well to study the circuits presented and select those most suited to their needs. As the author tells us, a good "break-in" system gives one a feeling of assurance even under the worst possible conditions of band congestion.

This system, although used quite frequently at low power stations, seems to have found little favour with those operating with power in excess of 50 watts. This is possibly due to the fact that very few DX stations are equipped for "break-in," perhaps because they fear its complications. To encourage its employment we shall be pleased to publish each month a list of stations using this system for either local or long-distance operation.

Duplex working is sometimes confused with "break-in," especially among telephony stations, who assume that they may employ the former system throughout a long QSO. This is a mistaken idea ; duplex operation is not forbidden but those who use it must bear in mind that it is a condition of their licence that they shall listen in on their transmitting frequency at least once in every ten minutes. On several occasions we have heard duplex operation continuing for hours at a stretch with one station acting as a relay for many others. This practice is to be deprecated for several reasons but chiefly because, at any rate in this country, no amateur has the right to "hold" a specific frequency for more than ten minutes simultaneously. We can think of nothing more disheartening than for a low power station operator to find that his one and only crystal frequency falls on top of a high power station using duplex telephony.

Incidentally is it not time that some of our telephony experts, who have been carrying out prolonged duplex tests for years, gave us the benefit of their experience ? We feel quite sure the publication of such data would interest others, besides those directly connected with the Society.

PRESIDENTIAL ADDRESS, 1937

Read by Mr. E. Dawson Ostermeyer before the London members at the Institution of Electrical Engineers, London, on Friday, January 29, 1937.

TRADITION decrees that your new President shall give you an Address; many of you who I regard as very close friends, know that speech-making is not one of my strong points; therefore I crave your forgiveness if this, the address of your eleventh President, falls far short of those masterpieces of oratory which have passed into history *via* the medium of our Journal.

Our Society can to-day be regarded as a well-established, rationally organised undertaking, working along certain well-defined channels. Its first, and by far its most important function, is to foster interest in the scientific aspect of amateur radio. To this end it will be my earnest endeavour to emphasise on every possible occasion the need and necessity for members to keep a record of their work, so that if required we shall be in a position to put forward a wealth of invaluable information. Within recent months the Society has been invited by the authorities to provide a report dealing with the development of the metre wavelengths; this report has been accepted as a most useful contribution to existing knowledge. It is my desire during the year to see inaugurated one or two other study groups who will undertake to compile comprehensive reports on such vitally important subjects as 28 Mc. communication and high frequency propagation. I realise that many of our members are already producing useful monthly summaries of scientific data, further, I appreciate that it is not always possible to draw hard and fast conclusions, due to the fact that a complete solar cycle has not been recorded since observations begun, but I feel that interim reports of a qualified nature would interest not only our members but also scientists generally.

E. Dawson Ostermeyer (G5AR)
President 1937.

It will be my aim to do all that I can to foster the social side of our work, for I am convinced that close harmony between local groups of members will do much to produce an increase in experimental work. The need for co-operation has never been more urgent than to-day. I hope that when possible our town representatives will set problems at their social meetings, and that after solution a *prècis* will be submitted for publication. Group effort on the lines I have indicated will, I feel sure, add greatly to the interest in local meetings, many of which often run dull due to lack of speakers. By setting a problem and all working together towards its solution, much knowledge will be gained under conditions of social companionship.

During the year before us I shall do my best to visit as many of the provincial district meetings and conventionettes as circumstances will permit. In this connection I would urge that members respond more promptly to the requests of their local representatives to give prior advice of their intention to support these projects. Considerable time and effort is devoted to the organisation, but few members give that little help which will make the wheels revolve more readily.

The problem of band congestion is one which will occupy our attention this year. I realise that at present certain of our bands are becoming almost useless for serious experimental work, due to the tremendous increase of activity particularly from newly-licensed stations who use telephony almost exclusively. The Society as a member society of the International Amateur Radio Union, has to give immediate consideration to a proposal which is before the Union, concerning the division of the 7 Mc. band into sections devoted to telegraphy and telephony operation. I can assure the membership that before the Council record their vote on this proposition, every possible care will be taken to ensure that the decision

reached represents the majority view of experienced amateurs.

I am happy to be able to state that my friend and colleague, Mr. Arthur Watts, has agreed to continue his work as our contact officer at the G.P.O. The value of that contact can only be appreciated by those in very close touch with H.Q.'s, but I can assure you all that the present highly satisfactory state of affairs as existing between Society and G.P.O. is almost entirely due to our immediate Past-President. The year 1938 will be an important one for amateurs no less than for other radio interests. The Cairo Conference is due to take place early in that year, and it is our earnest hope that Mr. Watts will be able to represent us there, even as he did in Madrid four years ago. The preparations for Cairo are fast progressing, and whilst the chances are small of obtaining increases in frequency, we trust it will be possible to preserve the *status quo*.

I feel that I should, on this occasion, emphasise the point that those members who apply for extra licence facilities must put forward a reasonable case and be prepared to give chapter and verse when the G.P.O. inspectors visit their stations. The Council can only judge these applications on their merits, and it is rather embarrassing if our recommendations are rejected because the applicants fail to satisfy the examining officers.

LONDON MEETING,
February 26, 1937
at
I.E.E., SAVOY PLACE.

Tea 6 p.m. Commence 6.45. p.m.
Discussion :
"DX Work."

Opened by Mr. H. A. M. Whyte, (G6WY).

With regard to the T. & R. Bulletin, I have always held the view that this should be the first care of the Society, for it is only through this medium that a large proportion of our members are kept in touch with Society activities. The Council will continue, to the best of their ability, to make this as instructive and interesting as possible.

I should like to say a word or two about the honorary treasurership. For some time I have considered that I should not hold two executive posts simultaneously, and now having reached the goal I set some years ago, of placing the Society's finance on a firm footing, by creating a substantial reserve, I decided to offer to Council my resignation as honorary treasurer. I am pleased to be able to announce that Mr. Alfred Gay has been offered, and has accepted the vacant post, and I am sure his elevation to executive office will be popular among all members. Mr. Gay will, of course, continue as head of the Calibration Section, in which good work he will be assisted by Mr. Milne.

I am also pleased to announce that Messrs. Page and Elmer have promised to continue in office as the manager and assistant manager of our Research and Experimental Sections. It will be their policy and the policy of the Council to extend and intensify these sections, for it is of the utmost importance that we should keep before the authorities the scientific side of our work.

The difficult task of organising contests will be again undertaken by Mr. St. Johnston and his group of workers, who have in recent years rendered invaluable service.

I hope that members generally will realise that all of these appointments are of an honorary nature and that we owe a debt of gratitude to all those who undertake Society work. For my part I wish to thank everyone who has accepted an official position, and I assure them that their services are very much appreciated.

The new Council have not thought it desirable to re-appoint a QSL manager, as under our new arrangements the whole of this service is carried out as a routine task by Headquarters staff. When I say that over 30,000 cards pass through Headquarters every month I think it will be readily appreciated that a paid staff is desirable to deal with such a volume of work. I should like to record a vote of thanks to Mr. Chisholm for the way he has handled the section for a number of years.

I have every confidence that the progress we have made in recent years will continue, and that with the passing of time the Society's work will become of even greater importance than hitherto. I base this hope on the fact that a society having over 3,000 members, many of whom are trained observers of radio phenomena, must be consulted whenever questions concerning high frequency communications are discussed.

I thank you, gentlemen, for the honour you have done me in electing me your President, and I assure you that no effort will be spared in keeping up the prestige and goodwill of the Society, which it has been my pleasure to serve for the past ten years.

We have a very efficient Council and I am sure if I receive from them the same measure of co-operation, as President, as it was my good fortune to receive as your executive vice-president and honorary treasurer, my term of office will be a happy one.

I conclude by congratulating you on having such an able and enthusiastic secretary and headquarters staff. They will, I am sure, do everything to promote the welfare of the membership.

And now, ladies and gentlemen, it is my privilege and pleasure to make a little presentation to our retiring President, Mr. Arthur Watts. No words of mine can adequately convey the regard with which he is held by us all. His time and energy has been unselfishly devoted to the advancement of the Society, and as our secretary told us a month ago, when paying his tribute, no president before him had such a grip of the Society's activities.

The Midland P.D.M.

Mr. J. W. Swinnerton, G2YS, Saltley College, Birmingham 8, informs us that he has prepared a special street plan of Central Coventry for the benefit of visitors to the P.D.M. to be held in that town on March 14th. A copy of the map will be sent to any member sending a stamped addressed envelope to Mr. Swinnerton.

BREAK-IN

By J. Hamilton (G5JH)

The author of this article has reviewed several different types of circuit designed for Break-in operation which have appeared in past issues of this Journal. As Break-in holds a definite appeal for the low power station, many of whom are comparatively new to the air, we believe this summary may prove of more than ordinary interest, especially as the issues containing certain of the circuits are now out of print.

"TEST BK de G2—" frequently brings no reply, simply because few stations are equipped for this convenient method of working. Yet how much better it can be, when properly understood, than those long test calls which produce long replies, the end of which is more often than not lost in a chaos of QRM! The purpose of this article, therefore, is to examine the various methods of "break-in" work in the hope that more amateurs will adopt it.

The majority of stations to-day use crystal control, and the C.O. stage is running continuously when transmissions are taking place. This blocks the receiver, so that to use break-in, the C.O. must be keyed, unless, of course, the transmitter is some distance from the operator and the C.O. stage has no effect on the receiver.

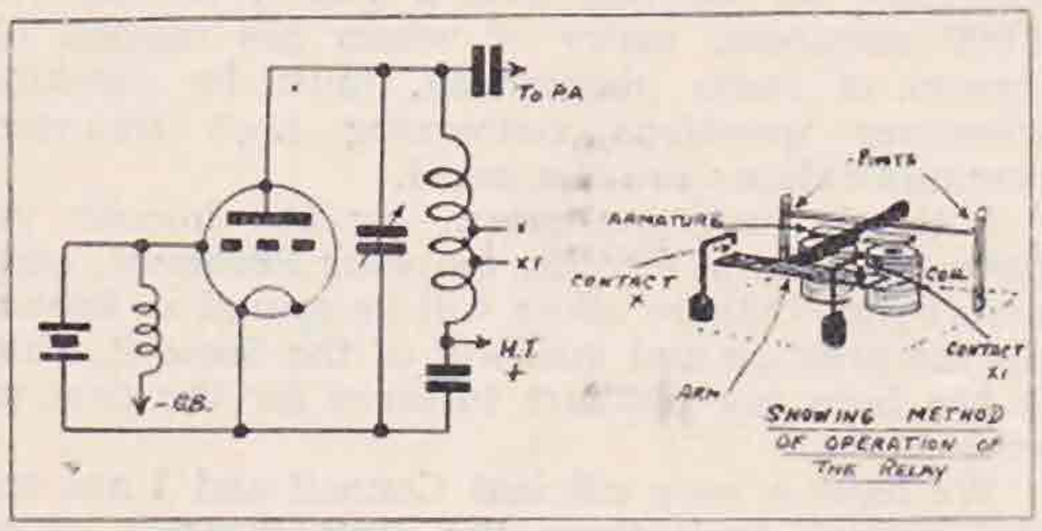


Fig. 1.
Triode crystal oscillator. Keying leads can be any length, therefore permitting remote control.

In Fig. 1 a triode is used as the C.O. At the points "X," two wires are taken from the coil to a relay near the C.O. stage; when the relay is up, these two wires are shorted, and the C.O. goes off tune, and when the key is pressed the relay closes and the C.O. comes in tune and a signal is transmitted. This method has been successfully used to key transmitters having an input of 100 watts to the P.A. Some relays will operate from a 2-volt battery. The speed of sending depends, of course, on the relay, but 25 to 30 words a minute have been transmitted by the writer without any trouble.

Fig. 2 was described by G2OW in the Bulletin for September, 1934, on page 105. This method is much simpler than No. 1, and is recommended to those who use triodes as crystal oscillators.

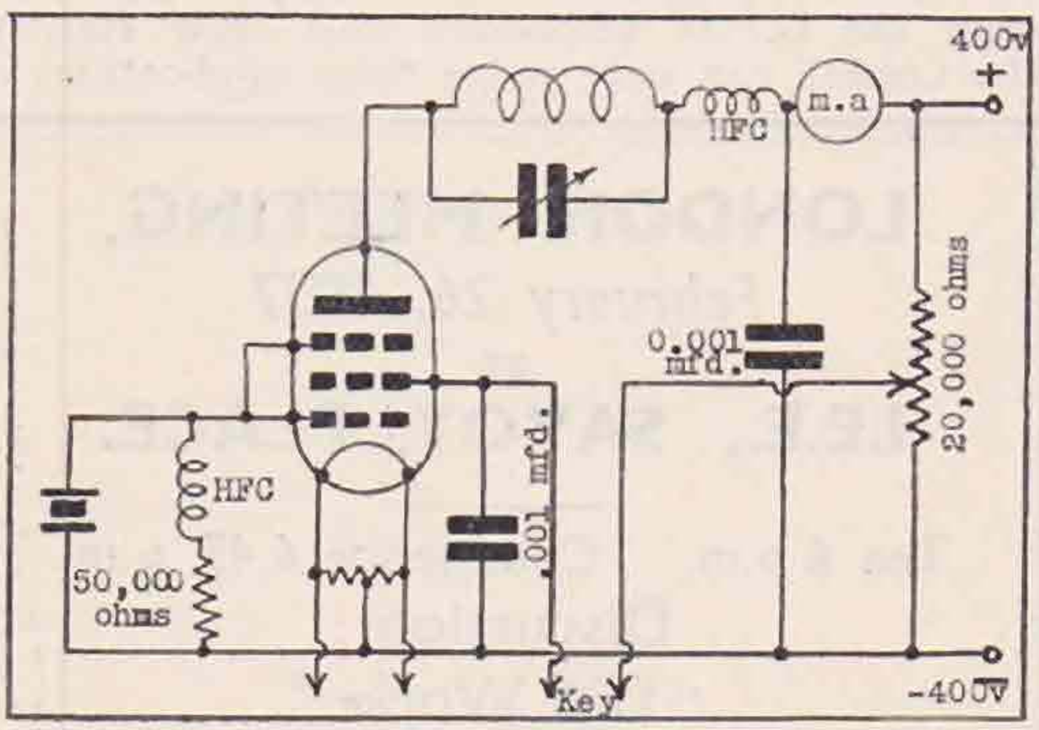


Fig. 3.
A pentode crystal oscillator suitable for break-in operation.

The circuit shown in Fig. 3 is due to G6FY, and was described in the Bulletin for May, 1934, on page 357. It is one of the best systems the writer has tried, and is in constant use for C.C. work. It is entirely free from key clicks. The circuit used is a C.O. driving a P.A. which does not differ from the conventional triode C.O., and a small capacity coupling condenser to the P.A. meets the situation. A slight modification of the circuit has, however, been made to meet requirements at the writer's station, a fixed resistance being used in place of the potentiometer. As G6FY remarks it *is* the ideal solution of that difficult problem—break-in with crystal control.

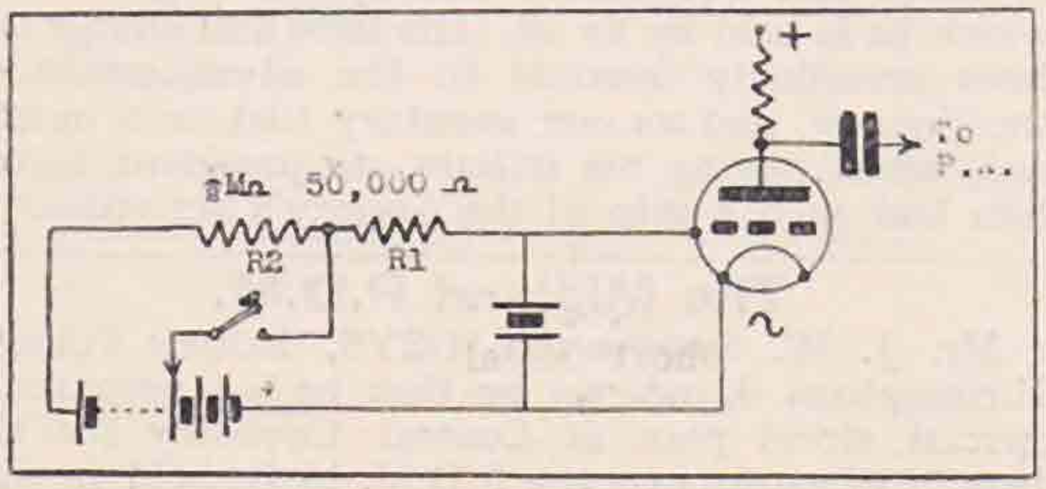


Fig. 2.
Triode crystal oscillator, biased normally with key closed. With key open extra bias is added, thus backing the valve off completely.

Fig. 4, due to X1AA *via* G6FY (Bulletin November, 1934, page 180), is slightly different from Fig. 3, and key clicks are present unless a filter is put across the key. With a suitable key click filter, however, no trouble has been experienced using this circuit, but that shown in Fig. 3 is preferred.

The fifth circuit is due to G2OA (Bulletin August, 1933, page 46). Although it has not been tried by the writer, its possibilities as a C.O. for break-in seem to be quite good. Keying is effected in the centre-tap, and a resistance across the key

is not necessary, as the note (according to G2OA) is usually clear cut and spacerless. If the key is placed in the auxiliary grid between the H.T. positive and the dropping resistance the circuit becomes somewhat similar to Fig. 3.

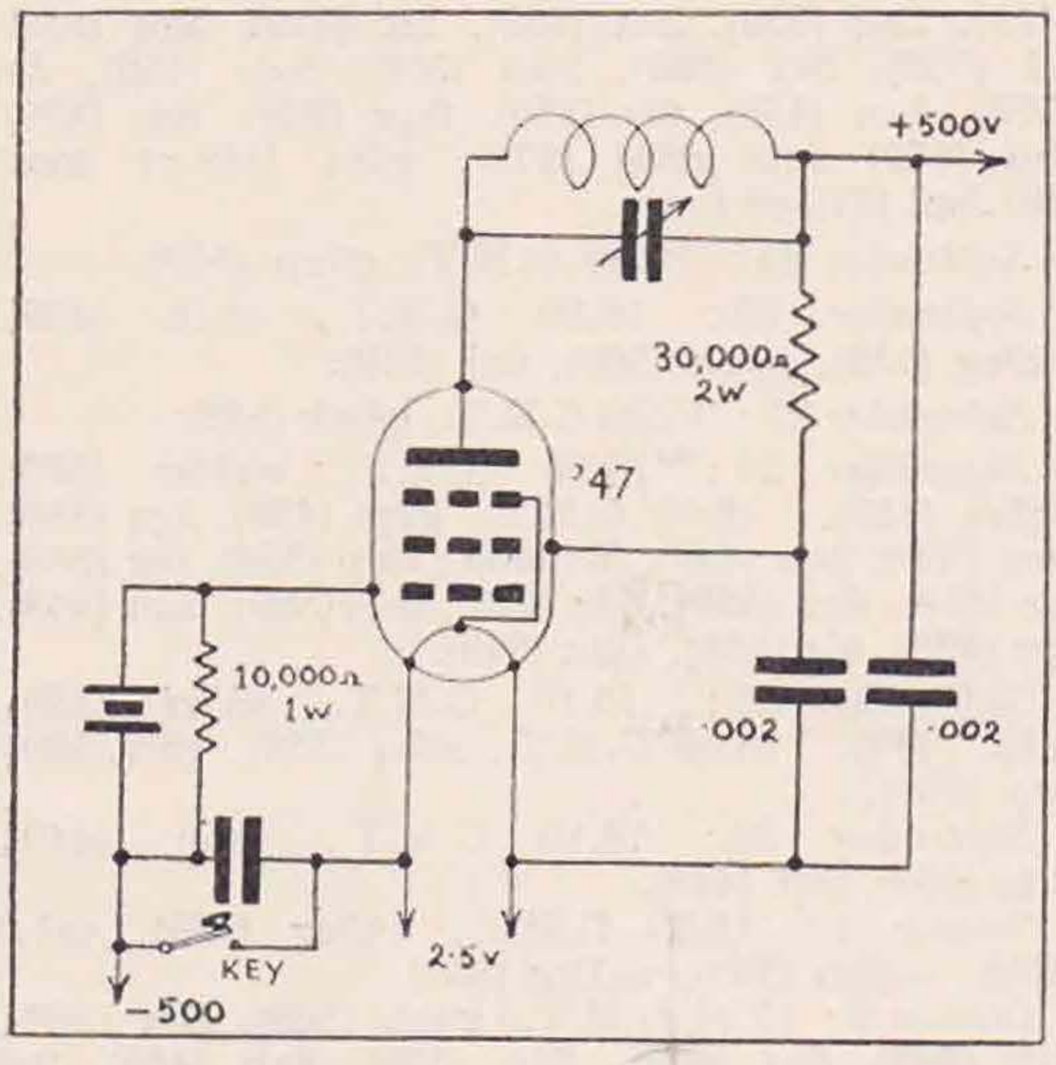


Fig. 4.
Another pentode arrangement for break-in work.

A pentode oscillator (Fig. 6) giving second harmonic control was described by "Anon" in the BULLETIN for November, 1933, on page 137. With the exception of an added tuned circuit it is similar to Figs. 3 and 5. Using a PT625 as oscillator with a 7 Mc. crystal second harmonic control on 14 Mc. is good, and sufficient drive has been obtained to drive the P.A. to 10 watts. A *Mullard* PM24M should be capable of driving the P.A. to 50 watts or more.

Fig. 7 shows an electron coupled oscillator described by VS2AF (BULLETIN, September, 1934, pages 87 and 88). This is similar to Fig. 6. An E.C.O. driving a P.A. is used here with a PT625 in the E.C.O. stage. The condenser at "A" caused chirps, but when it was cut out the note was pure D.C. The drive circuit is tuned to half the required output frequency; thus for 7 Mc. working it is tuned to 3.5 Mc., the tank circuit, of course, being tuned to 7 Mc. Although the drive is somewhat less than when the driving circuit is tuned to the fundamental frequency, it is to be preferred as the note is much cleaner and control is better. To use crystal control with this circuit all that is necessary is to have a combined crystal holder and condenser and plug it in, as shown in the diagram. Little difficulty was experienced in getting second harmonic control; what difficulty there was no doubt being due to the unsuitability of the PT625 as a source of R.F. When used as an E.C.O.—P.A., break-in is used constantly and reports are encouraging. Forty-seven stations worked reported T9 or C.C., and four stations gave "T8 FB." The frequency showed no drift (even on a super-het.) except for the first two QSO's, when chirp and frequency drift was reported; this, however, was found to be due to the fact that the drive circuit was tuned to the out-

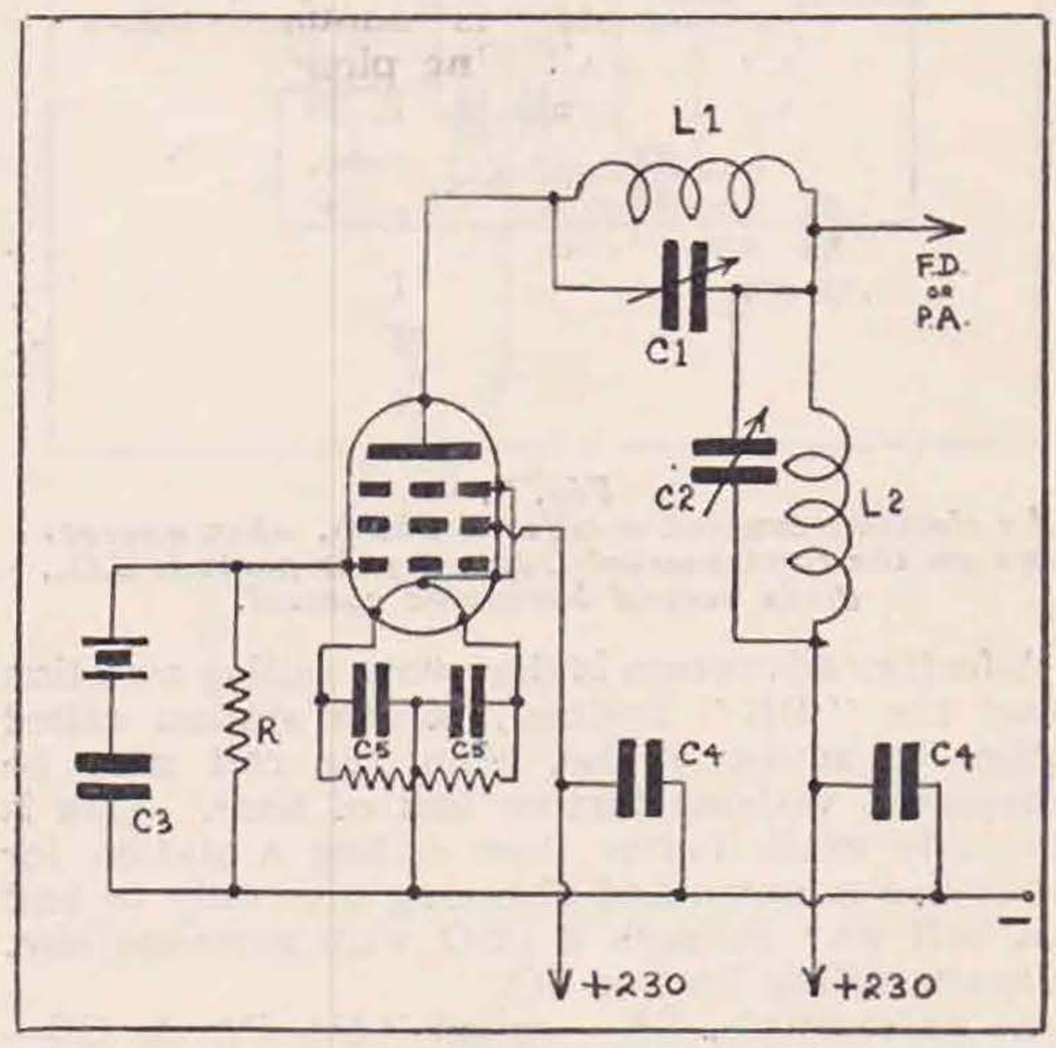


Fig. 6.
A pentode crystal oscillator giving second harmonic control.
R: 20,000 ohms. C3: .006 μF mica.
C1, C2: Standard values. C4: .004 μF „
C5: .002 μF non-inductive.

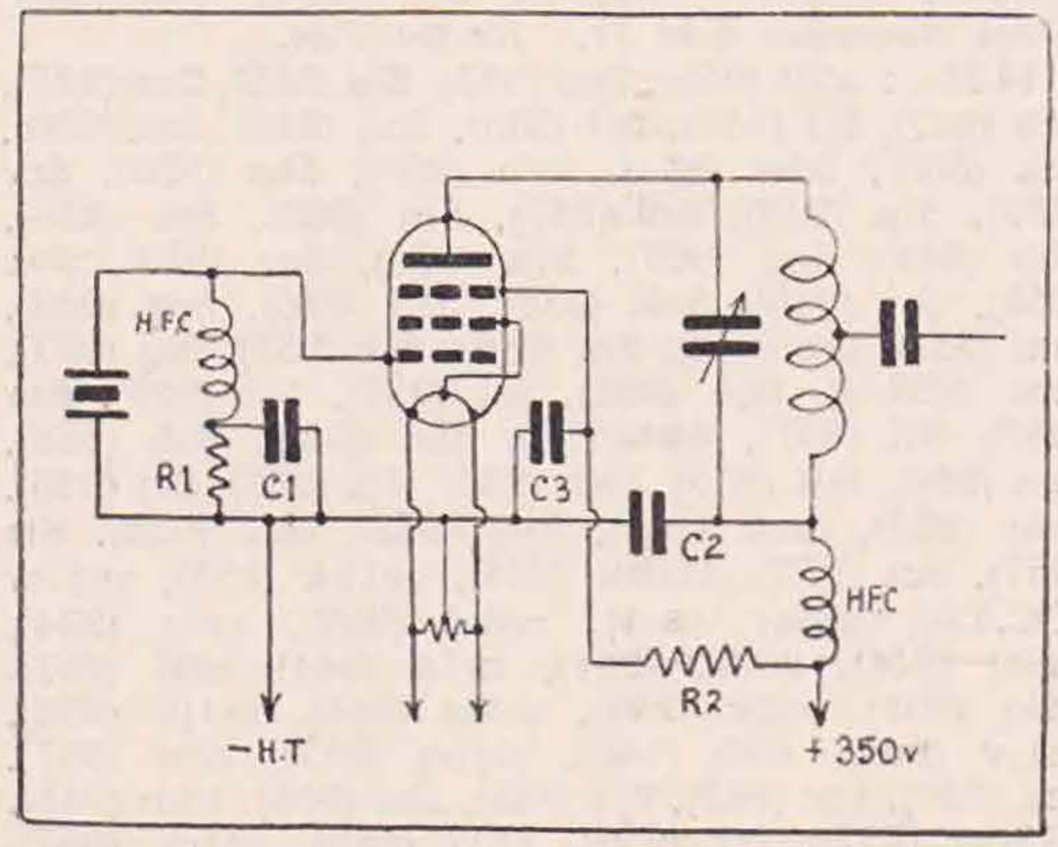


Fig. 5.
A pentode crystal oscillator using centre-tap keying.
R1: 10,000 ohms. C1, C2: .001 μF.
R2: 50,000 „ C3: .01 μF.

put frequency. Break-in on 7 Mc. using this circuit with an input of 8/9 watts has been successfully accomplished with W1, 2, and 3. On two occasions three-way break-in has been worked by the simple expedient of changing frequency to that of the other two stations, and a four-way break-in QSO was obtained on 7 Mc. between G, D, OZ, and PA, all working on the same frequency.

Break-in Operation.

A separate short aerial is necessary for the receiver for break-in. The writer's receiver is SG-V-P, the SG stage being tuned.

The use of "BK" means that "I can hear you through my transmissions and should interference come on, interrupt me by sending a series of dots." It will be noted that in the circuits described, when

the key is up no oscillations are taking place, and therefore if a slight pause is made between two words the operator can hear what is happening on the frequency he is listening on. If there is no interference he can tell the other operator to go ahead, and by this means a running conversation can be kept up between bouts of heavy QRM. If necessary the use of "QRX—QRM" or "AS—QRM" will be sufficient for the other operator to know that QRM prevents reception. But if the first operator's wave is free he can go ahead until QRM clears on his listening frequency or comes on his transmitting frequency.

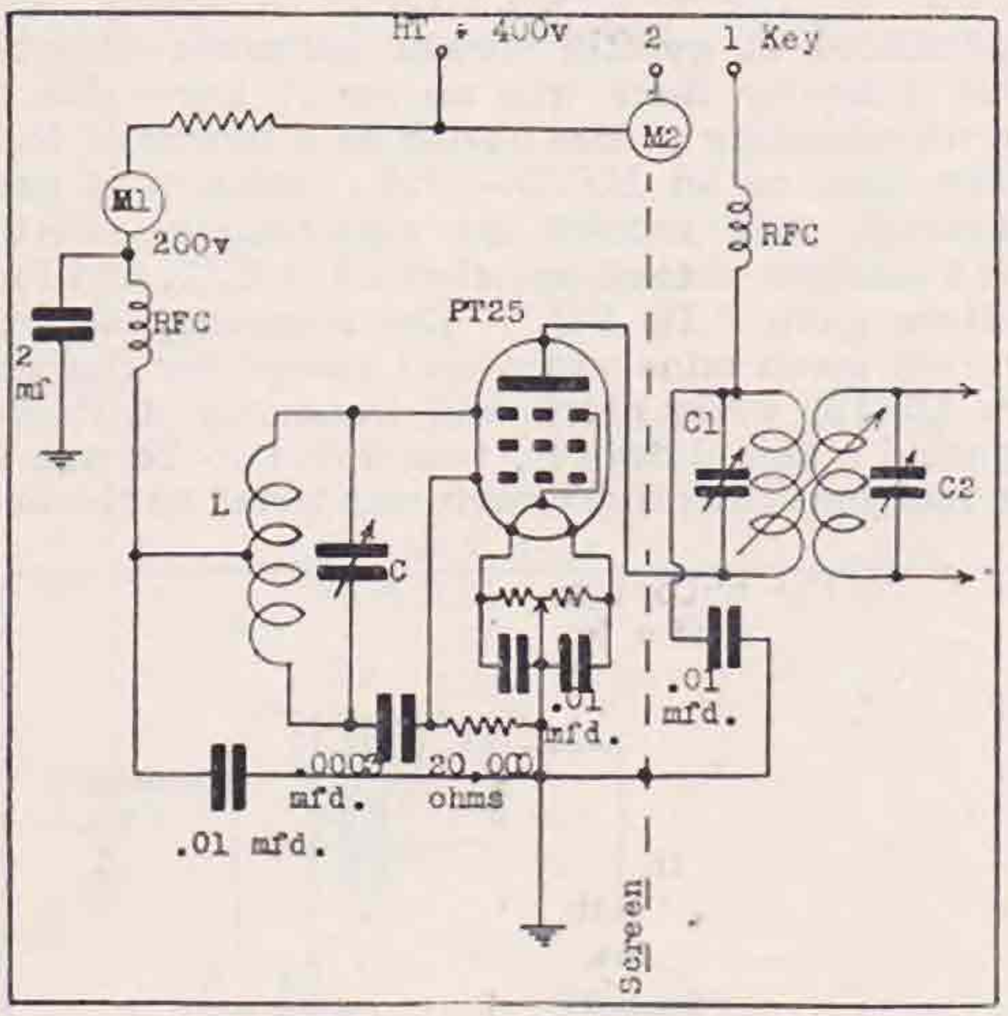


Fig. 7.
An electron-coupled oscillator which, when operating on the fundamental frequency as pentode C.O., gives second harmonic control.

A further advantage is that when calling a station using the "BK" method, if the station called replies to someone else, then the call may be terminated without further loss of time. This is obviously much better than calling a station for about five minutes and changing over only to find him half way through a QSO with someone else, or again calling Test or CQ.

As an example, G5— called "PA PA de G5— BK" and on tuning round the band heard a station calling him. Then G5— sent "GA," and the other station immediately sent his call sign, and a pleasant QSO was the result. The time from the initial call to making contact was not more than 30 seconds. Thus it will be seen that the use of common sense will result in good operating. After a little practice, QSO's even through QRM do not become a matter of guess-work. The "Q" code should be learnt thoroughly, and also the use of "IMI," "WA," "WB," "AA," and "AB," or "IMI from — to —" will save time and trouble. Interrupt, if necessary, and get the part which has been missed. In this way break-in will eliminate "Sri OB QRM" and turn it into "R solid." It will also save many unnecessary repeats.

An added advantage is that in the case of QRP work depending upon batteries no current is flowing when the key is up. The benefits of break-in are considerable to the writer, who depends entirely on batteries, and has only one good hand with which to operate.

EMPIRE CALLS HEARD

*BERS*311, *Ambala, Punjab, India.*

14 Mc.:

September 21: 17.30 G.M.T., zu9an (434), g2fz (549).

September 24: 21.00 to 22.00 G.M.T., g2lu (449), 2mf (559), 2oa (459), 2rt (449), 5gq (559), 5il (559), 5kt (569), 5ms (569), 5vb (459), 5sr (569), 5uu (458), 6is (559), 6qx (569), 6zo (459), 6zu (569) and gi5nj (579), g2pl (449-r4 fone) and 5ml (579-r6 fone).

September 25: 16.30 G.M.T., g6up (569).

September 26: 16.50 G.M.T., zb1h (459), vk3eg (459), g6pk (569), 6cj (559).

September 27: 19.10 G.M.T., g6wk (569).

September 28: 15.30 G.M.T., vq3far (559), vq2rs (459). 18.05 G.M.T., g2pl (459), 5gq (559), 6yu (559), 2qn (449), 5ri (569), 6vp (559), 6sr (568), 5sr (559), 6zu (559), 5dr (448), 6wy(589), 2im (449), 2gc (459), 6jz (558), zs2x (549).

September 29: 15.10 G.M.T., vs7rf (559), ze1jc (468). 18.00 G.M.T., zt2q (559), g5ri (569), 6vp (569).

September 30: 16.10 G.M.T., zs5u (449), g2fz (559), 2qt (449).

October 1: 15.35 G.M.T., vk3eg (559), vs1al (559), vu2eb (559), su1kg (559).

October 2: 17.35 G.M.T., g6hb (569), 60a (569), 2dh (569), 6fq (449), 2xn (589), 8ab (458), 2pl (599), 6mk (559), 5yx (569), 2gc (559), 6fl (459), 8ar (569), 5uo (569), vk2no (559), 2zc (569), 2ei (559) and 2eg (559), g6md (559) and gi5wd (558).

October 3: vk-2no, 2el, 2ei, 3mr, 3kx, 3eg, 4ap, 5fm, 5wd, 5cl, 5hj, 6fo, g2pl, 5ic, 5vb, 6hb, 6cw, 6xn, zs5u, vq3far, vs6bd and ei8b.

October 4: vk2ae, 2ks, 2oj, 2ti, 2ny, 2px, 2vg, 2la, 2mh, 2tf, 2rb, 2as, 2el, 2yl, 2qe, 2ex, 2vq, 3eg, 3mr, 3hk, 3kx, 3bj, 3cp, 3ng, 4yl, 4ur, 4bb, 4ap, 4oc, 5ld, 5hd, 5wj, 6fo, 6kb, 6fl, vu2au, 2eb, 2ft, 2lj, 2ep, vs7md, vs8aa, vs1al (589), zl1dv, 1dy, 1fe, 1hy, 1ue, vk3gq, 3oc, 7lz, 7dk, vs1ab, zs1h, ve4ro (569).

28 Mc.:

vs8aa, g2pl (459) and g6wy (5.8/5.9).

C. R. Emary, c/o 37, *Delvino Road, Fulham, London, England* (*station at Haifa, Palestine*). *From November* 4 *to* 11. *Rx* 0-*v*-*Pen*.

14 Mc.: g2ft (855), 2pn (955), 2lu (955), 2ux (945), 2hu (957), 2jf (955), 2yl (933), 2hq (945), 2as (956), 2zk (856), 2dw (945), 2yb (956), 5bz (956), 5rv (957), 5lp (956), 5ri (957), 5bj (955), 5ac (956), 5hh (844), 5oq (957), 5va (955), 5qz (955), 5vn (956), 5rf (956), 5vb (955), 5so (956), 5zg (956), 5mi (957), 5ss (956), 5rs (956), 5jx (957), 6nj (957), 6xw (956/4), 6gh (956), 6si (956), 6cl (956), 6br (957), 6fl (957), 6ja (756), 6kq (856), 6ob (958), 6xn (956), 6dt (955), 6wa (957), 6jz (956), 6cj (956), 6wq (955), 6mk (956), 8yq (955), 8cv (955), 8fz (857), 8ct (957), Gi6tk (934), ve1bk (955), ve5mr (DC.5.6), zs6ay (845), zs6al (956), zr6z (934), zs6aj (944), zu6af (944), zu1d (944), zs4j (957), zt2q (955), zs2v (756), ze1js (944), ze1jb (956), ze1jv (944), zu6l (856), zl4bq (957), 2cw (957), 4ck (956), 1bc (955), 2jq (955), 2ha (956), 1dm (945), vk3mr (957), 2tt (956), zb1j (855), su1ch (957), vq8ae (556).

The first figure indicates tone, the second audibility and the third readability.

A TWO-VALVE PENTODE TRANSMITTER

By J. N. Walker (G5JU). *

MODERN high efficiency pentode valves enable a transmitter to be built in very compact form, and the radio frequency output obtainable is, for a given input, in excess of that given from the older model triodes. Care has to be taken, however, to see that circuit constants and the voltages applied are correct, if full advantage of the valves is to be obtained, whilst good screening must be used to prevent self-oscillation, especially at the higher frequencies. The grid-anode capacity of pentodes has been reduced to a very low figure, but even so the reactance of this can also be low at high frequencies and back coupling take place.

Its Main Features.

The transmitter to be described is a useful one for several reasons. First, where space is restricted, because it takes up very little room. Second, it is economical on power supplies and can, if required, be run off one power pack. Third, with any one crystal three bands are available. With 10 watts input, a very good radio frequency output is obtained, whilst drive sufficient to run the power amplifier to 25 watts is derivable from the first pentode oscillator. The whole outfit can therefore be used as a transmitter feeding the aerial directly, or as an exciter unit for a high-power transmitter. At the writer's station the P.A. tank circuit is kept permanently tuned to 28 Mc. and the transmitter is used on the air on that frequency, but it is also in use to provide the drive for the 56 Mc. doubler unit described in the August, 1936, issue of the Bulletin. A compact transmitter for the 28 Mc. and 56 Mc. bands is, therefore, always available; it is also very suitable for portable and field day work.

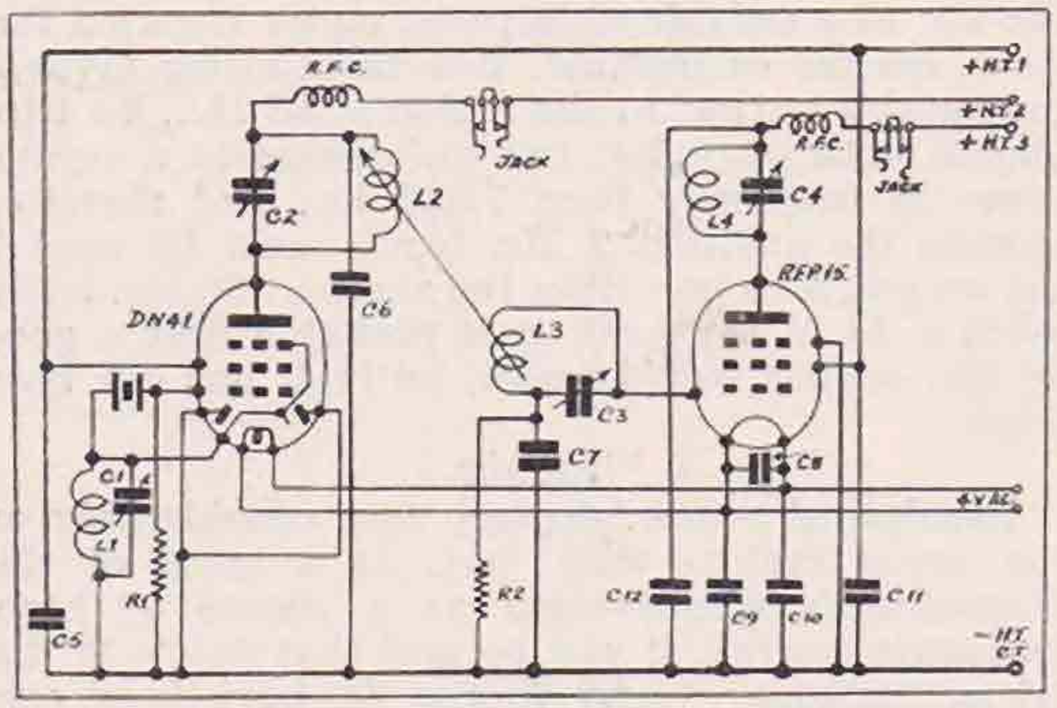


Fig. 1.

CIRCUIT OF TWO-VALVE PENTODE TRANSMITTER.

C1.—.0003 μF, type 4, Polar.
C, 2, 3, 4—Type 900 40, Eddystone.
C6, 12—.001 μF, 1500 v. A.C. test, type M, T.C.C.
C5, 8, 9, 10, 11—.001 μF, 500 v. A.C. test, type M, T.C.C.
C7—.0003 μF, 500 v. A.C. test, type M, T.C.C.
R1—30,000 ohms, 1 watt, Resistance, Dubilier.
R2—10,000 ohms, 1 watt, Resistance, Dubilier.
2—Valve holders, Ceramic Chassis mounting 1-5 pin, 1-7 pin, Clix.
1—Crystal Holder and Base, Q.C.C.
2—H.F. Chokes, type A, Q.C.C.
4—Stand-off insulators, type D, Q.C.C.
2—Stand-off insulators, type C, Q.C.C.
2—Closed Circuit jacks, B.T.S.
4—Condenser Brackets, B.T.S.
7—Type B terminals, Clix 2 LT, HT—, GB—, HT+1, 2, 3.
Coils—R.V. Industances.

Valves Used.

The valve used in the power amplifier stage is the 362 *Company* RFP 15, and is now sufficiently well known to need little description. It requires very little drive to take its rated input of 25 watts and is efficient either as a doubler or as a straight amplifier. The anode connection is brought out at the top and, due to the peculiar form of construction, the anode capacity is low, so enabling a high L/C ratio to be obtained in the associated tank circuit. The only unusual point is that the suppressor grid is connected directly to the chassis, instead of being at either a positive or negative bias. With the particular valve used it was found by practical test that the output was highest with this connection. The use of a by-pass condenser and positive bias gave no increase in output, although the anode current increased. Suppressor grid modulation is not recommended as a negative bias must then be used and the high-frequency output is considerably diminished. Better results will be secured with normal plate modulation. It will also be noticed that the auxiliary grids of both valves are fed from a common high tension supply. This is because 200 volts has been found a suitable value for efficient operation and no interaction effects have been observed, probably because thorough by-passing takes place at the valve-holders. Incidentally, for CW operation the key is inserted in this lead, since both the voltage and current is low, resulting in a clean smooth note without clicks.

The other valve is the *Osram* type DN 41, which is an indirectly heated audio-frequency power pentode. Due to the fact that the grid connection is brought out to the top cap, the valve is very suitable for high-frequency work and makes a good crystal oscillator. In the present circuit, it is always in use as a tritet, the output on the second harmonic being equal to that obtained when the valve is used as a straight crystal oscillator. The heater takes 2.3 amps. at 4 volts, so that one supply giving 3 to 4 amps. at 4 volts is all that is required. The DN 41 diodes are earthed, whilst the suppressor is internally connected to the cathode.

Construction.

The entire transmitter is mounted on a chassis measuring 15 ins. × 6 ins. × 2½ ins. deep, and this compactness is obtained by starting off with the DN 41 cathode circuit at one end, putting the anode circuit and the grid circuit of the RFP 15 at the other, and coming along again to the anode circuit of the latter valve in hairpin fashion. It must be pointed out that if an ordinary crystal holder is used, instead of the *QCC* plug in mounting, which goes underneath, a larger chassis will be needed. By raising the DN 41, room could be found on top for a standard-type holder, but

* 56 Mc. Transmitter Group Manager, R.E.S.

probably heat from the valve would cause frequency creep. Plenty of copper sheet screening is used and at no time has there been any trace of self-oscillation or instability. The top of the chassis is covered with a sheet of copper, the valve-holders are mounted in copper screens, and an additional screen is used around the top cap of the RFP 15. The diagram, Fig. 2, illustrates the position of the screens and gives their sizes. Care should be taken when mounting the RFP 15 valve-holder to ensure that the filaments shall be edgewise to the chassis and not parallel. The position of all the main components is indicated. Fixed condensers C5, 8, 9, 10 and 11 are mounted directly from the valve legs to the chassis, whilst C6, 7 and 12 go from the condensers C2, C3, and C4, thereby giving extremely short paths for the high-frequency currents. It will be noticed that C5 and C11 are in parallel, but it is essential that the pentode auxiliary grids are well earthed, consequently two condensers are used where possibly one would suffice.

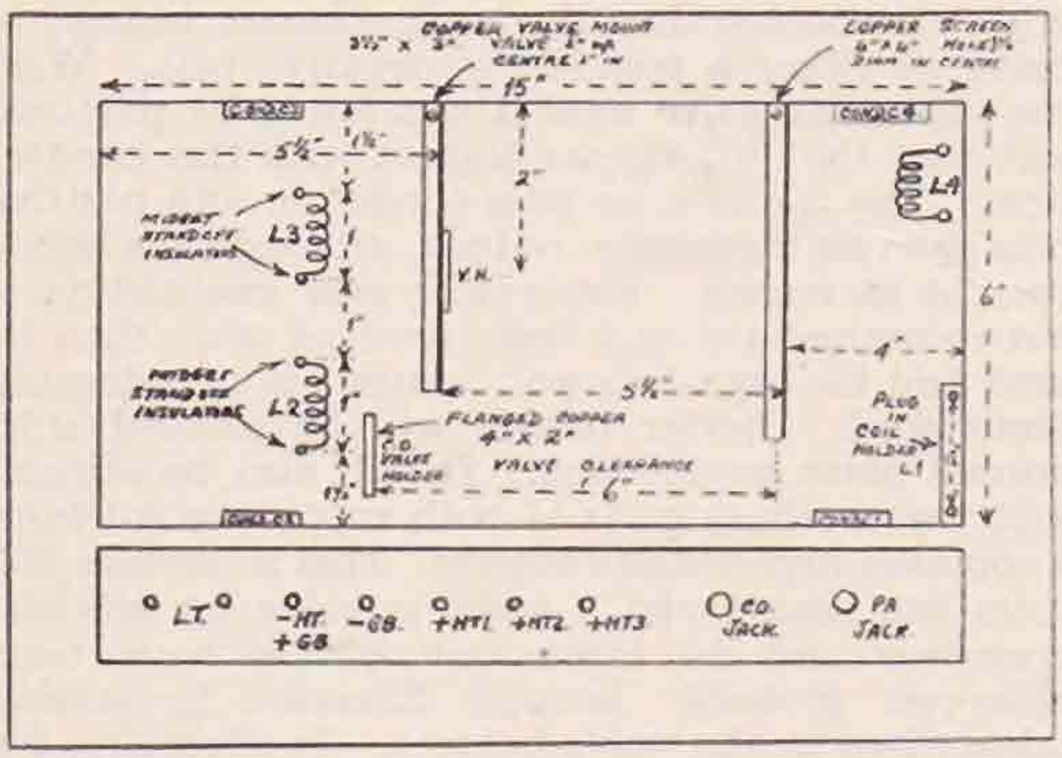


Fig. 2.

Layout of Components.

On the underside, only the crystal holder is mounted, the other components, consisting of grid leaks and high-frequency chokes, being held by the wiring. Two jacks are provided, one for measuring the anode current of the DN 41 and the other the anode current of the RFP 15. A further jack can be mounted, if desired, for measuring the grid current of this valve. To prevent trouble arising from undesirable resonances, no grid chokes are used, their omission making no appreciable difference to the results, since the high frequency voltages at these points are not of a high order. The cathode coils used by the writer are home-made and arranged to plug into the holder shown in the sketch, but it is evident that any type of plug-in coil can be used in this position or another pair of stand-off insulators substituted. The coils in the anode circuit of the DN 41 and grid circuit of the RFP 15 are close-wound on celluloid strip and can be purchased from *R.V. Transmitting Inductances* at very reasonable prices.

The new floating-type ceramic valve-holders made by *Clix* are used and the insulation throughout to high-frequency voltages is maintained at a high order by the use of ceramic or porcelain insulating materials.

Operation.

For normal operation 250 volts should be applied to the anode of the oscillator, and 200 volts to the auxiliary grid, but these values should be reduced to 200 and 150 until the valve is performing properly, as no bias is present in the non-oscillating state. On the other hand, if very high drive is required, the anode (but not the auxiliary grid) volts can be raised to between 300 and 350 quite safely since the valve is dissipating much less power internally than when used for audio-frequency work. This will not, however, usually be necessary. Assuming a 7 Mc. crystal is used, a coil employed for 14 Mc. operation should be used for L1, as it is essential for good output from any tritet circuit that C1 should have an effective capacity of 200 $\mu\mu$F or more. When this circuit is tuned to resonance, the anode current should drop to a very low value; this should then be increased by slightly reducing the value of C1. On tuning C2 (with a 14 Mc. coil in position), another dip should be observed. Coils C2 and C3 should be practically identical, and on bringing L3 C3 into resonance, the anode current of the DN 41 will rise sharply. As a guide, this current with 250 volts should be in the region of 20mA. Coupling between L2 and L3 is adjusted by bending the coils nearer to or away from each other until maximum drive is obtained without any double hump effect being in evidence. On inserting a suitable coil in the anode circuit of the RFP 15 and applying 400 to 500 volts, and tuning to resonance a high output on either 14 or 28 Mc. will be obtainable. Negative bias on the RFP 15 should be 30 volts when used as a straight PA, and rather more when used as a doubler. Since a pentode triples almost equally well as it doubles, care must be exercised that the outputs obtained are on the desired frequency, and the use of a reliable absorption meter is called for. As a matter of interest, this transmitter gives a measurable output in the region of 63 Mc., by tripling in both pentodes, but unfortunately a crystal lower in frequency than 7,000 kc., and therefore outside the amateur 7 Mc. band, must be used if the output is to be within the amateur 56 Mc. band. With a 14 Mc. crystal, it is probable that a good 56 Mc. output would result, but this has not been tried.

Results.

Results, of course, depend very considerably on the aerial system used, but, as a proof of this transmitter's effectiveness as a source of high-frequency energy, it can be said that many W districts, including 5 and 7, also ZS have been contacted on 28 Mc., whilst on 14 Mc. consistent signals have been put into VK, ZL, W6, etc. Since the transmitter was constructed, a somewhat improved version of the DN 41 has made its appearance. This is the N 43, in which the inter-electrode capacities have been reduced, with the main object of providing higher fidelity audio output, and the diodes removed. It is very probable that this valve will be even more effective as an oscillator than the DN 41.

A Suggestion

Mr. J. O. Dykes, 2AIJ, suggests that all announcements of special interest to non-transmitting members be published in a special section. We shall be pleased to give effect to this suggestion, providing sufficient data is submitted.

BREAK-IN OPERATION

By H. N. D. Bailey (G5BP).

IN the days of single-stage transmitters which provided their own excitation, it was a simple and common thing to be able to listen in the receiver whenever the key controlling the transmission was open, but since the advent of crystal control, break-in operation has been left alone by the vast majority of amateurs.

A few years ago, it was found that quartz crystals did not object to being suddenly started and stopped in oscillating circuits and it became quite a common thing to hear of amateurs keying their crystal oscillator stages, but, in nine cases out of every ten, a small chirp in either frequency or amplitude spoilt the otherwise good quality of the transmission,

After this fact was realised, a well-shielded circuit in the transmitter, together with a super-heterodyne at the receiving position enabled the oscillator to be run continuously without blotting out more than a few kilocycles. This, however, was certainly beyond the means of most experimenters in this country, as the autodyne has probably been more popular in Great Britain than anywhere else in the world. Also, a most peculiar thing was noticed, namely, that the station it was wished to contact always seemed to be exactly on the frequency of the oscillator.

Admittedly, then, break-in would only achieve true popularity, in this country at any rate, when no idle radiation was taking place at all, or most certainly no super-heterodyne receiver was to be required. To have to run with the oscillator running is only a compromise, and that will not suit true amateurs.

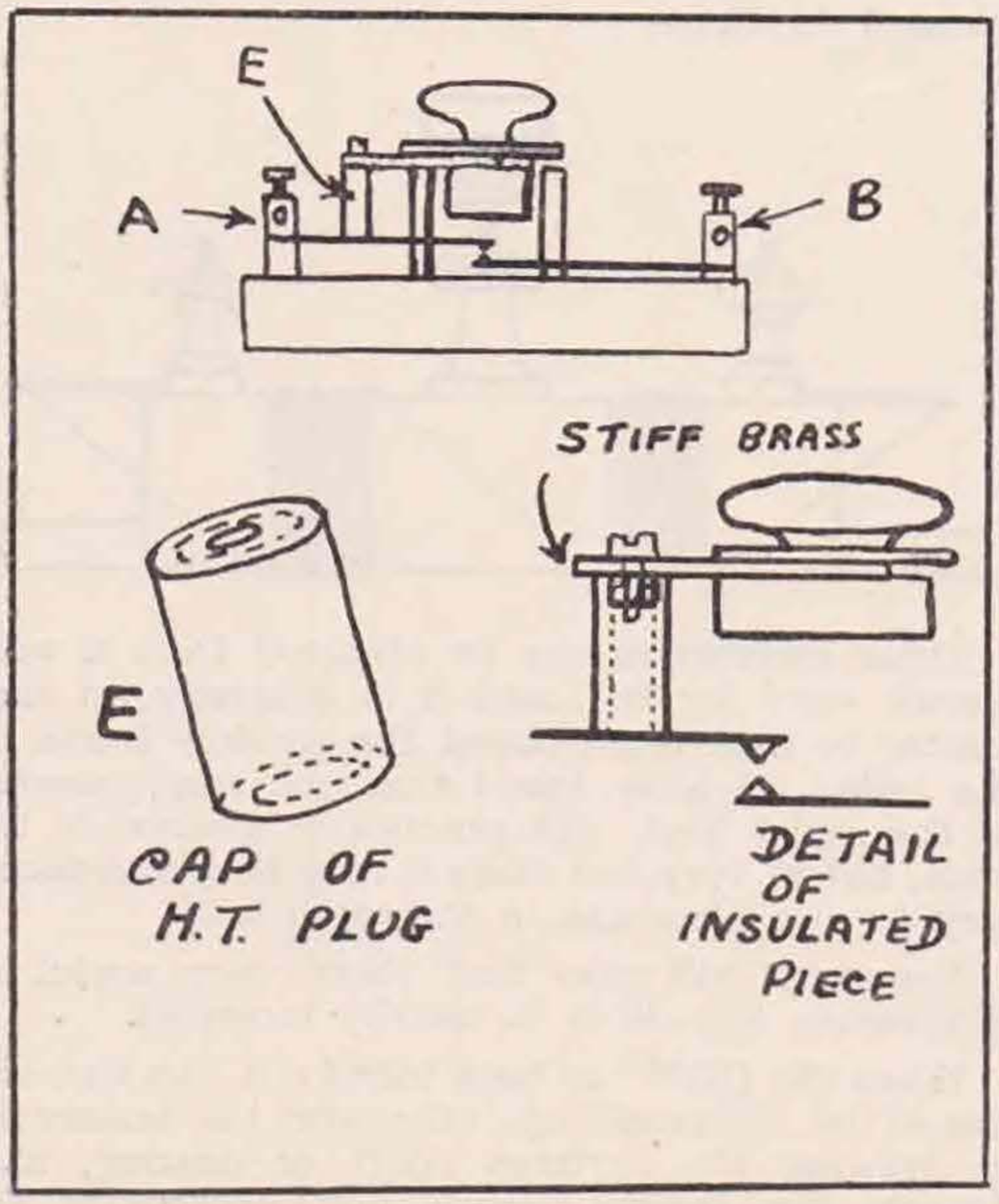


Fig. 1.
The method of constructing the special key described by the author.

A Practical Arrangement.

The author has designed a system of operation in which there is no idle radiation, no chirp and no super-heterodyne. It can be applied to any amateur station.

It was found when using a key in the crystal oscillator anode that if the anode supply to the buffer stage is in circuit, a chirp is always introduced on keying, but if the oscillator is switched on first, no matter how small the increment of time earlier, no chirp is found in the radiated signal on completing the buffer anode feed. To do this automatically was the problem, and it calls for the construction of a special key.

The Special Key.

The specifications of this key were to be that an extra pair of contacts would make circuit just before the main contacts. The usual movement of the main contacts may be about 1/16th of an inch. Then if the auxiliary contacts met after a movement of 1/32nd of an inch of the main contacts, the key would be suitable for its job. The way in which this was accomplished may be seen by a glance at Fig. 1.

Actually a fortunate amateur may not find it necessary to construct this key specially, as some large ships' keys designed for 1½kW 'phone/CW transmission have this auxiliary set of contacts already fitted. Their use in this case is to short-circuit the microphone transformer secondary, effectively preventing the introduction of any modulation in the CW emission. Naturally the auxiliary contacts must close before the main set, so this type of key is ideal for our purpose.

The chief difference between a commercial key and one constructed by the amateur is that in the former, the auxiliary contacts are behind the main body of the key, whereas in the latter, they are in front of the support. This does not require such accurate and rigid construction and is thus more suited to the average amateur's workshop.

Two terminals, A and B, are fitted to the base such that a line joining them will cross the key approximately half way between the main contacts and the knob. Two pieces of springy brass containing light contacts are fixed to the terminals as shown and are arranged normally to be open. The next part of the constructional work must be carefully done if the job is to be a success.

Prepare a piece of stiff brass with a 2BA clearance hole drilled at one end, and at the other a hole which will clear the thread of the stud fixing the knob to the rocker bar. The distance of the holes apart should be sufficient for the insulated distance piece E to be adjusted clear of the knob skirt. Now fix this brass strip beneath the knob firmly, with the other hole exactly over the springy brass underneath.

The simplest way of obtaining a suitable distance piece for E is to use the insulated cap of the spring-grip type plug for a high-tension battery. The length of this must be cut very carefully, and should be such that when placed between the stiff and the springy brass, the latter is depressed to give a gap

of about 1/32nd of an inch at the contacts with the key open. The insulated piece is fixed to the stiff brass strip by a 2BA nut and a short bolt. The lighter the springy brass, the less will the touch of the key be altered.

In the commercial job, the working was opposite to that of the one just described in that the insulated piece normally kept the contact open against the resilience of the brass, and on depressing the knob, the piece left the auxiliary contact altogether, and hence the touch of the key remained the same whether the auxiliary contact was in use or not.

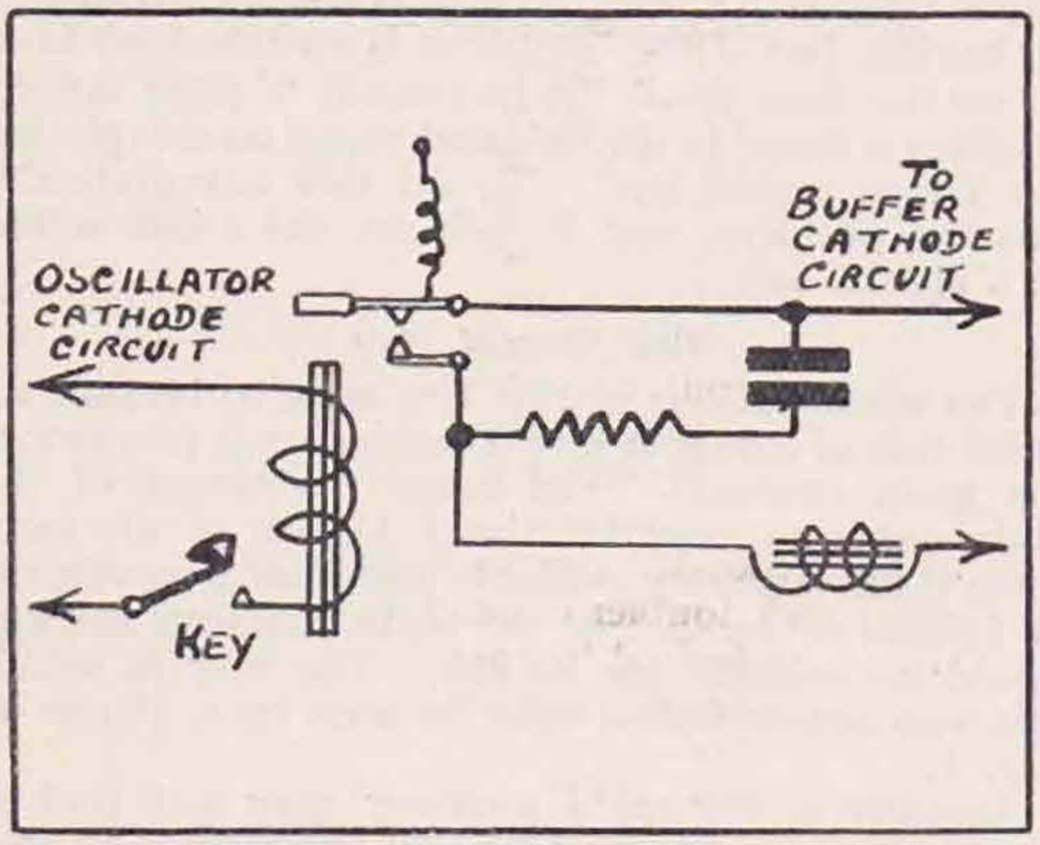


Fig. 2.
The electrical delay circuit suggested.

Circuit Arrangements.

Now for the simple connections to the transmitter. The auxiliary contacts break the crystal oscillator cathode circuit, while the main contacts are in the buffer cathode circuit of a three-stage transmitter in which the final amplifier is biassed to cut-off or more. The conventional click filter is installed in the main keying circuit, no filter being required or even desirable in the oscillator circuit. In the transmitter at G5BP, a 46 is used in the buffer stage. This tube is conveniently keyed in the grid return lead with a current of only a few milliamps, making quite a simple filter consisting only of the primary of an audio transformer, a 400-ohm rheostat and a 2-μF condenser in the conventional circuit perfectly effective in removing all traces of click in a BCL set running in the same room.

To the amateur who is interested in the foregoing, the author would like to suggest an electrical method of accomplishing the delay effect mentioned earlier in this article. This requires a relay which will operate on the current normally passing in the oscillator cathode circuit (Fig. 2). The key is connected in this circuit in series with the relay coil. The points of the relay are in circuit for keying the following stage, as previously described. As will be seen, an ordinary key is suitable in this, and those who favour bugs and side-swipers will find that this method can be applied to their own special key.

On closing the key, the oscillator is started immediately, whereas the next stage is only switched on when the relay has had time to operate, the delay of the mere fraction of a second being sufficient entirely to eliminate the chirp which is almost invariably present if the oscillator be keyed direct. No chirp is found at break, the oscillator being a true Trades' Unionist, as even if there is a delay in the start of the crystal, it stops instantaneously.

Aerial Arrangements.

Naturally, a separate aerial for the receiver is necessary, and should not be too near the one used for transmission in the interests of efficiency of the latter. Grid-leak values in an autodyne detector coupled straight to the aerial should be adjusted until the receiver immediately returns to normal operation after the blocking signal from the transmitter has been removed. It is important that there is no delay of action here.

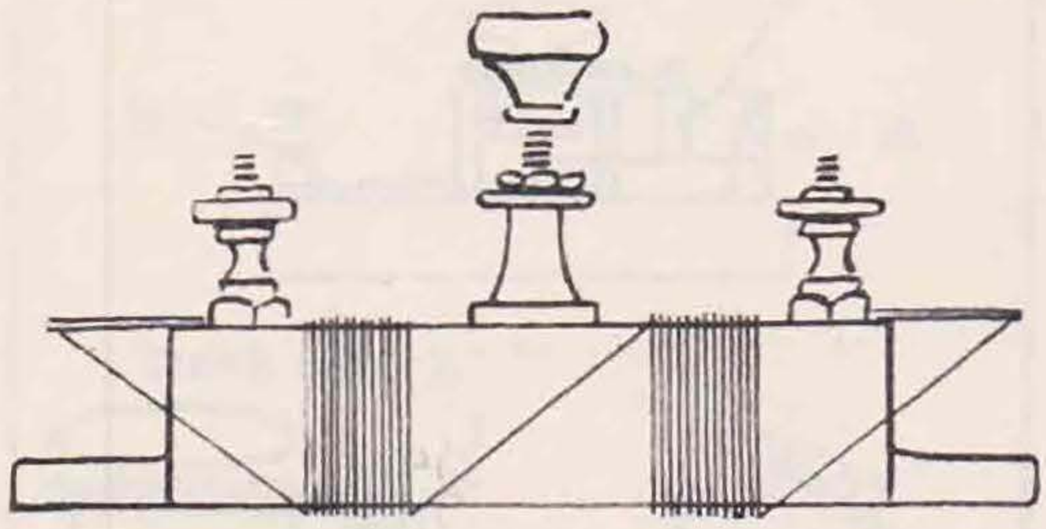
The writer hopes that the foregoing will encourage more stations to use break-in operation as he feels sure that more enjoyment will be obtained from the contacts, less time will be wasted in fruitless calls and hence a big step towards clearing up the QRM question will be taken.

An Efficient Wave-Trap

By G2NJ.

As one who resides in a working-class area, where obsolete receivers are numerous, I can thoroughly recommend the wave-trap illustrated for cutting out interference from telephony. Actually, it is the idea of Mr. W. Elliott (G6LX), at present at Cambridge University.

The wave-trap comprises a pre-set condenser with a capacity of .0003—.000025, around which is wound (for 7 Mc. interference) 26 turns of 26 or 28 gauge cotton covered wire. The nut at each end of the condenser should be first removed and tags placed on the screw in order that the wire can be soldered to them.



These condensers can be obtained from a well-known store for 6d., and it is generally an easy matter to hide them round the window frame on the inside. I have found that one trap, inserted in the aerial lead, will practically always do the trick, but in very bad cases it may be found necessary to also place one in the earth lead.

Amateurs will also find them very useful in eliminating key-clicks in nearby receivers.

When the QRM has been tuned out, the lock-nut should be tightened up, otherwise the housewife, in drawing the curtains apart or dusting, may disturb the tuning, which will necessitate the operator of the transmitter visiting the house again!

A BATTERY-DRIVEN TRANSMITTER

By W. Robertson, B.Sc. (G6RI).

MANY excellent articles on transmitters and transmitter design have appeared in the Bulletin. Most, if not all, of the transmitters described have been built around valves which are indirectly heated and require a fairly heavy L.T. current. It has seemed to the writer that the really low-power man has been somewhat neglected of late. In particular no articles have appeared to help the beginner who is placed in the "no mains" category.* The writer is in such a position and it is thought that a description of his transmitter and a note on the results obtained from it, may prove interesting and possibly helpful to someone.

When G6RI started up first, it was realised that a modern and somewhat greedy transmitter was out of the question on account of the heavy drain on both H.T. and L.T. batteries. Therefore the circuit originally used was that faithful old favourite, the T.P.T.G. It was not long before the shortcomings of this circuit were found and something more stable was sought. After many experiments, trials and disappointments the present rig was evolved. The circuit is not modern, the valves used are all triodes, the stages are not link-coupled, but it works, it is stable and it is reasonably economical.

The Circuit.

Briefly, it consists of four stages, CO-FD-FD-PA. The reason for the four stages is to permit of operation on 7 Mc. as CO-PA, on 14 Mc. as CO-FD-PA, on 28 Mc. as CO-FD-FD-PA, and even on 56 Mc. as CO-FD-FD-FD. The valves used are all 2-volt filament receiver type power valves.

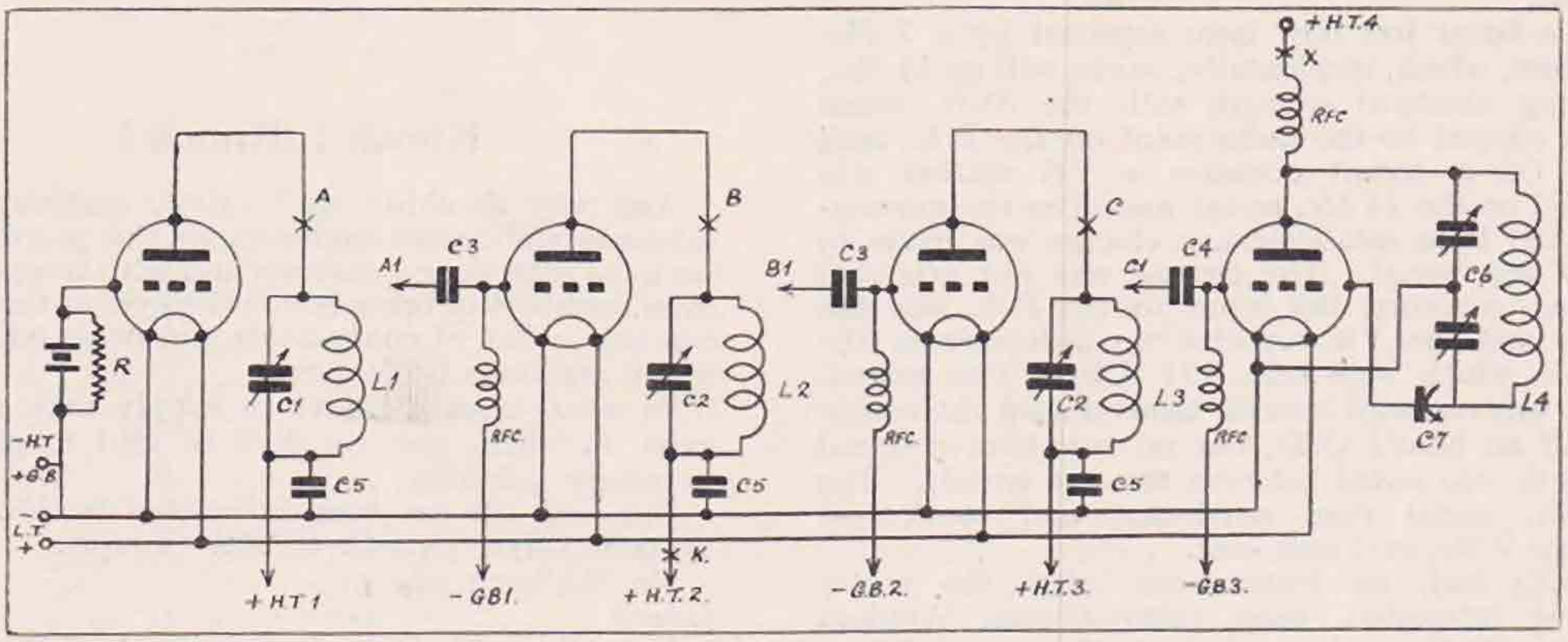
In the CO there is a *Hivac* P215 with 180 volts on the plate, drawing about 8 milliamps. The plate circuit of this stage consists of a valve base coil of 12 turns, tuned by a .0001 μF. variable condenser. The first FD stage, using a *Tungsram* LP220 with 180 volts applied, is capacitatively coupled to the plate of the CO through a .0003 μF. fixed condenser, a flexible lead and a crocodile clip. The plate circuit is again a valve-base coil tuned this time by a .00005 μF. variable condenser. When the transmitter is working on 14 Mc. or 28 Mc. this stage is keyed by breaking the H.T. plus lead.

The second doubler to 28 Mc. is identical to the first and uses a similar valve.

The P.A. is capacitatively coupled through a .0001 μF. fixed condenser by means of a flexible lead and a crocodile clip to either the C.O. or the first or second doubler depending on the frequency on which it is desired to operate. The plate circuit of the PA is a copper tubing coil, mounted on stand-off insulators, tuned by a *British Radiophone* split-stator condenser, .00016 μF. each section. The neutralising condenser is an *Eddystone* .000025 μF. In this stage a *Tungsram* SP220 valve is used, and, although it has 360 volts H.T. on its plate, shows no signs of distress. The P.A. is biased to double cut-off and. on 14 Mc., with the doubler using 3 watts, can be driven to 50 mills, dropping to 12 *m*A at resonance. When 7 Mc. operation is desired, the P.A. is keyed.

(*Continued on page* 382.)

* An article is being prepared dealing with a low-power battery transmitter.—Ed.



Circuit of Low Power Transmitter.

C 1. .0001 μμF
C 2. .00005 ,,
C 3. .0003. ,,
C 4. .0001. ,,
C 5. .002. ,,
C 6. Split stator .00016 each section.
C 7. Neutralising condenser.
R 25,000 ohms

L 1 (7 Mc.) 12 turns valve base.
L 2 (14 Mc.) 8 turns.
L 3 (28 Mc.) 4 turns (air spaced).
L 4 (7 Mc.) 14 turns 3 ins. Diameter.
,, (14 Mc.) 8 turns ,,
,, (28 Mc.) 4 turns ,,

For 7 Mc. operation: Clip C 1 goes to point A, key at X.
For 14 Mc. operation: Clip C 1 goes to B, clip A1 goes to A, key at K.
For 28 Mc. operation: Clip C 1 goes to C A 1 to A, B 1 to B, and key at K.

SOME NOTES ON THE WINDOM AERIAL

By W. H. Allen (G2UJ).

THE writer has met several people who say that they have had difficulty in getting the Windom aerial to function satisfactorily, and being, along with other members of the Tunbridge Wells group, something of a Windom addict, it was thought that a few notes on this aerial would be of interest.

Up to the present time six aerials have been constructed to the formula given by G2BI and all have worked satisfactorily without any "cut and try." Two of these were for 7 Mc., three for 14 Mc. and one for 56 Mc. operation.

The writer considers, rightly or wrongly, that the aerial is cut to length and the feeder in the proper place if the feeder can be clipped on to the tank coil of the P.A. at a point which gives the ordinary draw without necessitating *any* alteration to the tuning of that circuit.

The argument put forward to those who question this procedure is that if the feeder was *not* acting as a true feeder, but had standing waves on it, it would add to the length of the "top" and the effect of attaching the aerial would be that of adding an odd length of wire to the P.A. tank circuit, which would, of course, throw it out of tune. So far, judging by results obtained, this assumption is amply justified.

The 14 Mc. Windom in use at 2UJ is erected on two short masts on the chimney stacks, and although 50 ft. above ground, is only 10 ft. from the ridge of the roof and the ends of the aerial 6 ins. distant from the masts, yet it tunes dead, exactly as did a similar one running at an angle of 45 degrees to it, well clear of surrounding objects, and 30 ft. above ground.

This latter has now been replaced by a 7 Mc. Windom, which, incidentally, works well on 14 Mc., drawing identical current with the 33-ft. aerial when clipped to the same point on the P.A. tank coil. On a recent occasion a VK station was worked on the 14 Mc. aerial, and after communication had been established, a change was made to the 7 Mc. aerial. The change was not attended by any retuning, the input to the P.A. was the same, and the VK reported no difference in the signals, which were still RST 459x. This experiment was repeated several times during the course of half an hour's QSO, but no variation of signal strength was noted between the two aerials. The 14 Mc. aerial runs north-east and south-west and the 7 Mc. east and west.

G5OQ had, for some time before the writer became interested, been using sloping Windom aerials with the end remote from the mast pointing in the direction of desired greatest signal strength. These were highly successful, and one each for 7 and 14 Mc. were constructed for N.F.D. The 14 Mc. aerial "beamed" on U.S.A. worked VE, several U.S. districts, and VP5 at good strength, but also obtained a report of R6 from SU1A off the back of the aerial, which was hardly according to expectations! On 7 Mc. no DX was worked, although signals were heard in VK. This aerial being about 66 ft. long, had one end within 4 ft. of the ground, but this again did not upset its matching.

G6OB, 5KV and 8AC are other satisfied users of this type of aerial with whom the writer is acquainted, and the two latter have proved that even with less than 10 watts input, a Windom will work over several thousand miles on 14 Mc. with only slight diminution in efficiency, when the frequency in use is as much as 150 kc. different from that for which the top was cut.

Naturally this is not recommended, but it is interesting to know that in cases of severe QRM change of frequency may be made, even to the other end of the band, without sacrificing more than a very small percentage of the available output.

It is hoped that the foregoing will help to dispel the idea that the Windom has to be cut to fit its surroundings, and the formula used is given below in case the original article by G2BI is not to hand.

$$\text{Length of top in feet} = \frac{475{,}200}{\text{freq. in kc.}}$$

$$\text{Distance of tapping point from centre} = \frac{\text{Length of top} \times K}{180}$$

Where K=25 for 16 S.W.G. and 23.2 for 14 S.W.G.

The writer would like to thank G2BI, if this comes to his notice, for a very satisfactory formula for an excellent aerial, and would be pleased to hear from members who either agree or disagree with the foregoing remarks, bearing in mind that these are practical results, the theoretical aspect of aerial design being somewhat beyond the writer's mathematical attainments.

Knock! Knock!

And why shouldn't we? Many manufacturers, salesmen and design engineers see this journal, and we hope with their assistance and with co-operation from members to bring before the eyes of those who can help, a list of components and other oddments which amateurs badly need.

In some cases a source of supply may already exist, in which case we shall be glad to give the necessary publicity.

Our first list has been submitted by Mr. J. N. Walker, G5JU (R.E.S. 56 Mc. Groups).

Mr. Walker's wants:—

Item 1.

Brass Crocodile Clips, in sizes to fit (*a*) thin wires up to 16 s.w.g., (*b*) thick wires up to 12 s.w.g., (*c*) $\frac{3}{16}$in. tubing, (*d*) $\frac{3}{4}$-in. tubing.

Item 2.

Brass Wing Nuts to fit 0B.A., 2B.A., 4B.A. threads.

Item 3.

Plates of Ceramic material for home-made coil mounts, etc., in various sizes.

Item 4.

A range of metal chassis.

FOR THE TECHNICAL EXPERT

Details of the new

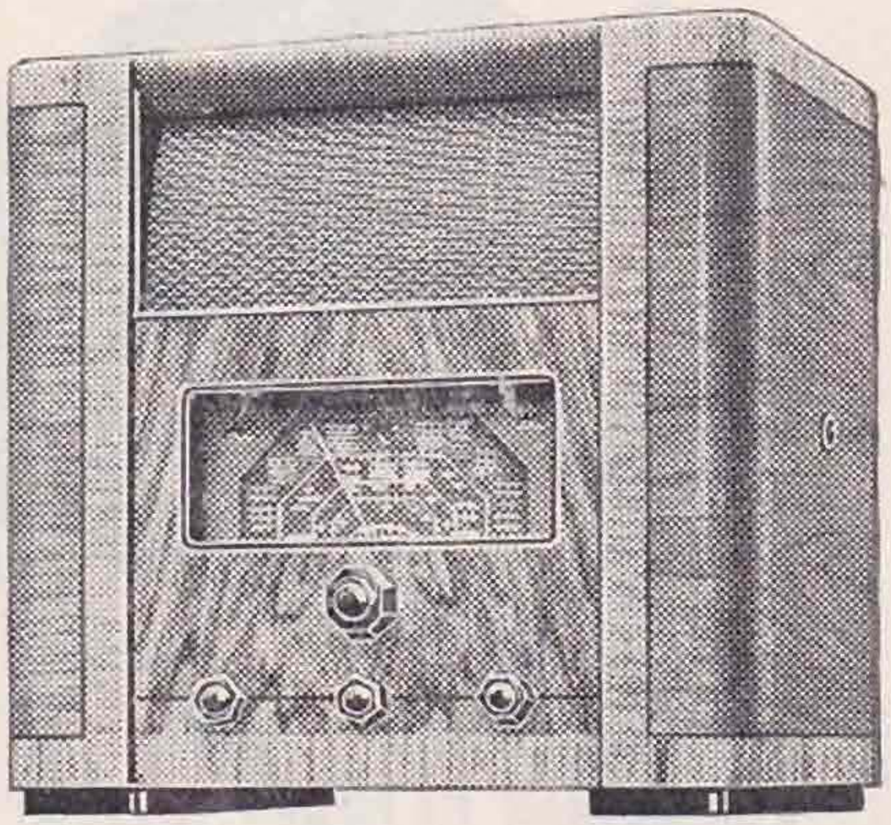
"HIS MASTER'S VOICE"

ALL WAVE FLUID LIGHT SUPERHET RECEIVER

MODEL 482 A.C. PRICE 16 GUINEAS.

The new "His Master's Voice" all wave superhet receiver, Model 482, is one of five all wave receivers being marketed by "His Master's Voice" this season. We hope the following details will be of interest to the technical expert who is considering the purchase of a commercial receiver, or the expert who is often consulted by listeners not possessing a highly technical knowledge.

MODEL 482 is a six valve (plus detector) all wave superhet receiver for A.C. mains, in a figured walnut table cabinet.



WAVE RANGE

16.5 to 51.5 metres. 200 - 580 metres. 725-2,000 metres.

CONTROLS

Apart from the Mains Switch, which is mounted at the side of the cabinet, there are four operating controls—Volume, Waveband, Tone and Tuning. The controls are situated on the front of the cabinet below the Tuning scale.

TWO-SPEED TUNING

The Tuning control is of the two-speed type with fast and slow knobs arranged concentrically. These knobs drive simultaneously the main wavelength indicator and a vernier scale. The main indicator travels across the illuminated wavelength scale, which bears the names of over eighty medium and long wave stations, besides the wavelength calibrations of the three bands. The wave bands of the principal short wave stations are indicated by special markings.

VERNIER SCALE

The vernier scale is calibrated in degrees of 0 to 100, and rotates five times to one complete movement of the pointer across the wavelength scale. It will be realised that with this arrangement the exact point of the reception of each short wave station can be noted for future reference.

WAVE BAND INDICATOR

An ingenious lighting scheme illuminates the station names and wavelength calibrations, leaving the rest of the scale dim. A wave band indicator is situated at the top corner of the scale, and shows which wave band is in use. It is actuated by a control knob on the front of the receiver.

CATHODE RAY FLUID-LIGHT

The fluid-light tuning device is of the electronic cathode ray type and is extremely sensitive. The device is semi-circular in shape, and when the receiver is not tuned to a station two arcs of light are apart. As the receiver is correctly tuned the arcs converge.

VOLUME CONTROL

The volume control is wired in the grid circuit of the L.F. amplifier, and is operative on both radio and gramophone pick-up.

5-POINT TONE CONTROL

The five-point tone control which operates both on bass and treble, will be found extremely useful as the best setting can be obtained for each station. It operates on radio and gramophone pick-up, which may be connected to two sockets.

AERIAL

Sockets are provided for either "His Master's Voice" all-wave anti-static aerial, or a doublet aerial.

SPEAKER

Energised field moving-coil speaker incorporating a special cone to give a good response on both high and low notes. The flux density is 7,500 lines. A "Sound transparent" metal grille is mounted on the cabinet in front of the speaker. Sockets are provided for the connection of additional external speakers.

CONSUMPTION & VOLTAGES

85 watts on A.C. voltages from 95–260 50–100 cycles.

CIRCUIT

The circuit and chassis have been designed to keep stray capacities to an absolute minimum, and the valves employed have low inter-electrode capacities. In this way the absolute maximum degree of sensitivity and selectivity has been obtained on all wave ranges, particularly on the short wave range. The valve complement is as follows:

W42 H.F. amplifier.
X42 Mixer.
W42 I.F. amplifier.
D41 Speech and AVC double diode.
H42 L.F. amplifier.
N42 Pentode output.
U14 H.T. rectifier.

It will be noticed that the employment of valve D41 looks after speech rectification and the production of AVC voltages, and as the latter are applied to the three previous valves, the AVC control is very efficient. The speech output from valve D41 is via resistance capacity coupling through the H42 valve to the high efficiency pentode N42 which has an output of three watts undistorted.

If you would like to receive a copy of the "H.M.V." illustrated catalogue of RADIO receivers and Radio-gramophones write to "HIS MASTER'S VOICE" 98-108 Clerkenwell Road, E.C.1.

Bright Ideas No. 8

Those who possess a *Ferranti* No. 36 three range milliameter with ranges of 7.5, 30 and 150 mils., may not be aware that by suitable connections it is possible to obtain two additional ranges of 15 and 75 mils. respectively. These ranges fall nicely in the middle of the rather wide gaps between the normal ranges of the meter, and also fit in with the normal calibrations, the 15 mil. range being read on the 150 mil. scale by knocking the noughts off, the readings on the 75 mil. range being obtained by adding a nought to the readings on the 7.5 mil. scale. The connections are as follows :—

15 *mil. range.*—Connect the negative lead to the normal negative terminal. Connect the positive lead to both 7.5 *and* 30 mil. terminals.

75 *mil. range.*—Short the 7.5 and 30 mil. terminals. Connect the negative lead to the normal negative terminal and connect the positive lead to the 150 mil. terminal.

It is also possible to obtain a 10 mil. range by connecting the negative lead to the 30 mil. terminal and the positive lead to the 7.5 mil. terminal, but this range is rather difficult to read on the normal calibrations, and is, in any case, of rather limited usefulness as it is only just above the 7.5 mil. range and not much below the 15 mil. range.

The accuracy of the meter on these additional ranges is equal in every way to the accuracy on the normal ranges.

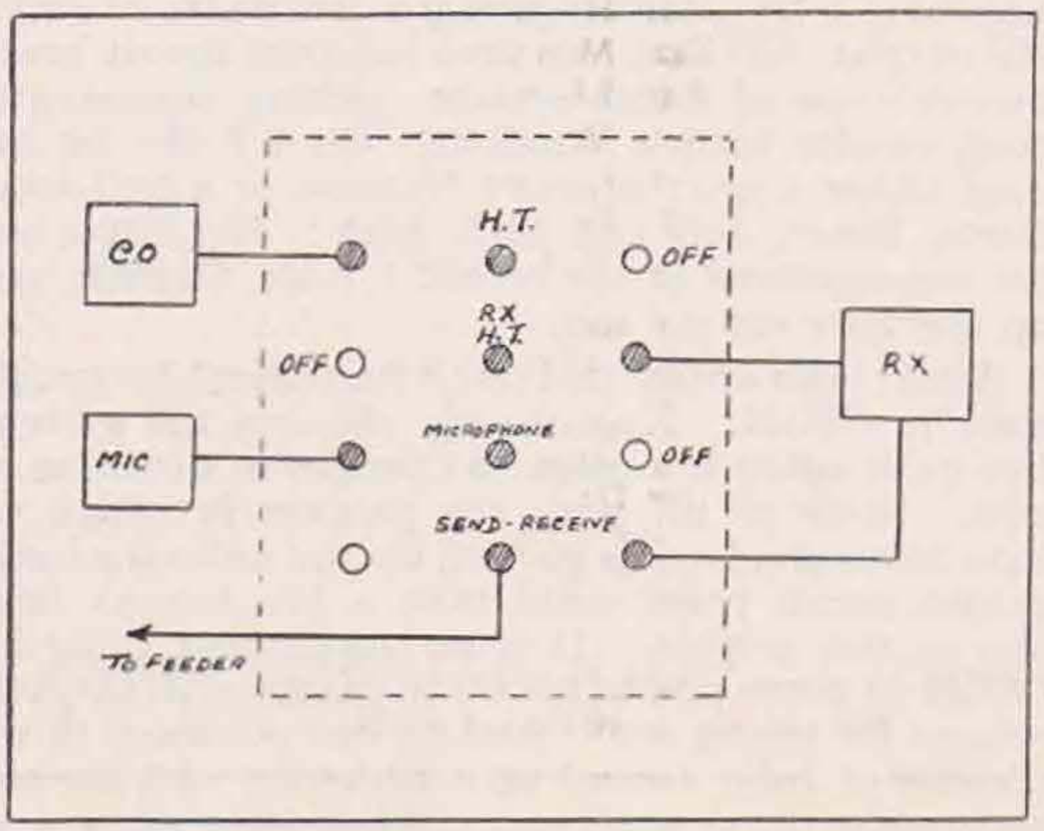
There is not the slightest risk of damage to the meter with any of these connections except, possibly, on the 10 mil. range, as the fuse is out of circuit with this connection and, in the event of a short circuit, the meter would have no protection. However, as mentioned, this range is not of any great practical value.

No doubt the same principle can be applied to other multi-range meters, and a little experiment will soon find the correct connections.

G6SH.

* * *

Members using crystal control who have not yet attempted to use a break-in method for both C.W. and telephony will find that a simple four-pole double-throw switch will accomplish four necessary operations at one and the same time. Providing that later stages are all biased to at least cut-off a flick of the switch can be made to cut off the current to both C.O. and microphone as it switches aerial from Send to Receive, and allows the receiver H.T. to flow or *vice-versa*. The microphone is included because of feed-back with the loud-speaker and the send-receive operation only consists of making and breaking the lead from aerial feeder to receiver. The connections are as per sketch.



G2NS.

* * *

G6LH draws attention to the binders issued by the G.P.O. for holding the Post Office Magazine. The binders are designed to take twelve issues, each being secured by a steel rod clamped in a metal slot.

Such binders would prove quite useful for a volume of The T. & R. Bulletin. The price is 2s. each, post free, from Post Office Magazine, Dept. B, G.P.O., London, E.C.1.

* * *

The capacity of a large condenser (1 to 24 μF) may be quickly and accurately checked with a 3.2v. A.C. 50-cycle supply and an 0-24 mA. A.C. meter.

If voltage is applied to the condenser and the current measured, the current reading in milliamps is a direct reading in microfarads (*i.e.*, 8 μF passes 8 mA. with 3.2v. A.C. applied).

The voltage may be obtained from a 4v. filament supply provided the mains are 50 cycle. Electrolytic condensers may also be checked this way as the voltage is too low to do any harm. A D.C. meter can be used if of the moving-iron type.

G5NO.

An Operating Hint.

Mr. W. Robertson (G6RI), of Forfar, tells us that at a recent Scottish "C" District meeting the members present agreed that in future, when signing off after calling a station, they would give the readability value of the station concerned. For example, G6RI calls G5ZX, and signs G5ZX de G6RI ar 5, indicating that signals from G5ZX are R5.

For some years several well-known DX operators have used this method, often giving a full RST report before signing. We mention Mr. Robertson's suggestion for the benefit of more recently licensed members.

Bon Voyage !

Mr. D. Gordon Bagg, G6BD, set sail for Trinidad, B.W.I., on February 6 last, taking with him the best wishes of countless radio friends. Gordon Bagg has been closely associated with R.E.S. for several years, and has been a moving spirit in the activities of the Tunbridge Wells Society.

Mr. Bagg hopes to operate under a VP4 call at an early date ; meanwhile, he will be glad to hear from those members who were associated with him in England. His address is c/o Trinidad Leaseholds, Ltd., Pointe à Pierre, Trinidad, B.W.I.

Remember, Trinidad provides a South American contact for W.A.C. !

Bon Voyage and Good Luck, o.m. !

MEET A HAM

By A. F.

IF one day you found yourself in the little market town of Holsworthy, in the glorious North Devon country, you would—if you knew your way in these parts—take the Bradworthy road, passing through the hamlet of Chilsworthy *en route*. Having left the first and last of these worthy places behind, look for a turning to the right. If the season is high summer, as we may hope, you will bump down a deep, green leafy, Devon lane. If it is winter, you have to splash along the same lane, full of pools and rivulets, and with streams in spate all round you. A final lurch round the last of several bends will bring you to a farmstead, standing on rising ground to your left.

As a ham, the most conspicuous feature of the landscape to you will be two, or perhaps three, near-sixty-foot masts. Sound " Test DX " on your horn, and you will be in personal QSO with G6GM.

Harold Merriman, retired from the Royal Navy (and one of the few now left who were trained in sail) is the elder brother of VS6AH, Hong-Kong, a call well known to DX men in this country. The call G6GM was actually taken out by VS6AH during one of his long-leave periods, and, the bug having bitten the subject of this article well and truly as a result of his brother's influence and enthusiasm, was transferred to its present owner in March, 1934.

Unlike most beginners, G6GM's initial efforts were on 14 Mc., using a QRP self-excited rig which brought him in the way of DX all continents, except South America proper, many times over. However, he has had the consolation of working the Canal Zone nine times! This period is noteworthy as marking the beginning of his long radio association with the SU men, where G6GM's call is particularly well known. Coming up to 7 Mc. later on, the DX results of 14 Mc. were repeated, but again without the elusive South American, and signals from that part of the world are not often heard at G6GM.

The high lights of the period March, 1934, to May, 1936, were a QSO with V8AC, Madagascar, on 7 Mc., a long sequence of contacts with SU on both 7 and 14 Mc., and then a schedule with his brother, VS6AH, in Hong-Kong. This started on Easter Monday, 1936, and ran thrice weekly for seven consecutive weeks, the power input at G6GM being never more than ten, and usually about seven watts.

Shortly after G6GM and the writer, the only amateurs in all North Devon, had gotten together (as the Americans say) as amateurs will and should, the former was persuaded to try the lower frequency bands. The results were startling. A high place in the 1936 1.7 Mc. Contest with less than the full operating time put in, followed by a sound performance on 3.5 Mc. during the summer. This was interlarded with excursions to 28 Mc., which resulted in many DX QSOs. Then came the effort, already recorded elsewhere, of working W2BGO on 3.5 Mc. for 25 consecutive mornings up to New Year's Day, 1937, while those who took part in the recent 1.7 Mc. Contest will remember G6GM's hefty signal pumping away at the high-frequency end of the band. He only wants a W QSO on 1.7 Mc. to achieve his ambition of having worked the States on the five communication bands 10 to 160 metres, which, so far as is known, is a distinction only held by one other amateur in this country.

The results outlined above, while particularly interesting and encouraging to the beginner, also give the lordly QRO DX men something to shoot at, for all their WBE, WAC, HBE and such-like certificates pinned neatly round the wall.

G6GM is not only a low-power battery-operated station, but the gear is the simplest imaginable. It consists largely of ordinary b-c components trimmed down for the purpose and everything that can be is home-made. Though he has and uses a T25D, G6GM worked his W2BGO schedule with an MO-PA transmitter using a PT625 driving a PM256, both receiving valves which had seen better days. This is the transmitter arrangement for all bands, except 1.7 Mc., where a 1,900 kc. crystal is used, and the MO becomes CO. This Tx, operated MO-FD, will give a T8-T9 note on 28 Mc., which is about all that need be said for G6GM's capabilities as regards adjusting his gear.

The power supply is a bank of triple-capacity dry batteries, usually at a nominal voltage of 300, but occasionally, as at the present time, boosted to 450 volts. LT is, of course, also from batteries. Up till recently, they were taken five miles to be charged, but a lucky buy in the shape of one of the original Levis 1½-h.p. mo'-bike engines and a Morris 12-volt dynamo, combined with G6GM's patience and ingenuity, soon changed all that. There are now rumours of H.T. to be derived from a windmill or water-wheel!

Having got thus far, it is only fair to say how it is done. In the first place, the QRA is an ideal location, if we except the absence of mains, which will probably never come anywhere near. Situated on high ground, with a view practically all round of magnificent rolling country, there is ample space for aerials of any shape or size. And here we touch on the whole secret of G6GM's success. He is one of the few amateurs who realised at the outset that the vital factor in getting out is the aerial. One can almost say that nothing else matters, assuming a transmitter giving a few watts of stable RF output. G6GM in his time has tried nearly every known type of aerial system, getting consistently good results with a Windom. On 1.7 Mc. he has used either a quarter-wave Marconi or a half-wave Hertz, 264-ft. long and 45-ft. high! The latter was the arrangement in the recent 1.7 Mc. Contest, put up specially for the job.

Aerial tests are carried out with patient thoroughness by G6GM. He not only changes the system, but quite often investigates changes of direction as well. Some of us, with the palaver in which we have been involved in getting up the ordinary back-garden aerial pole, could take a few lessons from him in this respect. It is no uncommon thing for G6GM to move one of his 60-ft. masts with the help only of his young son! And on one occasion, in the absence of John, he put up a 72-footer with the sole assistance of a pony!!! When one arrives at

G6GM, therefore, even if one is lucky enough to be a frequent visitor, it is quite the usual thing to find "another aerial" and either an extra mast or one of the movable ones away across a field in quite a different position from that one saw it in last week.

G6GM is also lucky in other ways. He is heard so frequently on all bands because his time is his own, within the very reasonable limits imposed by Mrs. Merriman. Those few local members in this sparsely populated district who have the privilege of the family's acquaintance know her to be a charming and generous hostess with a sound knowledge of the demands of Amateur Radio, while her hospitality and kindness to the local group during the 1936 N.F.D. will not soon be forgotten. The fourth member of the family, Joan, is almost as good an operator as her father! More than this, what can we say?

To spare his blushes, we shall not essay a description of G6GM's many attributes. Suffice it to say that, having spent the best years of his life in a fine service which brought him strange adventures in queer places, and in which he gained rank and distinction by merit alone, he has a broad and stable mental outlook with all the sailor's cheery straightforwardness and boyish enthusiasm. Nor can we more than touch upon the famous occasion when the *five* Merriman brothers, reunited after many years, went out together one evening to have a look at Portsmouth, and the events which ensued therefrom.

Like all sailors are traditionally supposed to do when they retire from the sea, G6GM lives on a farm as far as possible from salt water. And so we leave him, ready for tests, DX or rag-chewing, and planning a new aerial for the B.E.R.U. Contest. Though this is written under the cloak of anonymity, the writer is known to G6GM, and between them there is, on one side at least, a firm and valued friendship to which this article is a tribute and, perhaps, an offering—in the sense of encouragement to the beginner—from them both.

Strays

Mr. E. R. Martin, G6MN, asks us to mention that all correspondence should be addressed to him at "Castlemount," Worksop, Notts.

G5QY, who is now working on 29,100 kc., would appreciate it if more DX stations listened higher than 29 Mc.

Mr. D. L. Martin, ex VU2BL, who provided many G stations with their first India contacts on 28 Mc., is now licensed as G6MT and located at 504 (B) Squadron, R.A.F., Hucknall, Notts.

Mr. A. C. Williams (G5VX), 5, James Street, Port Talbot, Glam., will be pleased to hear from transmitting members connected with police forces in this country.

A Correction

Owing to an error two diagrams in the article "DX to Order" in the January issue, were interchanged. The large diagram, page 301, should read, Fig. 5, "Two full-wave Aerials," and the small figure on page 302, should read Fig. 2, "Effective Polar Diagram of Horizontal Dipole."

THE 28 Mc. BAND

By Nelly Corry (G2YL).

DURING the last two months there has been a slight, but perceptible, decline in the number and variety of signals heard on the band; but how much of this is due to a falling off of conditions, and how much to a decrease in activity, it is difficult to say.

In January stations in Oceania, Asia and South America were so scarce that a contact with one of these continents could be considered as something of an achievement. G6DH worked VK2GU and J2IN, and heard VS6AH and VU2AU, but did not log any South Americans, although the harmonic of HJO was heard almost daily. On January 4 VU2LJ reported that he and VU2AU had recently been neglecting the band, owing to poor conditions, but the latter was heard again towards the end of the month. The fact that J commercials are more consistent this year than last suggests that the lack of Asiatic signals is primarily a matter of inactivity. Of course, it must be remembered that they do not get much encouragement from Europeans, who, apart from week-ends, are naturally seldom active in large numbers in the early mornings, when Asiatic signals should be coming through.

Apparently the chance of double points in the S.A.R.R.L. Contest at the week-ends did not induce many new African stations to try 28 Mc., and those signals which came through were usually weak. ZS6AJ was one of the most consistent, and others heard were ZT6AY, ZU6P, ZE1JJ, ZE1JU ZE1JR and FB8AB. CN8MQ reported on January 24 that conditions had been poor on the previous few days, but that he was hearing W's regularly from approximately 1300 to 1700 G.M.T., and also numerous Europeans, though the latter usually had low signal strength. He heard a few VK's and ZL's early in the month, but none later on.

The one continent (apart from Europe) where both 'phone and c.w. activity is still at a very high level is North America, and signals from all W districts and VE1, 2 and 3 were heard during the month, though there was a scarcity of W6 and 7. Those heard well included W6HB, W6JN, W6FVJ and W7GBI. From the West Indies HI7G and FM8AA have been heard again this month, and a new signal, heard by G6DH, is that of VP9G. FM8AA has been keeping daily schedules with French stations, and has also worked G6WN.

Exceptionally short skip distance for this time of year has enabled many Europeans to be audible in England, and countries heard include EI, PA, F, D, OK, HAF, YT, YR, YM, SP, YL, SM, OH and U. This is a considerable increase on January of last year, when signals from Western and Central Europe were much rarer.

British activity seems to have fallen off slightly, but a number of new calls have been heard. G6YR, who started up on Christmas Day, and has since worked W1, 2, 3, 4, 5, 6, 8, 9, VE2, 3, ZE, CN and Europe, voices the general opinion of newcomers to the band when he reports that "after the 14 Mc. scramble, it's a delight to get up on to 28 Mc. for a change!"

THE 56 Mc. BAND

By L. G. Blundell (G5LB).*

JUST missing the January notes further news arrived via G2YL and W9FM on conditions in early December, 1936, in the U.S.A.

On December 2 W3AIR was listening round the 28 Mc. band shortly after noon (their time) and heard W6DOB calling "CQ 56 Mc." Realising that this signal was due to 28 Mc. doubler leakage to the aerial at 6DOB, and that his (3AIR's) own 28 Mc. gear put out a fair signal on 56 Mc. under normal conditions, he put a few more volts bias on the final for luck and gave 6DOB a call. Back came DOB with "Your R7 QSB R2—am receiving you on 56 Mc.—are you on five ? ?" Explanations followed, wherein 6DOB attributed the lower-frequency signal to the proximity of the 28 Mc. aerial feeders to the 56 Mc. final tank coil. In spite of this not being strictly a "two-way" contact, it is held to be the first QSO between W3 and 6 on "five."

Through the kindness of BRS250 some detailed information from CN8MQ is to hand. He is using as TX an '89 in a tritet with a 14001 kc. crystal, followed by another '89 as doubler to 56 Mc. The receiver is a plain 0-V-1, using the Schnell circuit. The aerial for both receiving and transmitting is a voltage-fed Hertz 200 (!) ft. long. (It is 8MQ's opinion that for 56 Mc. work the aerial must be as long and as high as possible.)

During the early part of January conditions were good and signals from PA0ZB (RST576), D4KPJ (339) and D4VDV (339) were logged on the 3rd between 1030 and 1230 G.M.T. On the following day at 1000 G6XT was heard at RST339, every day up to about the 15th, but after this time conditions deteriorated rapidly and the latest report received via G2YL says that no signals have been heard above about 45 Mc. for some days. 8MQ adds that there seems to be a 5 to 15-day period when conditions are good.

A chart also sent to BRS250 covering conditions during December and November and showing day by day the number, frequency and times of signals heard below about 7 metres. Study of this chart reveals that the hours at which conditions seem to peak are 0900 to 1400 G.M.T. during the "good" spells, and further, that these periods of good conditions correspond to the times when DX signals have been heard in this country, showing that the path of ionisation is quite broad, if not of a very intensive character.

G2XC provides welcome news to the effect that OH7ND is active with CW on approximately 56.4 Mc. every Sunday until 1300 G.M.T. 2XC also reports that he hopes to be active on this band in the near future, frequency will be 56.13 or 56.24 Mc., and reports will be much appreciated.

ZE1JN reports DX interest in South Rhodesia. He is working 'phone with ZE1JS daily at 1130, 1630 and 1800 G.M.T. More encouraging news is that ZE1JU is now on 56.16 Mc. with C.C. CW. He is putting out test calls at 1600 G.M.T. every day.

G6DH is transmitting automatically for the next four months! Until March 31 these will be for three 8-minute periods at half-hour intervals from 1000 to 1600 G.M.T. During April, May and June transmissions will be extended to cover the hours of 0900 to 1700 G.M.T./B.S.T. Good luck O.M.!!

There is still a great need for more activity on week-days during the hours of daylight, and it is hoped that some stations will be able and willing to oblige in this respect for the future.

Finally, congratulations to G5BY, who has been heard by W2HXD. Details were published in a recent issue of *Wireless World*.

On January 31 at 11.15 and 11.30 G.M.T., G2HG reported hearing "CQ56 de CN8MQ" at RST.449. Later in the day 2HG had a contact on 28 Mc. with CN8MQ, wherein the latter confirmed his 56 Mc. calls at the times reported.

These two stations have fixed a daily schedule at 08.15 G.M.T., and on Sundays at 10.00 and 11.00 G.M.T.

Variable Condenser Dangers.

The following may prove of interest to others. A three-stage transmitter was plate modulated, the final stage running at 400 volts, and 25 to 70 milliamps as required. Excellent results were obtained on 3.5, 7 and 14 Mc., and then attempts were made to modulate it on 1.7 Mc. To reach this band a small condenser was clipped across the tank condenser, which having a capacity of .00015 μF was too small to tune both bands on one coil. Modulation became very poor, the aerial current rising on the lesser but falling sharply on the higher peaks, unless very little drive and bias were applied to the final stage. The quality was characteristic of severe cut-off on the modulation peaks.

The trouble was eventually located by the final stage being suddenly thrown out of resonance on a modulation peak, while the insulation of the fixed plates of the additional condenser began smoking. Replacement cured the distortion completely, and the modulation was accomplished without difficulty. Examination of the faulty condenser (which was of a leading make, though some years old, and rebuilt with double spacing) shows that it is useless for R.F., but will stand 500 volts D.C. with no signs of failure or leakage. As such a fault might prove extremely difficult to trace in a newly-constructed transmitter, without actual replacement, this information has been submitted for the benefit of those who find that modulation difficulty persists in spite of adjustment of working voltages.

X.

28 Mc. Contest.

Members are reminded that entries for the 28 Mc. International Contest must be received by February 28, 1937.

* 45, Monivea Road, Beckenham, Kent.

SOLILOQUIES FROM THE SHACK

By Uncle Tom.

(Returning from his two months' holiday-tour, part of which he seems to have spent on the Moon, the Old 'Un wipes his whiskers and lets fly once more.)

FIRST of all, I must thank the hundreds of readers who have written to the Editor to say how much they appreciate my absence. Some of them fondly imagined that it was to be a permanent absence (otherwise known as a demise), but, as yet, their hopes are unfounded.

I have merely been "too full for words." To explain, I decided, for the last two months, that if I had said what I really wanted to say, the Editor wouldn't have published it; so I just didn't waste time on saying it—I *thought* a lot.

Now I've cooled down again, and my barrel of vitriol has been reduced to something approaching the weakness of 10 per cent. u.p.—but I'm going to unburden myself of quite a few grouses before I do any more.

Look at this lot: heard on the air between January 1 and January 24, 1937. First, a "G" amateur calling test 87 times, signing 5 times (once unreadably); test another 43 times, signing 3 times (twice barely readably); finishing by sending "K" 3 times. I heard eight stations reply to him (on 7 Mc., of course), but he apparently didn't hear one.

Next, two 7 Mc. 'phone merchants discussing aerials. One describes his own as a "7 Mc. Windom" and bewails the fact that he can't get out on it at all. He can't even get a good report from SM or OH, poor little feller! And further conversation brings to light the fact that his 7 Mc. Windom is 33 ft. 6 ins. long, with the feeder 4 ft. 9 ins. from the centre.

Third exhibit: A British amateur discussing with a Yank the number of countries he has worked and saying that by his own reckoning it is about 105, while by the list published in *QST* recently it is 88. Incidentally—and I must say it—if some of the hams, young squirts and old hands alike, would spend a little less time worrying about the countries they have worked and a little more on finding out some of the elementary facts of radio they would rank a little higher in the estimation of the people that listen to them.

Why this "swank-parade," please? Can't you just tell the bloke next door that you've got a better rig, operate better than he does, know more about radio than he does, and are in every way a more desirable person than he is, without having to clinch the argument with the unanswerable fact that you've worked one more country than he has? Seems a funny business to me. Perhaps, when we're up against it as amateurs and fighting for our share of the ether, somebody will be able to think of a stronger argument than this "countries worked" racket. I hope they will, anyway, or it will be 75 cms. and below for us.

Right! Diversion over—next grouse coming. How many 'phone operators have forgotten their call-signs in this great "Christian names" craze? I listened round on 7 Mc. the other day and heard nothing but "Bob" and "Oliver" and "Peter" and "Marmaduke"—no call-signs attached at all. Try 'em on your car, instead of the number-plate, and see how far you get.

The admirable article on "Reducing QRM by Intelligent Operating," by A. G. Ham, which appeared last month, included under its "don'ts" most of the things that I have been attacking for years. But let me underline No. 3, which I haven't said much about—namely, duplex 'phone. I used to think this quite an amusing racket, but nowadays it's getting a darned nuisance and nothing more.

Two stations will go on for *hours*, sometimes, just as if they were on the landline, and a third man, who may want to call one of the offending parties (although it seems doubtful to me whether anyone ever *would*) is absolutely powerless to do a thing except sit and swear.

Duplex is the ideal means of making a radio contact—don't think I am decrying it. It wants technical ability to get it working decently, and it wants efficient gear. But what it also wants (and doesn't usually get) is intelligent handling. Suppressed carriers or "push-to-talk" arrangements don't help much unless the operator occasionally has a listen, for a change.

There seems to me to be quite a lot wrong with the state of amateur radio at present. Just as all the "Death on the Road" scare has been started by the incredibly bad behaviour of a small percentage of motorists, who bring the vast number of well-mannered drivers into disrepute, so I think the "wrong-ness" (real or apparent) of ham radio is an impression caused by the foolish behaviour of the small minority.

The innumerable well-operated stations pass without notice. That is probably the hall-mark of a well-operated station—that he doesn't make you pull up with a jerk and wonder what the heck he's doing. The bad stuff simply shrieks at you, and against your will you have to listen to it.

If only the Good Hams can get together and organise a mass-drive against the depredations of the Bad Hams, all will be well.

Furthermore—and I must say it—I think that most of the bad operating of every kind arises from some kind of swank. A man won't *admit* that he's a duffer at the code—and so he bluffs it out with sending double and all his "O.K., but please repeat" futility. A 'phone man sometimes hasn't the vaguest idea what he's talking about, but he goes on talking, and often talking big. Another man, with a nice ready-made transmitter, isn't capable of doing any really useful experimental work, and knows it—so he swanks about the number of countries he has worked, and pretends that that is more important, although he knows, as well as you and I do, that it isn't.

For goodness sake, Good Hams, do what you can to stop this sort of thing. Never mind losing a few friends in the process; they'll probably come round and thank you later on. If you hear a man committing an offence against Ham Decency on the air, try to get hold of him and tell him so—either on the air or by landline or through the post.

And you Bad Hams who are reading this—don't think I'm just hard up for something to write about. Just for the present I've stopped trying to be funny.

THE MONTH ON THE AIR—JANUARY

JOHN HUNTER (G2ZQ). *

G2PL is the star station this month, having had a QSO with VE1EA on 1.7 Mc., to make one of the first five-band trans-oceanic contacts. He now wants a sked on 56 Mc. to make it six bands! G5YG hears a station calling CQ Mars de World, but no replies were audible to YG! G5WG calls test 54 times in succession, signs and then calls test 55 more times. Needless to say, he worked nothing.

The number of odd stations heard and worked seems to increase monthly. G5PY works TA1CC. NX1AP, reported last month, turns out to be NY1AP, of Gatun, but G8CV is doubtful if he is *bona-fide*. G2PL works OA6FE on 7 Mc. G8CV hears HS4T working VKs, and giving his QRA as Radio HSJ, Bangkok, but HS1PJ states that all amateur stations in Siam are under his control, and comprise 1PJ. 1PU and 1RJ. QY6 is G5ZC in Jerusalem—he QSL's, says G2MI. G8CV asks about SX3A—he is a semi-commercial in Athens. G6CJ hears HZ1AA with a fist like OS1BR, and SU2TW hears him on 14 Mc. 'phone giving his QRA as Feudi (? Saudi) Arabia. This seems to open up the whole question again, so will anyone who gets any *definite* information let me know, please? G5IU hears FD8AA (no QRA given), and works FI8Z, of Saigon, French Indo-China; IU, however, is doubtful about him. FL8AA on 7150, of Tanjoura (? Tajura), French Somaliland, is worked by GI5TK. The French colonies seem to be getting very busy these days. G6ZO reports VS9AL working G6DT on the L.F. end of 14 Mc. with a T5 note; he is supposed to be in Aden.

First TA/SU QSO is made by SU1SG with TA1N, who QSL'd immediately. Both he and TA1G are on about 14250. G2LC had a look at last month's article, and sat back and worked CNTFL, of the National Workers' Committee, who gave his QRA simply as "In Spain—Revolutionary." G5YH reports VU3AW, of Andaman Islands, a bogus station. Who is HG1AA, heard being called by many W's?

G6ZO, on holiday in Scotland, heard a T8 note on 7110 calling "CQ S.O.S. QTH 770N 3W de USBL." He immediately reported to the local police and G.P.O., who passed the news on to the Coastguard, but nothing more was heard. This seems to indicate a particularly disgusting form of piracy.

G6YL corrects my error about EL2A, ex UN2A. He is genuinely in Liberia, is ex-W8BIS, and his QRA is c/o John Cooper, Government Radio Station ELA, Monrovia, Liberia—he is getting cards printed, too. G2YL works ZA1D at the L.F. end of 14 Mc.—he gives his QRA as Demattia, near P. Bicai, Alessio, Albania. W9OKZ, Editor of the Call book, and G6YL, confirm that FK8AA is ex-F7CGV.

G6KP works GNYZ off the S.W. coast of Iceland on 1.7 Mc.—he QSL's by cable.

The VK tests on 3.5 Mc. were not quite as successful as hoped, but VK3EG heard G2PL and G6HB on the first week-end before a power leak spoiled things for him. G2PL worked ZL1DI again, and VK3EO and 3EG were heard in G. In the I.F.S. many Antipodeans were heard. G8DA listens to ARRL QST broadcasts from W9HQH.

7 Mc., when the QRM lets up, is quite productive. G2PL gets S9 from W7BD, works K6KVX, and is called by HC1FG. G6ZO hears HH5PA, J2MJ, XU2HY around 2200. G5YH comes on the band at 0115 for the first time in two years, gets a report from VE5HC. IDM causing QRM on 7100 continually, as well as the many Spanish war stations. CR7AK (575) at 2200 sounds doubtful.

14 Mc. displays the usual activity. G6GH works K6MXM and K6AKP at 1800, and VE5AW in Yukon at 0900. 2BIC hears K6JPD. G6CJ works VE5QB of Old Crow, Yukon, 100 miles from the Arctic and 300 miles from Fort Yukon, Alaska, the local town. CJ proves that this signal was making a helical trip around the whole shadow edge of the earth, his true direction being 330° E. of N., whereas the beam used is completely blind this way, but very good indeed from 20° to 40° E. of N., which is along the shadow edge at the time of QSO (0900-1000). CJ is of the opinion that conditions during B.E.R.U. will gradually improve from "foul" the first week-end to "roaring hot" the last. G5IU wants to encourage QRP men to try 14 Mc. DX. With less than 4 watts he has worked 14 ZS and ZL in the last month. With this power at various hotel QRA's he has raised 65 countries in the last six months. He raised W on 7 Mc. with a 3-watt CO, using a 16½-ft. vertical aerial.

SU2TW works HS4T, and considers him genuine. TW is under the shadow of SU1CH's 600-watt 'phone station, but apparently is not unduly worried by it. ZL3AZ reports that Africa is his most difficult continent, yet he raises VQ8AH, who uses 80 volts of dry batteries for plate power. Hears SU1CH for his first African 'phone. Other hard spots worked recently by 3AZ are IIIT, VU2GB, HS1RJ, ZP6AB, CR9AB. GI6TK has consecutive QSO's with W7EKA, of Everett, Wn., and W1FID, of Everett, Mass. He looked through the call book, but could find no more Everetts to work. Reports RTMA, RFBA, U.S.S.R. commercials working amateurs. G2ZQ raises VK6LJ, gives him a shock, as, during his CQ he was reading November's Month on the Air. RFH 14385, IUP 14305, Addis Ababa and IBE 14050 cause QRM to amateurs.

2BDO, with a two-valve super-regen., is doing good work amongst the 'phones. He has copied 15 U.S. police 'phones between 7 and 9 metres, including W9XCH, Chicago, W9XEA Kansas, and W9XEY, and 12 broadcasters, including W9XAZ and W9XHW.

GI6TK represents Northern Ireland on W8DOD's quilt; while G5IL is another of England's representatives. G8DA reports that Mrs. D. Hall (W2IXY) will record your signals and play them back at you. W2ZC is erecting a rhombic aerial

(*Continued on page* 382.)

* 63, Hervey Road, Blackheath, London, S.E.3

RESEARCH AND EXPERIMENTAL SECTIONS

MANAGER :

H. C. PAGE (G6PA), "Warren House," Warren Road, Bexleyheath, Kent.

ASSISTANT MANAGER :

J. C. ELMER (G2GD), "Aethelmar," Seabrook Road, Hythe, Kent.

SECTIONS :

No. 1 : TRANSMITTER DESIGN
S.M. : (To be appointed)

G.M. : 7 and 14 Mc.
S. BUCKINGHAM (G5QF), 41, Brunswick Park Road, New Southgate, N.11.

G.M. : 28 Mc.
(To be appointed)

G.M. : 56 Mc.
J. N. WALKER (G5JU), 4, Frenchay Road, Downend, Bristol, Glos.

G.M. : Artificial Aerials
A. W. LISTER (G5LG), Royal Military Academy, Woolwich, S.E.

No. 2 : RECEIVER DESIGN
S.M. : J. MAWBEY (BRS. 1300), 109, Clare Road, Tankerton, Kent.

G.M. : General
J. MAWBEY (BRS. 1300)

G.M. : 56 Mc.
J. N. WALKER (G5JU)

No. 3 : AERIAL DESIGN
S.M. : F. CHARMAN (G6CJ), Orchard Cottage, Stoke Poges, Bucks.

G.M. : General
F. WILSON (G2XX), 85, Risca Road, Newport, Mon.

G.M. : 28 Mc.
L. O. ROGERS (G2HX), "Audwen," Estcourt Road, Gloucester.

G.M. : Joint Group with Propagation
G. A. H. ECKLES (G5GC), 57, Sutton Road, Beverley High Road, Hull.

No. 4 : PROPAGATION
S.M. : J. C. ELMER (G2GD), "Aethelmar," Seabrook Road, Hythe, Kent.

G.M. : 56 Mc.
D. W. HEIGHTMAN (G6DH), 59, Burrs Road, Gt. Clacton, Essex.

G.M. : 28 Mc.
MISS N. CORRY (G2YL), "Redholm," Walton-on-the-Hill, Tadworth, Surrey.

G.M. : Conditions
J. HAIGH (G6HA), 2, Greenock Terrace, Leeds, 12.

G.M. : Literature
A. T. MATHEWS (G5AM), 24, Woodside Park Road, North Finchley N.12.

G.M. : Joint Group with Aerial Design
G. A. H. ECKLES (G5GC).

No. 5 : VALVES AND INSTRUMENTS
S.M. : D. N. CORFIELD (G5CD), 10, Holders Hill Gardens, Hendon, N.W.4.

No. 6 : AUXILIARY APPARATUS
S.M. : A. O. MILNE (G2MI), "Twemigh" Kechill, Gardens, Hayes, Kent.

G.M. :
F. W. BENSON (2BWF), 53, Corona Drive, Thorne, Doncaster.

No. 7 : MICRO-WAVES (112 Mc. and above)
S.M. : DR. C. G. LEMON (G2GL), 19, Lena Gardens, Hammersmith, W.6.

No. 8 : CONTEMPORARY LITERATURE
S.M. : (To be appointed).

No. 9 : TELEVISION
S.M. : E. L. GARDINER (G6GR), The Nyth, Norwich Road, Northwood, Middlesex.

G.M. : Contemporary Literature
E. J. SCUDDER (BRS. 981), 32, Queen Street, Folkestone, Kent.

NEWS OF THE MONTH

ALTHOUGH several articles have been submitted this month we have decided that, in order to present them to their best advantage, certain modifications shall be effected before publication. In this connection a few comments on the preparation of articles for the R.E.S. may perhaps avoid unnecessary delays in future.

First and foremost we should all realise that a technical contribution must be written in technical language. The use of slang terms and facetious remarks will only lead to a decline in the "tone" of the BULLETIN in general, and R.E.S. notes in particular.

Secondly, when information is culled from a contemporary the source must be mentioned. This remark applies in particular to our Contemporary Literature groups who may frequently wish to give a *précis* or extracts from contemporary publications.

Thirdly, do please double space contributions, and before sending them in read them through to yourself or, better still, ask someone who has had experience in preparing technical contributions to do so.

Our editorial staff are most anxious to publish well-written articles, but unless a full measure of co-operation exists between contributors and those responsible for the editing of this Journal the high ideals which are being set will fall to the ground.

This month we publish another article from Mr. de Cottignies. This member is engaged on medical research and it is his intention, from time to time, to give us the latest news concerning Radio and Medicine. He will be glad to correspond with any member interested in the dual subjects.

G6PA.

Individual Members

The following have enrolled as Individual Members since November 29 :—

No. 3 Section : G2FO.
No. 4 Section : G2FO, BRS2717.

The following have enrolled as individual members since December 29, 1936 :—

No. 3 Section, BRS2641.
No. 4 Section, BRS2641, ON4XX.

A Stabilised Oscillator for 56 Mc.

The writer of this article, in the January issue, wishes to apologise for a mistake made by him in Fig. 2. C3 should be connected to the other side of R1, and not in parallel with it, as shown. The cathode should also be connected to earth (*i.e.*, *via* H.T. minus). Further experiments with the design have shown that it is not suitable for use with A.C./D.C. type valves (where one side of the mains supply is earthed), this is because a ripple is set up between the H.T. minus and the heaters resulting in a fluctuating R.F. output.

ELECTRICAL AND RADIO SCIENCE IN MEDICINE AND SURGERY

By E. De Cottignies (2AWD).

Short-Wave Therapy.

IN writing these notes it is assumed that the reader is acquainted with the fundamental principles of short-wave therapeutics, and these notes are meant simply as a brief survey of the subject and of its latest developments. Those interested would be advised to read certain books mentioned at the end of these notes.

The Field.

For diathermy, the connection between the treated material and the electrodes is conductive; whereas in therapy this connection is essentially capacitative. Air and/or glass dielectric gaps are placed between the electrodes and the material. This has the double effect of (*a*) decreasing the capacity of the circuit, thereby increasing efficiency; and (*b*) of reducing risk of burns. The former is of importance because the natural capacity of biological materials is high.

Since any biological material consists of a network of resistances and capacities in all conceivable combinations of parallel and series, the current is partly "conduction" current and partly "displacement" current. For even effect a uniform distribution of field strength is essential. The further apart, and the larger the electrodes, the more uniform does the field tend to be. Where a small, strong field is desired, one electrode is reduced in size, the other simultaneously being enlarged and removed farther away from the first. The smaller and more acutely curved the electrode the greater the field concentration near it. (Point effect.) Care has to be taken where part of the object treated is sharply curved, as a similar concentration of field takes place and a burn may result. For treatment of a surface, one "point" electrode is used, the other being flat and well away from the first; the lines of "displacement" then enter the object very obliquely and travel some way in its surface before penetrating.

Summarising, we may say that form and spacing of electrodes have an important bearing on the field configuration, as do also the form and position of the object treated in that field.

Electrical Properties of Biological Materials.

The electrical properties of the material have an important bearing on the action of the short waves. Thus the conductivity depends on frequency used and on the specific resistance of the material. With lower frequencies thermal effects predominate and are proportional to the specific resistance. With the higher frequencies, the thermal effect is less marked, is no longer proportional to specific resistance, and other specific effects appear. With the higher frequencies, dipole phenomena appear; that is, polarisation of molecules takes place, the polarised molecules then become aligned with the field and alternate with it. Resonant vibration of whole cells was said to occur, but this is hardly possible at these high frequencies. Oscillation of these "dipoles" is said to set up chemical changes; if this is so, it may account for some of the "specific" action. The frequency of the field-alternation affects the dielectric constants of the biological materials; this also may account for specificity.

Summarising, we may say that the frequency chosen depends on the particular material to be treated and the action required on it.

Specific Action.

Certain effects noticeable with the use of higher frequencies lead one to believe that short waves have a certain specificity of action. This specificity must be understood to be of two kinds:—(*a*) the action of short waves generally and (*b*) the action of frequencies specially selected from the short-wave spectrum.

These specific effects can be grouped as "changes in biochemical and physiological reactions of various biological materials." It must be realised that part of these specific actions are the direct results of heating of the biological elements, which are otherwise inaccessible, by the deep penetration of the "displacement" current. Some of this heating effect in its turn is due to "point energy transference" in which the field causes vibration or oscillation of polarised molecules ("dipoles"). Another part of the specific effect is due to change in the dielectric properties of the material, under the influence of the particular frequency used. Some other form of specific action is probably at work in addition, but owing to the divergence of opinion and complete lack of research information, nothing definite can be stated as yet.

Apparatus.

In view of the number of members who are medical practitioners, a few words on apparatus for biological research and a generator for the practitioner and its requirements may perhaps be of interest.

Apparatus for Biological Research.

For research work a generator of quite low output is satisfactory, from 5 to 50 watts being a good figure. In order to observe microscopically the effects of the short waves on materials a special apparatus is set up. This consists of a microscope, with a water jacket round the stage (to maintain the preparation at correct temperature); a condenser-field is arranged vertically between the lens and the light condenser, so that the preparation is in the field.

Requirements of a Generator for the Practitioner.

The generator should, for short-wave therapy, be capable of producing frequencies from 20 megacycles to 100 megacycles; frequency control should be as simple as possible; the generator must be checked and calibrated so that an accuracy of + or — 1 per cent. can be obtained. A wavemeter, accurately calibrated, is a valuable asset.

The wave-form must be a pure sine-wave, free from harmonics and free from any form of modulation. For this reason it is advisable, where possible, to work from D.C. mains. If A.C. mains are used, efficient smoothing and hum-filtering are essential. A fairly high output is desirable—that is, from 100 to 500 watts.

The switchboard should be simple; only essential

meters should be included in the circuit as superfluous ones reduce the efficiency. Remote control of R.F. voltage is very desirable. An enterprising man will build in the arrangements necessary for short-wave cautery and electro-surgical procedures. A chart should be kept, showing actual hours of use, in order to check up on working life of the tubes.

Complete enclosure of the apparatus is desirable, and, if possible, the door to the cabinet should control the mains switch. A special key should be made for the door. Careful attention should be paid to the electrode system; the protecting caps should be sound, frequently examined, and should have a minimum puncture voltage of 10,000 (at 50 cycles). Lastly, care should be taken that no radiation takes place.

Bibliography.

For those interested, we suggest the following books be examined :—

(1) *Foundations of Short-Wave Therapy.* By Holzer and Weissenberg (Vienna). Translated by Wilson and Dowse. (Hutchinson.)

(2) *Les Ondes Hertziennes Courtes en Thérapeutique.* (Saidmann and Cahen, Paris, 1931).

(3) *Kurzwellen-Therapie.* (E. Schliephake, Jena, 1929.)

Tank Coil Efficiency on 56 Mc.

By Dr. G. F. Bloomfield

It is felt that certain experiences of the writer in adjusting a 56 Mc. transmitter for maximum output may focus attention to the importance of accurately matching the output circuit to the type of valve in use. On frequencies of this order, where even a short length of No. 14 s.w.g. copper wire has very considerable impedance, the importance of correct matching cannot be over-emphasised.

In putting into operation a long-lines frequency stabilised push-pull oscillator using L.S.5 valves, a 5 in. diameter loop of 14 s.w.g. wire was found to give a reasonable output; when, however, a loop of $\frac{1}{4}$ in. copper tubing of similar diameter was substituted, the output was practically nil. Ultimately the optimum output was obtained by using three turns of the copper tubing 2 in. in diameter, spaced about $\frac{1}{2}$ in. apart. While no alternative data is yet available for other types of valves the need for experiment in each individual case is apparent.

The Samson-Whyte Superhet

In his article dealing with the Single Signal Superhet,* Mr. G. G. Samson promised to publish any information obtained from experiments with this receiver working on 56 Mc. These tests have now been completed, but we must apologise for the delay in presenting them.

Many members have asked why series band spread condensers were used. One of the chief reasons was for high frequency operation, thereby making it a universal receiver.

Owing to the inefficiency of H.F. Pentodes at 56 Mc., it was found that any form of R.F. amplification reduced the signals considerably, therefore the R.F. stage was cut out. The aerial was attached to the coupling coil L4, for the tests, but it can be loosely wound round the grid lead of V2. Both methods are equally satisfactory. The H.F. oscillator trimmer condenser (C4) which is in parallel with L7, was cut out, as its extra capacity prevented oscillation as low as 10 metres, which is the wave on which V3 must oscillate to give a good 5 metre output for the first detector. Oscillation was very smooth, and the output good at this frequency.

It need not be emphasised that some difficulty may be found in locating the 56 Mc. spectrum, owing to the large number of sub-harmonics heard when rotating C3 with a C.O. running. Actually there are two which are much louder than the rest, and these are the true and image frequency respectively. Set C3 about half-way and line up on the trimmer C2. Do not forget that the receiver is extremely sharply tuned at 56 Mc., and a C.W. signal will peak up and down very quickly and may only appear to be weak until tuned on the peak.

Signals from G2HG operating a C.W. transmitter on 56 Mc were as loud on this frequency as on 28 Mc.

Only two coils need be made, and the data follows :—

Coil	...	L4	L5	L6	L7	Tap on L7
Turns	...	3	$1\frac{1}{4}$	2	$3\frac{1}{4}$	$1\frac{1}{2}$

L7 was wound on a standard curved *Osram* valve base at the top below the ridge; L4, L5 and L6 are wound on an *Eddystone* former. L6 should be wound fairly close to L5, and this can best be done by experiment.

It must be borne in mind that this receiver is not suitable for reception of self-oscillator 'phone, nor will it have the capabilities of a super-regenerative receiver for 'phone work, but as the general trend on 56 Mc. is for C.W. and crystal-controlled 'phone, it will be found to be remarkably stable and easy to handle.

Excellent results have also been obtained on frequencies between 56 and 28 Mc. The 'phone transmissions from Alexandra Palace are received on the loud-speaker without audio amplification. The television transmission is also received, but owing to the width of the carrier it is received as a series of small carriers, about 60 in number.

One stage of audio amplification will help with weak signals on 56 Mc., especially 'phone.

G6WY.

Calls Heard

Gi6TK, *Frank A. Robb*, 46, *Victoria Avenue, Sydenham Belfast, N.I.*, on 14 Mc. from November 22 to January 24 :

Su1ch (57), 1ke (55), 1sg (57), 1ro (57), Ve1fb (57), 1dr (55), 1bk (55), 1dl (56), 1dq (57), 3adm (56), 3sy (56), 3agt (56), 3aap (56), 3ws (46), 4aaj (45), 4gj (56), 4ht (55), 5aw (57), 5qb (34), Vk2my (56), 2oq (34), 2do (56), 3eo (45), 3bj (56), 3hk (55), 3kx (55), 4gk (56), 4ap (56), 5wr (56), 5xj (55), 5cm (46), 6sa (55), Vo1i (56), Vp3gg (34), Vq5al (55), Vu2cq (58), Z8ij (57), Zc6aq (56), Zd2a (44), Ze1jv (56), 1jz (34), Zl1aa (35), 1ar (56), 2oq (55), 2go (56), 2al (45), 2sm (45), 3kb (46), 3as (56), 3gr (36), 3ar (45), 4fw (56), 4bq (56), Zs1an (55), 2x (34), 6ad (55), Zt5z (55), 6ty (56), 6y (44), 6d (56), 6e (56), Zu1tu (34), 6af (44), 6f (58). Figures in brackets denote R. and S. respectively.

* April 1936, T. & R. Bulletin.

BETWEEN  OURSELVES

Our New President Installed

At the London meeting held at the Institution of Electrical Engineers on Friday, January 29, some seventy members were present to see our new President installed.

For the first time in the history of the R.S.G.B. three past presidents were present at a Society function, for besides the Immediate Past President, Mr. Arthur Watts, the meeting was honoured by the company of Mr. Gerald Marcuse and Mr. H. Bevan Swift.

The installation ceremony was conducted by Mr. Watts, who congratulated the Society on its good fortune in having chosen such an enthusiastic leader as Mr. Ostermeyer.

Our new President's first task on taking the Chair was to move a vote of thanks to Mr. Arthur Watts for his untiring efforts extending over many years. Mr. Bevan Swift, in supporting the motion, spoke of the excellent relationship existing between the G.P.O. and the Society; this happy condition, he said, was largely due to the work of Mr. Watts, who, he hoped, would next year again represent the Society at the Cairo Conference.

The motion was carried with acclamation.

Mr. Ostermeyer then read his Presidential Address, which is fully reported elsewhere in this issue.

At its conclusion he presented to Mr. Arthur Watts a handsome gold watch which had been subscribed to by his many friends at home and abroad. Mr. Ostermeyer also handed to Mrs. Arthur Watts a handbag which he asked her to accept with the best wishes of the membership, all of whom appreciated the fact that her interest in her husband's Society work had lightened his task.

Amid applause Mr. Watts rose to express his thanks and those of his wife. In a brief speech he mentioned that although we were all pleased to see that our membership had increased by over 50 per cent. since he began his term of office and our financial position was in every way sound, service to our members was the first consideration of the Council and its officers. We must never lose sight of the fact that as experimenters we are judged by our collective contributions to the art of high frequency radio engineering. There is, he said, much useful work still to be done, and although sometimes we may feel that finality has been reached, we must not relax our efforts.

He referred to the happy liaison existing between the Society and the Government, and concluded by thanking the retiring Council and all District, Town and B.E.R.U. representatives for their support in the past.

* * *

A discussion on "Straight Receivers" was then opened by Mr. H. Cecil Page, G6PA. This was also contributed to by Messrs. Chisholm, G2CX, Wilkins, G6WN, Charman, G6CJ, de Cottignies, 2AWD, Corfield, G5CD, Clark, G6OT, Thomas, G5YK, Kidd, G2GG, Hackney, G6YP, Andrews, G2YG, and Swift, G2TI.

At the conclusion of the discussion Mr. Gerald Marcuse supported a vote of thanks to Mr. Page and congratulated the Society on its recent progress. He offered his best wishes to Mr. Ostermeyer for a happy and successful year of office.

The Secretary then explained the arrangements being made for the February meeting, which, as an experiment, will commence 30 minutes later and conclude at 8.30 p.m.

In the Honours List

We were especially pleased to notice that the invaluable services rendered by Mr. Harold Old, G2VQ, to the Nottingham City Police had been recognised in the Honours Lists published on February 1. Mr. Old has been awarded the M.B.E. and receives the heartiest congratulations of all amateurs.

For the past four years he has devoted his time and energy to the work of equipping the Nottingham Police Forces with radio apparatus. Last year he joined the Nottingham City Police as Wireless Engineer and later was appointed to a similar position for the Midland Regional Police scheme.

Another well-known member, in the person of Commander Richard John Bayntun Hippisley (G2CW), O.B.E., T.D., M.I.E.E., J.P., D.L. (late R.N.V.R.) received the C.B.E. Commander Hippisley is the Western Area Traffic Commissioner and a vice-president of the Society.

The Engineer-in-Chief of the G.P.O., Colonel A. G. Lee, O.B.E., M.C., received a Knighthood.

Friendly Advice

We have been advised by the Radio Section, G.P.O., that they cannot approve of the use of the apparatus described in the December BULLETIN by Mr. W. A. Scarr, G2WS, for automatically transmitting intermittent signals from a transmitter left unattended. They give the following reasons :—

1. The licensee would not be in a position to close down his station immediately upon receipt of instructions from a Government station.

2. It would appear probable that the station would be operated for longer periods than the permitted maximum of ten minutes and that the required subsequent listening periods of three minutes, on the transmitting frequency, would not be observed.

3. It is doubtful whether the call sign of the station would be transmitted as frequently as required.

We pass this advice on to our members at the request of the G.P.O.

I.E.E. Meetings

"DX Work" is the title of a discussion to be opened by Mr. H. A. M. Whyte, at the I.E.E. meeting arranged for Friday, February 26, 1937.

Tea will be served from 6 p.m. and the discussion will commence at 6.45 p.m. (30 minutes later than usual), but the building will be open from 5 p.m. as hitherto. The later start has been arranged in order to allow suburban members to attend.

Sectional and Committee Appointments, 1937.

The following appointments were made by Council at their January Meeting :—

R.E.S.—Manager : Mr. H. C. Page (G6PA). Assistant Manager : Mr. J. C. Elmer (G2GD). Committee : Messrs. H. A. M. Clark (G6OT), R. H. Hammans (G2IG), A. O. Milne (G2MI).

Tests and Awards.—Chairman : Mr. T. A. St. Johnston (G6UT). Committee : Messrs. C. J. Greenaway (G2LC), W. H. Matthews (G2CD), A. O. Milne (G2MI) and J. M. Watson (G6CT).

Calibration Manager.—Mr. A. D. Gay (G6NF).

QRA Manager.—Mr. M. Williams (G6PP).

Band Monitoring Group Manager.—Mr. A. O. Milne (G2MI).

Band Occupancy Group Manager.—Mr. L. Hill (G5WI).

Publicity Section.—Messrs. A. E. Watts (G6UN) and A. E. Dyson (G6NJ).

As the work of the QSL Section has now been taken over by Headquarters, the position of QSL Section Manager has not been filled. The opportunity is here taken of publicly thanking Mr. J. D. Chisholm (G2CX) for his invaluable services in the past.

Our New Honorary Treasurer.

We have to announce with much pleasure that Mr. A. D. Gay (G6NF) has been appointed Hon. Treasurer for the current year in succession to Mr. E. D. Ostermeyer, who asked to be relieved of his duties as Treasurer upon taking office as President. Mr. Gay has been a member of Council for several years, and his appointment to Executive Office will, we feel sure, prove of the utmost value to the Society in general.

The Editorship.

As from January 12 last, Mr. John Clarricoats assumed the title of Secretary-Editor. This change in style was considered desirable by the Council in order that our Secretary may accept responsibility for the general editing of the Society's Journal.

Mr. H. Bevan Swift will continue to act as Honorary Editor.

Guide to Amateur Radio.

The Council have decided to proceed with the preparation of a Fifth Edition of "A Guide to Amateur Radio." The Managing Committee will be : Mr. J. Clarricoats (General Editor), Mr. H. A. M. Clark (G6OT), Mr. F. Charman (G6CJ) and Mr. D. N. Corfield (G5CD).

The Committee will be pleased to receive suggestions for improving the new edition which will be published in August.

Town Representatives, 1937

The following T.Rs. have been appointed :

District 2.
Huddersfield : Mr. J. Dale (G5VD).

District 4.
Worksop and Retford : Mr. H. S. Chadwick (2BIC).

District 6.
Torquay : Mr. G. T. Claydon (2CAA).
Plymouth : Mr. D. E. Herbert (G6RF).
Taunton : Dr. A. J. H. Iles (2ASI).
Exeter : Mr. H. A. Bartlett (G5QA).
Penryn : Mr. H. Wright (G6LV).
Bideford : Mr. A. J. Forsyth (G6FO).

District 7.
Croydon : Mr. E. W. V. Butcher (G5AN).

CALIBRATION SERVICE

Crystals should be sent direct to the Calibration Manager enclosed in a small tin, and securely packed to avoid loss in transit. The Society cannot be responsible for any loss that might occur in sending crystals through the post.

Return postage must be enclosed as postage stamps, and not attached to the Postal Order.

Calibration fees : 1.7, 3.5 and 7 Mc. crystals, 1s. 6d. ; 100 kc. crystals, 2s. 6d.

All communications should be addressed to :—

Mr. A. D. Gay (G6NF),
"Oak Dene,"
156, Devonshire Way,
Shirley,
Croydon,
Surrey.

See page 117 *A Guide to Amateur Radio* for particulars of frequency meters, etc.

W.B.E. Certificates.

The following W.B.E. certificates have been issued :—

Name.	Call Sign.	Date.
T. F. Hall ...	G2TH	December 3, 1936
J. M. Kirk ...	G6ZO	,, 7
E. L. Mazery ...	VQ8AB	,, 16
T. H. Streeter ...	G5CM	,, 19
J. W. T. Mooney	G6IJ	,, 29
W. R. Kerr ...	GI2KR	January 12, 1937
C. H. Butler ...	G2YB	,, 12
J. L. Bates ...	VK4UR	,, 14
G. A. Greenhill...	VK4LE	,, 14
T. J. Brown ...	G5TB	,, 22
H. J. Merriman	G6GM	,, 27
	28 Mc.	
H. C. D. Hornsby	G5QY	,, 12
A. Guildford ...	VK4AP	,, 12
	Telephony.	
S. R. Green ...	SU1KG	,, 12

Radio Amateur's Handbook

The attention of members is drawn to the fact that the price of this Handbook is now 5s. 6d. post

free, and not 5s. as mentioned by our book reviewer last month. The 1937 edition has been considerably enlarged and as a consequence the cover price has been raised to 1 dollar 25 cents (5s.). Postal charges bring the selling price up to 5s. 6d.

Members calling at Headquarters can, of course, obtain their copy for 5s.

QSL Section

By J. D. Chisholm, (G2CX).

I have been informed by Council that it is no longer considered necessary to have a separate QSL Section and my notes this month are therefore in the nature of a farewell. It is with great regret that I part from the work which I have carried on during the past eight years, and I shall miss the interest and pleasure that derive from the thought that one is able to do one's little bit to help the work of the Society along.

It would be churlish of me to omit to put on record my appreciation of the help and advice received during my term of office from members of the Society. There is probably no sphere of the Society's activity which arouses such controversy as the QSL Section, and in spite of a few "snorty" letters now and again I feel that the membership has been tolerant of our efforts and forbearing under the chidings which have appeared in these columns month by month.

I wish to record, also, my thanks to the QSL Section Sub-Committee, Messrs. Dedman, G2NH, Kershaw, G2WV, and Weale, 6DZ, for the time they have given up to the problems which have vexed us. Mr. Kershaw, in particular, has spent many an evening with me at H.Q. sorting through the unclaimed files.

Miss Buckingham, of the Headquarters staff, has worked early and late on the routine work of the Section, and I am sure that members are appreciative of what must be rather a dreary job.

To Mr. Martin, GI5HV, of the R.T.U., Northern Ireland, and the other managers of Empire and overseas QSL Agencies I express my thanks for friendly co-operation and wish them all success in their efforts.

In conclusion, my thanks to all—and don't forget to keep a good supply of envelopes at H.Q. !

R.S.G.B. Slow Morse Practices.

Details will be found below of the slow Morse practices organised by the Society for those members wishing to learn or improve their code. As usual, test matter will be taken from recent issues of the T. & R. Bulletin. The page number and month of issue will be given at the end of each test—by telephony. A telephony announcement will al o be given at the commencement of each test to assist those interested in tuning in the sending station. It is emphasised that reports will be appreciated and are desired, in order to ascertain useful range of transmission and numbers utilising the service. If, however, a reply is desired, a stamp should be sent. Will stations in areas at present not served offer their services to Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4 (Telephone: Silverthorn 2285). G5SU of Gravesend reports having received gratifying letters of appreciation, and that such reports amply repay him for the time he gives up for this service.

Schedule of Slow Morse Transmissions.

			G.M.T.	k.c.	Stations
Feb.	24	Wednesday	2300	1775	G6ZQ
,,	24	Wednesday	2315	1741	Gi6XS
,,	26	Friday	2300	1785	G6QI
,,	26	Friday	2315	1852	G5DY
,,	27	Saturday	Junior	B.E.R.U.	Contest
,,	28	Sunday	Junior	B.E.R.U.	Contest
Mar.	1	Monday	2300	1741	Gi6XS
,,	3	Wednesday	2300	1775	G6ZQ
,,	3	Wednesday	2315	1741	Gi6XS
,,	5	Friday	2300	1785	G6QI
,,	5	Friday	2315	1852	G5DY
,,	6	Saturday	2300	7145	Gi5QX
,,	7	Sunday	0915	1775	G6ZQ
,,	7	Sunday	0945	7155	Gi5UR
,,	7	Sunday	1000	7260	G5JL
,,	7	Sunday	1015	1825	G5SU
,,	7	Sunday	1330	7180	G2YV
,,	8	Monday	2300	1741	Gi6XS
,,	10	Wednesday	2300	1775	G6ZQ
,,	10	Wednesday	2315	1741	Gi6XS
,,	12	Friday	2300	1785	G6QI
,,	12	Friday	2315	1852	G5DY
,,	13	Saturday	2300	7145	Gi5QX
,,	14	Sunday	0915	1775	G6ZQ
,,	14	Sunday	0945	7155	Gi5UR
,,	14	Sunday	1000	7260	G5JL
,,	14	Sunday	1015	1825	G5SU
,,	14	Sunday	1330	7180	G2YV
,,	15	Monday	2300	1741	Gi6XS
,,	17	Wednesday	2300	1775	G6ZQ
,,	17	Wednesday	2315	1741	Gi6XS
,,	19	Friday	2300	1785	G6QI
,,	19	Friday	2315	1852	G5DY
,,	20	Saturday	2300	7145	Gi5QX

A SILENT KEY.

Amateur Radio suffered another severe loss last month when Mr. Walter Seppings Tearle (G8CC), of Leicester, passed on at the early age of 35. Mr. Tearle, although only licensed last year, was one of the earliest members of the old Wireless Society of London. In more recent years he had taken an active interest in the Leicester Amateur Radio Society, in which Society he held office as President.

Mr. Tearle was educated at Rugby School, later he entered Sandhurst, but after three years gave up an Army career to study for the Bar. He was called in 1926, and practised in London until 1931, after which time he joined the Mountsorrel Granite Co., Ltd., Leicester, as Assistant Managing Director. In September last he became associated with the firm of Freer & Co., the well-known Leicester solicitors.

In addition to his interest in amateur radio, Mr. Tearle was an enthusiastic fisherman, often leaving the shack of his colleague, Mr. W. W. Storer (G6JQ), at 3 a.m. for a six-hours' fishing expedition.

Mr. Tearle married Miss Peggy Smith, of Leicester, as recently as June, 1936, and to her in particular we offer our deepest sympathies. Mr. Tearle's passing will be mourned by his many amateur friends in London, Leicester and elsewhere.

QRA Section.

Manager: M. Williams (G6PP).

NEW QRA'S.

G2AI.—L. Gregory, "Walcot," Uphill Grove, Mill Hill, London, N.W.7.
G2IP.—C. J. Reed, "Brondeg," Goitre Fawr Road, Dunvant, Swansea, Glam.
G2UG.—W. H. Burton, 2, Raglan Street, Beaumaris.
G2VV.—J. N. Roe, 19a, The Barons, St. Margarets-on-Thames, Mddx.
G2WW.—L. Davis, 52, Colebourne Road, King's Heath, Birmingham, Warwickshire.
G2YI.—R. C. Horsnell, 33, Highfield Crescent, Rayleigh, Essex.
G2YV.—George M. Whitehouse, A.M.Inst.B.E., Cannock, Staffs.
G5AA.—F. Hizzey, 25, Craddocks Avenue, Ashstead, Surrey.
G5AQ.—L. A. Carter, "High Field," Hailsham Road, Heathfield, Sussex.
G5BI.—V. J. Bartlett, 171, City Road, Cardiff.
G5CS.—C. Coates, 414, Leagrave Road, Luton, Beds.
G5FY.—G. B. Connor, Harrowby Lane, Grantham, Lincs.
G5IH.—G. C. Turner, Silverlands, Rattle Road, Westham, Sussex.
G5IJ.—I. J. P. James, 7, Mount Park Cresecent, Ealing, London, W.5.
G5IT.—H. J. Redgrave, 3, Southdown Avenue, Brighton, Sussex.
G5OP.—F. H. Pemberton, 95, Preston New Road, Churchtown, Southport, Lancs.
G5XY.—J. Davis, 7, Victoria Buildings, 76a, Albert Road, Southsea, Hants.
G5YZ.—R. S. Meakin, 67, Rutland House, Highlands Heath, Putney, London, S.W.15.
G6BY.—W. E. D. Parker, 17, Fife Road, East Sheen, London, S.W.14.
G6PD.—P. G. Day, 33, Warwick Avenue, Beeston, Notts.
G6TV.—Norman Davis, 57, North Parade, Sleaford, Lincs.
G8CP.—Rev. S. Newby, Newhaven Rectory, Sussex.
G8DL.—S. T. Phillips, 112, Garretts Green Lane, S. Yardley, Birmingham.
G8DT.—F. N. Bedwell, 199, Bath Road, Cheltenham, Glos.
G8FI.—H. Hargreaves, Radio House, King Street, Whalley, Lancs.
G8GI.—C. B. Raithby, "Hollis," Pointon, Sleaford, Lincs.
G8GO.—S. Stanley, 15, Pelham Street, Sutton-in-Ashfield, Notts.
G8HH.—H. T. Saunders Jeal, 65, Chart Lane, Reigate, Surrey.
G8HM.—G. Harrower, 7, Abbot Street, Graigie, Perth, Scotland.
G8HU.—A. E. Leach, 5, South View, Yatton, Bristol.
G8HX.—F. N. F. Bewley, 116, Westfield Lane, Mansfield, Notts.
G8ID.—J. H. Hemingway, 13, Alexandra Grove, Leeds, Yorks.
G8II.—H. A. G. Shepherd, 8, Ridlands Lane, The Chart, New Oxted, Surrey.
G8IJ.—R. H. Farr, 32, Broomhead Road, Wombwell, near Barnsley, Yorks.
G8IO.—K. C. North, "Midhill," Eastbank Road, Sheffield, Yorks.
G8IS.—J. Stalley, 680, Foxhall Road, Ipswich, Suffolk.
G8IT.—E. G. Thomas, "Seafield," Offington Lane, Worthing, Sussex.
G8IU.—W. H. Wentworth, 44, Farndale Crescent, Oldfield Lane, Greenford, Middx.
G8IW.—F. G. Whinfrey, 5, Revill Lane, Woodhouse, Sheffield, Yorks.
G8IX.—R. J. Rider, 97, Gloster Road, Old Woking, Surrey.
G8JD.—F. L. Firth, 32, Ryan Street, West Bowling, Bradford, Yorks.
G8JF.—W. Adams, "Sunnyside," Highfield, Wellington Road, Taunton, Somerset.
G8JI.—T. F. Higgins, 48, Woodlands Park Road, Kings Norton, Birmingham, 30.
G8JK.—R. Chadbone, "Hildeslea," Orgers Hill, High Wycombe, Bucks.
G8JL.—L. W. Gard, Nine Elms Farm House, Bucklebury, Berks.
G8JP.—J. T. Fletcher, 21, Stafford Road, Sheffield, 2, Yorks.
G8MH.—P. G. Spencer, 11, Nightingale Road, Bushey, Herts.
2ABK.—F. White, 148, Cotswold Road, Bristol, 3.
2ADM.—W. R. Smith, 15a, Winton Drive, Croxley Green, Rickmansworth, Herts.
2AGP.—W. Dall, 9, Ivanhoe Place, Taybank, Dundee.
2AIM.—C. E. Clarke, 29, Alder Grove, London, N.W.2.
2AJL.—J. Mawbey, 29, Caddington Road, London, N.W.2.
2ALN.—C. E. Alleway, "Hilderic," Shaggy Calf Lane, Slough, Bucks.
2AQF.—M. A. Floyer, The Manor, Piddletrenthide, Dorset.
2ARL.—A. G. Archer, 29, Gorse Road, Blackpool, Lancs.
2ATT.—J. Tourtel, 35, Morpeth Avenue, Totton, Hants.
2AUO.—R. Jones, 1, Victoria Street, Llandudno, N. Wales.
2BCN.—E. Le Cheminant, 19, The Crest, Berrylands, Surbiton, Surrey.
2BHG.—W. H. Greenhalgh, 13, St. James Terrace, Winchester.
2BLO.—H. B. Bolton, 8, Lyndhurst Avenue, Castleton, Rochdale, Lancs.
2BMG.—N. E. Holden, Brantingham, Birch Grove, Manchester, 14.
2BNB.—R. H. Newham, "Trofts," Byworth, Petworth, Sussex.
2BNN.—J. Nelson, 283, Dodworth Road, Barnsley, Yorks.
2BOS.—E. Gant, The Rookery, Leasingham, Sleaford, Lincs.
2BPI.—J. G. Pullen, 1, Roseville Avenue, Harrogate, Yorks.
2BSR.—H. A. Stocks, "Frankley," Hawthorn Road, Cherry Willingham, Lincs.
2BXF.—A. G. Fowler, Roadside Cottage, Aboyne, Scotland.
2CCF.—P. C. Morton, Highcauseway & Syers Lane, Whittlesey, Northants.
2CFZ.—W. E. Turner, 151, Second Avenue, Dagenham, Essex.
2CGT.—F. J. Dawes, Barton House, Burgh, Lincs.
2CHA.—R. Hilton, 181, Bradway Road, Bradway, Sheffield, Yorks.
2CHG.—W. L. Howat, 11, Kirkland Park Avenue, Strathaven, Lanarkshire.
2CHK.—E. F. Fowler, Roadside Cottage, Aboyne, Scotland.
2CHN.—D. Niven, 22, Hostspur Street, N. Kelvinside, Glasgow, N.W., Scotland.
2CHY.—Mrs. Catherine H. Myler, Knowle, near Braunton, N. Devon.
2CIB.—H. E. Bettney, 131, Carlton Hill, Nottingham.
2CID.—F. Hooson, 237, Chingford Mount Road, S. Chingford, London, E.4.
2CIL.—G. A. Hook, 195, Crawley Road, Horsham, Sussex.
2CJH.—A. Q. Morton, 23, Braidfauld Street, Tollcross, Glasgow, E.2, Scotland.

The following are cancelled:—G2HA, 2AFW, 2AGC, 2AHM, 2AMW, 2ANS, 2AOF, 2ASF, 2AXY, 2BKK, 2BKN.

Please send all new QRAs, changes of address, etc., to QRA Section, R.S.G.B., 53, Victoria Street, London, S.W.1. Members are particularly requested to write their names and addresses in BLOCK letters, so as to avoid mistakes caused by illegible handwriting.

NEW MEMBERS

Home Corporates.

J. C. Martin (G6MC), Holyoak, Holyoak Avenue, Bingley, Yorks.
J. S. Owner (G6XQ), 135, Springfield Road, Moseley, Birmingham, 13.
F. Tillotson (G6XT), 47, Watson Street, Morley, Nr. Leeds.
T. T. Parker (G8FL), Mundesley Road, North Walsham.
C. G. Allen (G8IG), Home Lea, Nightingale Lane, Bromley, Kent.
J. R. Letts (G8IL), 49, Addison Gardens, W.14.
E. G. Thomas (G8IT), Seafield, Offington Lane, Worthing, Sussex.
J. B. Parke, D.Sc. (GI8PA), 68, Bawnmore Road, Belfast, N.1.
J. H. Clarke (2AAN), 9, Northwood Road, Tankerton, Kent.
J. Fullagar (2AFL), 4, Douglas Avenue, Worthing, Sussex.
A. H. E. Scott (2AIX), 36 Sheldon Avenue, Highgate, N.6.
S. T. Hall (2ALL), 54, Ridgeway Drive, Bromley, Kent.
K. E. S. Ellis (2ALP), Regimental School, 2nd Bn. Scots Guards, Aldershot, Hants.
E. Mallinson (2AMN), 22, Chevinedge Crescent, Exley, Halifax.
W. E. Firth (2BQF), 4, Kennoway Drive, Glasgow, W.1.
G. V. Marchbank (2BTM), 7, South Grove, Morecambe, Lancs.
R. D. R. Jaques (2CFW), Pack Horse Hotel, Staines, Middlesex.
I. Jones (2CIM), Brixton Mount, Holyhead, North Wales.
J. M. B. Neilson (BRS2737), "Ardvohr," Dunbeth Avenue, Coatbridge, Lanark.
J. Mower (BRS2738), 4, Derby Terrace, Clarendon Street, Hull, East Yorks.
P. Phillips (BRS2739), Thistledown, Hoadly Road, Cambridge.
J. H. Tickle (BRS2740), Moel, Overlea Avenue, Deganwy, North Wales.
G. N. Glover (BRS2741), 1, Welburn Avenue, Leeds 6.
J. W. Cooke (BRS2742), 16, Crooks Avenue, Mansfield Woodhouse, Notts.
J. E. Baskerville (BRS2743), 10 (B) Squadron, R.A.F., Boscombe Down, Amesbury, Wilts.
C. C. Black (BRS2744), Stormont Cottages, Stoney Road, Dundonald, Belfast.
F. H. E. Tidmarsh (BRS2745), 25, Connaught Road, Hornchurch, Essex.
W. G. Brand (BRS2746), 6, Roseford Gardens, Shepherds Bush, W.12.
H. Wickham (BRS2747), 56, Noel Street, Leicester.
L. T. Wilkinson (BRS2748), The Shop, School Street, Darton, Nr. Barnsley.
G. B. Moss (BRS2749), 74, Hinckley Road, Nuneaton, Warwicks.
W. J. Butler (BRS2750, "Walcot," Pilkington Avenue, Sutton Coldfield.
G. Smith (BRS2751), 10, Cluny Square, Buckie, Banff, Scotland.
C. W. Packe (BRS2752), Wanstead, Garrison Lane, Felixstowe.
W. Cunningham (BRS2753), 37, Stenhouse Place West, Edinburgh.
N. H. Dowds (BRS2754), 15, Jonesboro Street, Belfast, N.1.
E. G. Finch (BRS2755), Hope Farm, The Haven, Billingshurst, Sussex.
S. P. Boucher (BRS2756), 13, Pembridge Gardens, W.2.
W. Anderson (BRS2757), 48, Rosslyn Street, Kirkcaldy, Scotland.
S. Roberts (BRS2758), 29, Chestnut Avenue, Cimla, Neath, Glam.

J. F. Franklin (BRS2759), 24, Shrewsbury Lane, Shooters Hill, S.E.18.
J. D. Kingston (BRS2760), 51, High Drive, New Malden, Surrey.
T. Simpson (BRS2761), 2, Thorburn Terrace, Leven, Fife, Scotland.
W. E. Beck (BRS2762), 31, Ridgefield Road, Oxford.
T. L. Fletcher (BRS2763), 5, Corona Terrace, Ham Hill, Snodland, Kent.
A. S. Davey (BRS2764), 9, Russell Street, Chichester, Sussex.
J. C. Robertson (BRS2765), 67, West Nile Street, Glasgow.
J. Hodge (BRS2766), 19, Longrow South, Campbeltown, Argyll.
W. F. Taylor (BRS2767), 285, Heysham Road, Morecambe, Lancs.
N. Hughes (BRS2768), 32, Piercy Street, Wednesbury, Staffs.
R. W. Standley (BRS2769), 67, Redcar Lane, Redcar, Yorks.
C. L. Hubbard (BRS2770), 102, Sutherland Avenue, Fenham, Northumberland.
H. J. Inwards (BRS2771), 11, Wharton Street, Bungay, Norfolk.
L. A. E. Moule (BRS2772), 30, Wilton Road, Shirley, Southampton, Hants.
F. King (BRS2773), 23, Newton Street, Dunston-on-Tyne, Durham.
S. Green (BRS2774), 63, Cross Lane, Bebington, Wirral, Cheshire.
E. J. G. Tucker (BRS2775), Greenloaning, Craigavan, Co. Down, Northern Ireland.
A. R. Osborne (BRS2776), 16, Southwood Drive, Tolworth, Surrey.
J. Spragg (BRS2777), 22, Church Street, Sutton-in-Ashfield, Notts.
G. A. McNair (BRS2778), 51, Dryburgh Avenue, Rutherglen, Glasgow.
D. C. Hutchinson (BRS2779), Gresham Lodge, Station Road, New Waltham, Lincs.

DOMINION AND FOREIGN.

P. R. Graham (ON4XX), 206, Rue Stexin, Brussels, Belgium.
W. Hawcroft (SU1WH), 1 Coy, Egypt Signals, Abbassia, Cairo.
J. P. Love (VK4JL), c/o Isles Love & Co. Pty., Ltd., 233, Adelaide Street, Brisbane, Queensland, Australia.
J. R. Magee (W8CNC), 1057, Elm Road, N.E., Warren, Ohio, U.S.A.
W. Gray (ZS6M), P.O. Box 4020, Johannesburg, South Africa.
M. Rashed (BERS387), 17, El Abani Street, Anfouchy, Alexandria, Egypt.

CORRESPONDENCE

N.F.D. AND LOCAL RADIO SOCIETIES

To the Editor of The T. & R. Bulletin.

Dear Sir,—Having read the very interesting article by G2VV in this month's Bulletin, I would like to add a few suggestions of my own to his remarks.

It appears to me that the question of private or club stations participating in N.F.D. could be considerably simplified by the adoption of a different method of scoring. It is presumed that the event shall remain, as at present, a competition between R.S.G.B. districts, but is there any real reason why the *total* scores of the stations in each district should be the basis of the competitive figures? Why not the *average* score of all stations in the District? This, then, is my first suggestion: that the average score be used to replace the total scores. The advantage of this arrangement is, I think, obvious. In effect, it means that any number of pairs of stations could operate in one district without giving that district any advantage over the other districts.

Arising out of the above, it will be noticed that the expression "pairs of stations" has been used. This forms the basis of my second suggestion, which is that each station operates on one band only, but that a single station may not enter. The obvious reason is that a single 7 and 14 Mc. station would have a great advantage over a group of four stations working on 1.7, 3.5, 7 and 14 Mc. respectively. The suggestion is, then, that pairs of stations may be entered by any affiliated society of R.S.G.B.; the stations to operate on 14 Mc. and 1.7 Mc. respectively *or* on 7 Mc. and 3.5 Mc. respectively, according to the choice of the district society. I may be wrong, but I consider that the average score of a pair of stations working on 14 and 1.7 Mc. should approximate closely to the average of a pair of stations working on 7 and 3.5 Mc.

The last suggestion I would like to make is that the N.F.D. trophy be awarded to the District having the highest *average* score, irrespective of whether the entries in the District are made by the District proper, or by affiliated societies within the district, and that a special prize be given to the pair of stations, by whomsoever entered, which has the highest average score.

This is, however, only the bare outline of a scheme, and would require a great deal of detail work before it could be put into operation. In any case, even if it only serves the purpose of arousing some "constructive" criticism, it will have achieved its main object.

Yours faithfully,
J. E. Maxwell, Junior (2BFJ),
Hon. Secretary Radio Transmitters' Union (N. Ireland).

Corrections.

The author of the article on Vibratory Transformers published in our December issue was Mr. H. E. Gurney (VQ4SNA), and not Mr. H. E. Guiness. In the same issue the address of Mr. J. W. M. Williams (BERS383) was recorded as Namabi instead of Nairobi.

AROUND THE EMPIRE No. 5.

ZT2B.

Mr. R. A. Dersley (ZT2B) uses what might be described as an "all-Bull" transmitter, for the exciter unit was taken from a very early issue of the Bulletin, and the rest of the transmitter is a combination of circuits published in various issues of this Journal. Two type 6A6 tubes are used as crystal oscillator and doublers to 28 Mc. The crystal oscillator is on 3.5 Mc., and is link-coupled to a *Philips* amplifier type QC 05/15, as buffer, which in turn is linked to a pair of *Philips* F.704's in class "C" push-pull. This is modulated by the usual class "B" arrangement with type 46 valves.

As the maximum input permitted in his territory is 50 watts, ZT2B finds his transmitter very satisfactory on all bands, with the exception of 28 Mc. Modulation at full wattage does not seem to cause any distress, and as a result he has worked W6, VU2 and U8 on 'phone. He still awaits a G 'phone contact, for while he has worked D4, and F, ON and PA are easily worked in his country, G stations are normally difficult to contact. This also applies to reception of the short-wave broadcasting stations. As the German broadcasts are usually received better than those from Daventry, it is suggested that some reflecting medium in the Channel may be the cause.

NOTES and NEWS from the BRITISH ISLES

DISTRICT REPRESENTATIVES.

DISTRICT 1 (North-Western).
(Cumberland, Westmorland, Cheshire, Lancashire.)
MR. J. NODEN (G6TW), Fern Villa, Coppice Road, Willaston, near Nantwich, Cheshire.

DISTRICT 2 (North-Eastern).
Yorkshire (West Riding, and part of North Riding).
MR. L. W. PARRY (G6PY), 13, Huddersfield Road, Barnsley, Yorks.

DISTRICT 3 (West Midlands).
(Warwick, Worcester, Staffordshire, Shropshire.)
MR. V. M. DESMOND (G5VM), 199, Russell Road, Moseley, Birmingham.

DISTRICT 4 (East Midlands).
(Derby, Leicester, Northants, Notts.)
Mr. J. J. CURNOW (G6CW), "St. Anns," Bramcote Lane, Wollaton Notts.

DISTRICT 5 (Western).
(Hereford, Oxford, Wiltshire, Gloucester.)
Mr. J. N. WALKER (G5JU), 4, Frenchay Road, Downend, Bristol.

DISTRICT 6 (South-Western).
(Cornwall, Devon, Dorset, Somerset.)
MR. W. B. SYDENHAM (G5SY), "Sherrington," Cleveland Road, Torquay.

DISTRICT 7 (Southern).
(Berkshire, Hampshire, Surrey.)
Mr. E. A. DEDMAN (G2NH), 75, Woodlands Avenue, Coombe, New Malden, Surrey.

DISTRICT 8 (Home Counties).
(Beds., Cambs., Hunts., Rutland and the town of Peterborough.)
Mr. G. JEAPES (G2XV), 89, Perne Road, Cambridge.

DISTRICT 9 (East Anglia).
(Norfolk and Suffolk.)
MR. H. W. SADLER (G2XS), "The Warren Farm," South Wootton, King's Lynn, Norfolk.

DISTRICT 10 (South Wales and Monmouth).
Capt. G. C. PRICE (G2OP), The Mount, Pembroke Dock.

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
MR. D. S. MITCHELL (G6AA), "The Flagstaff," Colwyn Bay, Denbighshire.

DISTRICT 12 (London North and Hertford).
(North London Postal Districts and Hertford, together with the area known as North Middlesex.)
Mr. S. BUCKINGHAM (G5QF), 41, Brunswick Park Road, New Southgate, N.11.

DISTRICT 13 (London South).
MR. J. B. KERSHAW (G2WV), 13, Montpelier Row, Blackheath S.E.3.

DISTRICT 14 (Eas ern)
(East London and Essex.)
MR. T. A. ST. JOHNSTON (G6UT), 28, Douglas Road, Chingford, E.4.

DISTRICT 15 (London West).
(West London Postal Districts, Bucks, and that part of Middlesex not included in District 12.)
MR. H. V. WILKINS (G6WN), 81, Studland Road, Hanwell, W.7.

DISTRICT 16 (South Eastern).
(Kent and Sussex).
Mr. W. H. ALLEN (G2UJ), 32, Earls Road, Tunbridge Wells.

DISTRICT 17 (Mid East).
(Lincolnshire and Rutland.)
REV. L. C. HODGE (G6LH), The Bungalow, Skirbeck Road, Boston, Lincs.

DISTRICT 18 (East Yorkshire).
(East Riding and part of North Riding.)
Mr. W. A. CLARK (G5FV), "Lynton," Hull Road, Keyingham, E. Yorks.

DISTRICT 19 (Northern).
(Northumberland, Durham, and North Yorks.)
Mr. H. C. D. HORNSBY (G5QY), "Newlands," 105, Kenton Lane Newcastle-on-Tyne, 3.

SCOTLAND.
MR. JAMES HUNTER (G6ZV), Records Office, 51, Camphill Avenue, Langside, Glasgow.

NORTHERN IRELAND.
MR. W. GRAHAM (GI5GV), 5 Ratcliffe Street, Donegal Pass, Belfast.

NEW MEMBERS ARE CORDIALLY INVITED TO WRITE TO THEIR LOCAL DISTRICT REPRESENTATIVE.

DISTRICT 1 (North-Western).

THE D.R. is anxious that all TR's and those wishing to take on the duties of TR should write to him as soon as possible as it is his wish to get into contact with these members and also to have a record of their respective addresses.

Liverpool.—In spite of bad weather and the prevalence of influenza there was a good attendance at the January meeting, when Mr. Davies, the new TR, put forward some suggestions with the object of making the future meetings a real success and asked for similar suggestions from the members. The meeting concluded with a demonstration by G2DC of High Speed Automatic Transmission gear.

A visit to the Liverpool Air Port was arranged for Saturday, February 6. An inspection of the apparatus in use was made and visitors had an opportunity of seeing the Blind-Landing Beam equipment which it is understood is the very latest of its type.

At the next meeting a talk on "The Rediffusion of Broadcast Programmes over Land Lines" will be given by Mr. E. L. Ellis, of *Wallasey Rediffusion, Limited*. Lectures are being arranged for future meetings on the subjects of "The Theory and Practical Application of the Cathode Ray Tube" and "Modern Electrical Signalling Apparatus" respectively.

No individual reports have been received, but there does not appear to have been any great activity in the district during the past few weeks.

Manchester.—15 members attended the last Manchester meeting, when G5YD gave a talk on the developments of an entirely new type of Quench receiver for 56 Mc. work—G6OM, 5KL and ex-2AAZ were also present, and their visit was much appreciated by the local members.

The following stations report active:—G2HW, 2ARC, 2ATZ, 2BQP, 5CH, BRS2579, 5YD, 2AYO, 2BJQ, 2AMH (ex BRS2327), 2WQ, 2OI, and 2OH. G6GV, 5YD, and 2OI are busy rebuilding, while 2WQ, 5CH, 5YD, 2RA are anxious for 56 Mc. schedules.

Please note District Calendar for March meeting and bring your receivers and transmitters to the meeting to make this a real 56 Mc. night.

Warrington.—Will members please note that the address of the T.R. is 11, Glebe Avenue, Chester Road, Grappenhall, Warrington, to which all reports should be sent.

G2DF is now settled at his new QRA and finds it very good for radio. He is rebuilding both transmitter and A.C. receiver and reports that he found the 1.7 Mc. test good and was surprised at the number of stations operating on this frequency. 2CDC has built new SG det and pentode receiver and finds it very good. 2AUQ can now do 12 WPM and hopes to join the R.S.G.B. ranks shortly. G8AF has turned his attention to 56 Mc.

throes of removing and has not much time for radio. 5TH has been heard at various times but no report received. The " old men " of the district, 6KK and 5DC, are believed to be doing things, but " the children " have not had any news from them. A P.C. occasionally, please!

DISTRICT 2 (North-Eastern)

Barnsley.—The following changes of calls are reported: 2AOF is now G8IJ; while BRS2408 and 2561 are 2BNN and 2CGD respectively. Active stations include G6PY, 6AJ, 6LZ, 5UA, 5KM, 2BH and 2AHT.

FORTHCOMING EVENTS

Feb. 14.—District 6 (Bridgwater Section), 3 p.m., at the Bristol Arms.
" 16.—District 12, 7.30 p.m., at the Café, Waterfall Parade, Lander's Corner, Oakleigh Road, N.11.
" 17.—District 6 (Exeter Section), 8 p.m., at the Y.W.C.A.
" 17.—District 13 (Wandsworth Area), 8 p.m., at the Collingwood, 7, Plough Road, Battersea.
" 17.—District 1 (Liverpool Section), 7.30 p.m., at 38, Mason Street, Liverpool. Discussion on " The Re-diffusion of Broadcast Programmes over Land Lines."
" 18.—District 14 (Chelmsford Section), 7.30 p.m., at Bell Hotel, Tindall Square, Chelmsford.
" 18.—District 6 (Torquay Section), 7 p.m., at G5SY, " Sherrington," Cleveland Road, Torquay.
" 21*.—District 11, 6 p.m., at G6AA, " The Flagstaff," Colwyn Bay.
" 23.—District 14 (East London Section), 8 p.m., at 2BZK, 3, Burwell Road, Leyton, E.10.
" 24.—District 14 (East Essex Section), 8 p.m., at 2BMR, 15, Nelson Street, Southend-on-Sea.
" 24.*—District 15, 7.30 p.m., at G6VP, 12, Ferrers Avenue, West Drayton.
" 24.—Scotland " A " and " E " Districts, 7.30 p.m., at Room " A," Institution of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow.
Feb. 24.—Scotland " D " District, 7.30 p.m., in the R.S.A. Rooms, 16, Royal Terrace, Edinburgh.
" 25.—District 13 (Anerley, Tooting, Brixton and Kennington Areas), 8 p.m., at Brotherhood Hall, West Norwood.
" 26.—London Meeting at I.E.E., 6.45 p.m. Tea at 6 p.m. Discussion on " DX Work " by Mr. H. A. M. Whyte, G6WY.
Mar. 3.—S.L.D.R.T.S., 8 p.m., at Brotherhood Hall, West Norwood.
" 3.—District 6 (Exeter Section) 8 p.m., at Y.W.C.A.
" 3.—District 1 (Manchester Section) 7.30 p.m., at Brookes Café 1, Hilton Street, Manchester 56 Mc. evening (Night-mobile stations required to co-operate).
" 3.—Medway Amateur Transmitters' Society, Exhibition, 3 p.m., at The Queen's Hall, Military Road, Chatham.
" 7.—District 7, 2.30 p.m., at Royal Hotel, Stoughton, Guildford.
" 10.—Scotland " D " District, 7.30 p.m., in the R.S.A. Rooms, 16, Royal Terrace, Edinburgh.
" 11.—District 6 (Bridgwater Section), 4.30 p.m., at the Bristol Arms.
" 16.—District 12, 7.30 p.m., at the Café, Waterfall Parade, Landers Corner, Oakleigh Road, N.11.

*Sale of disused apparatus at these meetings.

Blackpool and District.—The local club has received QSL cards for members from the Blackpool Corporation and these are now in use. G6VQ is doing some good work on 7 Mc. CW and working W6. On Boxing Day he worked W, 1, 2, 3, 4, 5, 7, 8 and 9 on 7 Mc. with 20-25 watts. 8AK is still waiting for his 14 Mc. crystal. 8GG is having trouble with a 6L6 oscillator. 6MI is also having trouble with the 6L6 and is building MO-PA for 56 Mc. 5MS is active on 14 Mc. 2ARL is in the

Keighley.—G2VO is active on 7 and 14 Mc.; 6ZN is doing well with QRP; 2CAW is building gear.

Sheffield.—Membership and activity is increasing and the next meeting is on February 18. The first annual dinner was held on January 16 at the Norfolk Arms Hotel and was a great success. We wish to thank G2OJ for his excellent entertainment and music, which were much appreciated. At a future meeting G5HK is to speak on " Twenty

Years Back." Active stations are: G6LF on 28 and 14 Mc., 6PJ on 28 and 14 Mc. 5TO (who was our leading station in the 1.75 Mc. contest) is on the same bands. 2DJ active; and 2AWQ ready for Morse test; 2BXA also busy with Morse; BRS-2606 now 2CHA; 2CBQ building transmitter; 2AFW now G8IW; and 2BKN is G8IO. Other stations active are G2AS, 2MF, 2BGN and BRS-2282, 2293, 2688 and 2CFA. We were pleased to see G2XH at the dinner, and understand he hopes to be at the meetings again soon. 2ASF awaits his call.

Leeds.—2AHM is now G8ID. No other reports to hand.

DISTRICT 4 (East Midlands)

Nottingham.—Saturday evening, January 23, 1937, proved a very enjoyable one for members and their YLs who attended the dinner and dance held at the Trent Bridge Hotel, Nottingham. One very striking feature was that wireless, as a topic, seemed taboo, no doubt being due to strong QRM from the YLs previous to the commencement of the festivities!

MIDLAND PROVINCIAL DISTRICT MEETING

at

THE CRAVEN ARMS HOTEL, HIGH STREET, COVENTRY

on Sunday, March 14, 1937.

Assemble	...	12.15 p.m.
Lunch	...	1.15 p.m.
Meeting	...	2.30 p.m.
Tea	...	4.30 p.m.

Followed by a visit to a place of interest.

Inclusive cost, 5s., or 3s. 6d. Luncheon, 1s. 6d. tea.

Reservations to Mr. V. M. Desmond (G5VM), 199, Russell Road, Moseley, Birmingham, not later than Wednesday, March 10.

The District is fairly active, for it appears that members who have been fortunate enough to avoid the 'flu have contracted another malady just as infectious, and that is "Re-builditus," a case of the same old dials but new racks. G5VU has been having some excellent results with a transmitter equipped for dual control; whether this is an innovation that will eventually prove for closer co-operation between two operators, YLs included, must be left to the inventor. 8DZ seems to be finding work for idle hands in assisting non-radiating members in the choice and building of equipment. BRS's are active, and record DX heard is being claimed by BRS2578 from his home-built RX.

Worksop.—Information has come to hand that the Worksop group, after months of smouldering activity, have broken out, no doubt the ignition being supplied by the return of the prodigal (6MN). G2WR is conducting experiments with a view to finding an aerial with maximum radiation for his purpose, and has been having some success by contacting ZK1AA and J8CA. 8CR appears to have had indifferent results with various valves, but has made up for DX heard (FY8C, French Guiana, and VE's on 14 Mc.). 2AII reports hearing HZ1AA (Arabia). The usual monthly meeting will not be held during February, as most members will be participating in the B.E.R.U. contest. While on the subject of contests, it is fair to assume that 2IO, 5VU and 6CW have met with an amount of success in the South African effort.

Leicester.—We regret the death and loss of one of our most popular members, Mr. W. S. Tearle (G8CC), who died after a very short illness on January 5, 1937. Mr. Tearle was married in July last year, and received his full call in August. His death came as a very great shock to the District, and sympathy is extended to his relations, and particularly to his widow.

The monthly meetings at the Club shack continue, and amateurs, local or otherwise, who care to call any Friday evening after 20.00 G.M.T. for code practice or rag-chew will be welcome. The address is 53, Cedar Road (off St. Stephen's Road), Leicester.

Congratulations to 2AAW in passing the code test. We hope he received his call in time for B.E.R.U.

DISTRICT 5 (Western).

Bristol.—The influenza epidemic affected many members, but, despite this, a good attendance was recorded at the Bristol January meeting, when the N.F.D. films were shown and enjoyed by all.

Mr. G. Hellin, 2BYU, resigned from the position of T.R., due to lack of time to devote to the work involved, and a vote of thanks was passed for his services during 1936. Mr. H. Martin, BRS686, was elected in his place, and all local reports should be sent to him at 68, St. Mark's Road, Easton, Bristol.

Members are reminded that Bristol meetings take place on the first Thursday in the month at 23, Bridge Street, and it is hoped that more members living in Bath and other localities within easy reach will make an effort to attend.

Five Bristol stations took part in the 1.7 Mc. Contest, and it is expected that a good deal of activity will again be apparent during the B.E.R.U. Contest.

Cheltenham.—An enjoyable visit was paid to the local newspaper offices, with a good "tuck-in" at G8DT's following. Further visits to places of interest are to be made.

G5BM, after doing well on 28 Mc., is finding conditions good on 14 Mc., whilst G5BK is building a new transmitter for 28 Mc., using a push-pull final with Tungsram K480 tubes—incidentally, these appear to be very good for high frequency work.

G8DA and 8DT are doing well on 7 Mc., whilst two A.A. members hope to qualify soon for full licences.

Bath.—Two new G8 calls have been issued to members in this town and the owners are congratulated. The D.R. would like to see a T.R. appointed and regular meetings held. He requests Bath members to write him giving their views.

Salisbury.—Mr. A. W. Lister, G5LG, is moving to this town, and wishes to get in touch with local enthusiasts. His QRA is School of Artillery, Larkhill. Local members please note.

Gloucester.—No report has been received, and the D.R. would like to hear of activity in the town.

DISTRICT 6 (South-Western).

All the town areas are now fixed up as regards T.R.'s for the coming year. In Taunton, Plymouth, Penryn and Bideford the T.R.'s have consented to carry on for another year, while there have been changes, as already mentioned, in Exeter and Torquay. It is hoped that they will all have a successful year of office, and that the members will rally round and support their T.R.'s in meetings and local activities. At the moment, perhaps on account of illnesses, it appears that some meetings are not being as well attended as they might, since, considering that the membership in District No. 6 is now approximating 130, the total attendances at meetings seem small by comparison.

Exeter.—G5QA took charge of his first meeting on January 20, when there was an attendance of ten. It was decided to hold meetings twice monthly in future, on the first and third Wednesdays. This first meeting each month is to contain a technical talk, while the second will be informal. All members report active. 2FP is rebuilding, while 5QA and 2CFY are busy with 56 Mc. 2AT hopes to be on the air soon from Exminster.

Taunton.—We are pleased to hear that 2ASI has agreed to act for another year as T.R., and that 5AK will continue as scribe. [Thank you both very much.—D.R.] A meeting was held at Bridgwater on January 14; this was informal and wives (and others) were admitted. 8GB brought his Skyrider, and there was also a 56 Mc. demonstration by 2JM and 5AK. Meetings in future will be at 4.30 p.m. on the second Thursday for odd months, and at 3 p.m. on the second Sunday for even months.

Penryn.—Business difficulties and illness have caused trouble here. A dinner was arranged, but had to be cancelled. A meeting was held at the QRA of BRS2675, who gave a demonstration of gramophone recording. Only four attended out of a possible twelve. Those who were present spent an enjoyable and profitable time. 8AW is experimenting with bi-phase aerials for 14 Mc. 6BC and 6LV have each got into difficulties with power packs. 2BXT, 2AHV, BRS2048, 2654, 2675 and 2252 are all active.

Bideford.—G6FO reports that G6GM is still working W on 3.5 Mc., and in co-operation with G6FO trying for U.S.A. contacts on 1.7 Mc. 2ADJ is at last applying for his full ticket. BRS2220 is now 2CHY. BRS2442 continues with Morse, and receiver construction. In connection with the local society a proposal is under consideration to affiliate to R.S.G.B. G6FO has put forward the suggestion that there should be a section of the BULLETIN reserved for articles of a practical nature for the new members. [Announcement next month.—ED.]

Plymouth.—No report this month, though it is understood that most members are active. The D.R. hopes that definite arrangements for meetings will be made soon.

Torquay.—A meeting at G5SY was held on Thursday, January 21. Future arrangements as regards 56 Mc. tests were discussed. The D.R. was also requested to forward to Council the views of the meeting regarding N.F.D. and piracy. Both the Torquay and Exeter groups are definitely of the opinion that N.F.D. would be vastly improved if each District were allowed to work a maximum of four stations, one for each of the bands 1.7, 3.5, 7 and 14 Mc. Several members reported hearing pirates, and the D.R. agreed to deal with the matter.

DISTRICT 7 (Southern).

The new venue at Guildford tried for the January meeting was quite a success, and a large number of members were present. G6NA arranged a demonstration of 60 cm. telephony between his QRA and the meeting room, a distance of a hundred yards or so. The transmitter used two Acorn valves in push-pull, and the receiver was a super-regenerative type using a self-quenching Acorn valve for detection, followed by one stage of low-frequency amplification.

The D.R. has received a number of requests for addresses of certain T.R.'s, so to avoid confusion the full list is given herewith.

Bournemouth.—D. Sherley Price, 2ACA, 39, Nelson Road, Bournemouth, W.

Croydon.—E. W. V. Butcher, G5AN, 16, Manor Gardens, Purley, Surrey.

Guildford.—W. B. Gilhespy, G6GS, Bermuda Cottage, Warren Road, Guildford, Surrey.

Kingston.—R. Pottinger, 2BNS, 1, Aldridge Rise, New Malden, Surrey.

Portsmouth.—L. E. Newnham, G6NZ, 145, Victoria Road North, Southsea.

Reading.—A. E. Lambourne, G5AO, 31, Baker Street, Reading, Berks.

Reigate.—J. Butcher, G5XG, "Kentaun," Hookwood, Horley, Surrey.

Southampton.—L. G. Stoodley, Physical Laboratory, University College, Southampton.

Individual reports to your T.R. should reach him not later than the 20th of the month.

The March meeting will be held at the Royal Hotel, Stoughton, Guildford, Surrey, on Sunday, March 7, at 2.30 p.m.

Croydon.—G2MV has been tackling the 56 Mc. band for some months now, and hopes for DX any time now. He finds a horizontal aerial highly efficient. 5XH has built an S.S. super that is working well. He now awaits DX to spot his Windom. 5XW has been busy on 7 Mc. both with C.W. and phone, and 8BX with 7 Mc. phone. 2KU reports that the 6L6 valve is a very efficient c.o., after trying many other types. 2BWY has built a super and is learning morse. Will the new G8 in Coulsdon please communicate with the T.R. 5AN still experimenting with aerials on 14 Mc., and gets best DX with a Y matched impedance type. The Surrey Radio Contact Club meets the first Tuesday in each month at the Alambra, West Croydon, where members of the Croydon section can gather and meet their fellow amateurs.

Guildford.—G5CM reports excellent DX on 28 Mc. During December he worked VK and W6, and started the New Year with ZE1JJ. Since then he has worked W9PZI in South Dakota. All this with 7½ watts. 8CV reports rebuilding to 59ECO, LP4FD, and a 2A3 as a locked amplifier. Proposes using grid leak modulation. 6LK has been active as usual on 28 Mc., and also on 3.5 Mc. 6GS has been enjoying many W phone contacts, and finds it a thrill after years of c.w. working. With 6LK he has had several three-way contacts with W9BHT on 28 Mc. phone. 5WP still busy on 14 Mc.

Portsmouth.—At the January meeting of the South Hants R.T.S., Mr. C. Shearston (BRS1907) gave an interesting lecture on H.F. measurements. Many inductances had been constructed and were compared by the Dynatron method. G2XC is now licensed for 50 watts. In the 1.7 Mc. week-end 8BD, 2XC and 2NZ were active all night, but not the next day! 6WS and 6SS continue on 7 and 14 Mc. 2ZR and BRS2105 have rebuilt, and are putting up a new aerial. 2BYZ awaits his two-letter call, while 2BCM, 2AIV and 2CBL are taking part in B.E.R.U. Welcome to BRS2727. 5XY will probably be inactive for some time.

Southampton.—It is hoped that the first meeting of Southampton members will have been held before this appears in print. 5OB is testing a 14 Mc. Windom. 2BFS is assembling gear and busy with code practice. 2ATT is trying out various aerials for 56 Mc. reception. 8DM is re-designing his 57 Mc. gear with a view to frequency stabilisation, and is also working QRP 7 Mc. phone. 5PT, 6YI and BRS207 continue active.

Kingston.—2BJK became G8HA in November last, and has now been working plenty of DX, using low power. 5ZK has returned his gear to Camberley in time for B.E.R.U. 6NK is building a new receiver, using pentodes throughout, and also hopes to have it finished in time for B.E.R.U. 2BNS is also still busy with his RX and a tri-tet oscillator. 2NH is not on much, apart from some work on 28 Mc. and the 7 Mc. network on Sunday mornings.

DISTRICT 8 (Home Counties)

Only eleven members were present at a meeting held at the Lamb Hotel, St. Ives, Hunts, on January 8. After discussion it was decided that this falling off in attendance at the St. Ives and Peterborough meetings is perhaps due to certain members not having means of transport available; it is therefore suggested that anyone who may need transportation to these meetings should communicate at least three days beforehand with his T.R. or the D.R., when this can usually be arranged.

The meeting opened with a reading of the previous minutes, together with certain comments from headquarters. The resignation of Mr. P. Crisp (G6DX) from the office of T.R. for St. Ives was accepted with regret and a vote of thanks recorded for his past co-operation. The meeting then accepted the offer of Mr. C. D. Whaley (G6WA) to take over these duties. We all wish him success and offer him our wholehearted support.

An interesting talk on the principles of television was given by Mr. T. L. Herdman (G6HD); this was much appreciated and held the interest of all present. The D.R. will be glad to receive offers of talks from other members.

It was decided to hold a junk sale at the next meeting, which will be held at the Fitzroy Arms, Fitzroy Street, Cambridge, at 8 p.m. on Friday, March 12; each member attending will be expected to bring along not more than three articles for inclusion in the sale.

Reports this month are very few—G5JO is having difficulty with valves in his modulator; 2PL continues to pile up the honours on 28 Mc.; 5DR is having some excellent results with South Africa and finds consistent working with this part of the world very easy; 2XV continues with good 14 Mc. 'phone results to VK, W, West Indies, etc.; 2AHK has commenced activities with BRS2320, and they have now completed a new RX; 2679 is temporarily at Oxford—he has just obtained his AA permit and has built a new RX and erected a new pole in readiness! 2392 is very disgusted with the small number of cards he gets in reply to his reports. (Try enclosing a stamp, OM!)

Peterborough.—G6PD has secured his W.A.C. and W.B.E. certificates; 2NJ had bad luck in the 1.7 Mc. contest, experiencing a breakdown during the period—he operated from Heacham, Norfolk, and had 36 contacts. He is working 7 Mc. 'phone from Peterborough. 2UQ is also active on 7 Mc.; 2075 has been experimenting with a very efficient wavetrap. (Dope for "Bull," please.)

Will members with ideas for our district conventionette please put pen to paper, pronto!

DISTRICT 9 (East Anglia)

There is very little activity in the District to report this month. G5QO has moved his shack to ground level. Congrats. to 2CUF on his new call. 5UD is rebuilding on the rack principle. G8FL has been in operation at North Walsham for some time and we take this opportunity of welcoming him to the District.

Other stations known to be active include G2MN. 2XS, 5LW, 5IX, 6QZ, 6UA and 8DD.

DISTRICT 10 (South Wales and Monmouth)

A very successful "hamfest" was held by the Blackwood Club on January 7, at the Central Café, where about thirty members and friends got together and had a very enjoyable evening, with Mr. Pond in the chair. The visitors were welcomed in a speech by 8CT, whilst 5FI replied on behalf of the visitors, who in many instances had travelled over 30 miles to attend. Entertainment at the piano was ably provided by 8CT and friend.

G6BK, who is now working the States every morning on 7 Mc., has added W5 to his list of districts; he recommends 7 Mc. between 08.00 and 10.00 for U.S.A. contacts. 8CT has to be congratulated on having worked W6 and W7 on 14 Mc. 2BXD is contemplating a full call. 2NG s active on 7 and 14 Mc., while 5FI has had numerous QSO's with W on 3.5 Mc., having failed to contact them on 7 or 14 Mc. He recommends 3.5 Mc. for "getting across" easily! 8FJ is active on 7 and 14 Mc. with 6 watts input. G2XX has had a dose of 'flu and has been inactive. 2BQB is testing his new CO-FD-PA. 8AM has changed to A.C. 5XN is very active in all directions.

The Scribe paid a visit to 5VX recently, and was much interested in his gear. 6YJ is hoping to start up in Pontypridd shortly. 8HI spends much time on the air, and is getting satisfactory results. 6JW is active with phone and C.W. on 7 and 14 Mc., and is about to extend his activities to 28 and 56 Mc. 5KJ, as usual, is active on all bands. G8GN, of Monmouth, is active on 7 Mc. C.W. The D.R. is QRT at the moment with 'flu.

If 2IP, now resident in Swansea, should by any chance read these notes, will he please get in touch with the T.R. (2UL)?

DISTRICT 11 (North Wales).

There was a good attendance at the meeting held at G5YP on January 24. It was decided to hold the monthly district meeting on the third Sunday of each month until further notice. The place and time will be announced in the appropriate section of each issue. A visit to the new B.B.C. station near Beaumaris is to be arranged. Will any person wishing to join the party please notify 5OD immediately, and in case the visit cannot be arranged for a Sunday, please state what other day would be most convenient. G5OD's address is "Rocklyn," Peulwys Road, Old Colwyn.

Prestatyn-Rhyl.—The Prestatyn weekly meetings mentioned last month are to be held at 6KY instead of the Savoy Café. Most members report active, but nothing worthy of special note has been done.

Colwyn-Llandudno.—G5UO wishes to make 56 Mc. schedules with other North Wales stations. His address is 2, King's Road, Llandudno.

A number of other individual reports have been received, but as they record no outstanding achievement, and give nothing of importance, their contents cannot be published. It is the policy of the D.R. to take no space in THE BULLETIN for matter which is not of general interest.

DISTRICT 12 (London North and Hertford)

North London.—The January meeting was held at Southgate on the 19th, and was attended by 25 members. Mr. Moxon (G6XN) gave an informal chat on "Modulation."

At the moment of writing the response to the District's proposed contribution to a series of constructional articles has not been very marked (see comments in last month's BULL!) It will be appreciated if members who are in a position to assist in this important matter will get into touch with the D.R. or T.R.s without further delay.

We are pleased to report that information on activity this month has increased.

G2VD has worked ZL on an indoor aerial, using low power; G8GC after working his first W's has had a spot of bother with valves; whilst G2GO has been active every night for the past two months, and only requires Oceania for W.A.C.

BRS2479 and BRS2490 have built 56 Mc. receivers and are concentrating on this band; 2490 is applying for his A.A. permit; 2605 is now 2CHI, and is constructing his transmitter; 2BXL is taking the morse test.

G5WW and 6QM represented the district in the 1.7 Mc. contest. G6ZO spent a very active period in Scotland with a low-power portable 7 Mc. transceiver.

Suggestions for programmes at future North London district meetings would be welcome, and as we cannot hope to please everybody, we should like to satisfy the majority.

The following crystal frequencies may be of interest, and are those used by G2QY and G2AI: 7025, 7040, 7135, 7180, 7190, 7294 kc. or the harmonic for 14 Mc., except the latter.

Hertford.—The first local meeting of the Watford group was held at Bushey on January 12, when about ten members attended. The evening was devoted to technical discussions which lasted until after 11 p.m. Considerable interest was shown in 56 Mc. and the higher frequencies.

G6GR would like co-operation on 112 Mc. 2BCU is G8CK, and 2AZD becomes G8GT. 2ANS has passed his test and awaits call.

Members living in Stanmore, Kings Langley, Abbots Langley, Boxmoor, Croxley Green, Rickmansworth and St. Albans, who are interested in these meetings, should communicate with the T.R. for Watford, Mr. H. L. Gibson, 50, Oundle Avenue, Bushey, Herts.

2AYH, of Hitchin, reports that he has constructed an ambitious crystal-controlled transmitter which is showing considerable promise on all bands.

DISTRICT 13 (London South).

The annual dinner of the S.L.D.R.T.S. took place on January 21 at the Half Moon Hotel, Herne Hill. Over 20 members were present, including Mr. Bevan Swift (G2TI), who was the guest of the evening. The toast of the Society was ably given by Mr. Johnson (G5IS), and replied to by Mr. Cullen (Secretary). Mr. Chisholm (G2CX) then rose to propose the toast of the R.S.G.B., and Mr. Swift, in replying, related some amusing anecdotes of his student days. After the dinner followed various competitions, one of which consisted of a general radio knowledge paper, in which appeared such questions as "Who was the first President of the R.S.G.B.?" To conclude the evening's entertainment, Mr. Maitland Edwards presented a very interesting cinematograph show. The party dispersed at 11 p.m. We should like to express the regret of all present that Mr. Clarricoats was unable to be at the dinner owing to 'flu.

It is with pleasure that we have to announce that the new T.R. scheme is now under full sail in South London, and we would mention that more than one expression of satisfaction has been received at the attempt to provide local meetings.

Blackheath Area.—A meeting took place on January 17 at G2ZQ, but the attendance was poor, probably owing to the very bad weather. G2YG is experimenting with frequency multipliers, including the quadrupler described in QST. 2APQ is soon joining the R.S.G.B., and is working at code for his licence. G6KP, of Welling, joins the area, as he is too far from any North Kent centre. 2ZQ has had 'flu, but has been collecting information against certain 1.7 Mc. 'phone stations. 2WV has been inactive owing to 'flu.

Wandsworth Area.—An excellent meeting was held at the Collingwood, 7, Plough Road, Battersea, on January 20, and the gathering had some interesting discussions on various subjects ranging from applications of high frequency in surgery to the old-timers who used spark in 1909! Our sincere thanks are due to 2AFA who threw open his clubroom for the meeting. The next meeting will take place on February 17. G2RC is using a new antenna—W3EDP type—and getting excellent results. 5SH is building a high-power modulator, and finds that excellent results are obtainable using grid modulation if attention is paid to detail. 2TH is experimenting on 1.7 Mc. and has worked Switzerland on this band. 2AFA is experimenting with transmitting circuits, and has built some interesting and useful auxiliary testing gear.

Anerley, Tooting, Kennington and Brixton Areas.—An interesting meeting took place at the Brotherhood Hall on January 27, and was well supported. The D.R. regrets that, owing to an error on his part, the date of this meeting appeared in the BULLETIN as January 25. The next meeting will be held on February 25.

Wimbledon Area.—Owing to private difficulties, 2BMH was unable to organise a local meeting in January. All members in this area are requested to get into touch with the T.R. with a view to a meeting in the near future.

We sincerely hope that a good effort will be made in South London to keep the Colonel Thomas B.E.R.U. Trophy in this District. It will be remembered that G2ZQ was the winner last year, and we wish everyone good scoring this year. The D.R. very much regrets that he was unable to be present at any of the area meetings in January owing to illness, but he hopes to get to several during February. It is requested that all those who wish to assist at N.D.F. 1937 get in touch with the D.R. immediately, as the list of operators has to be drawn up within the next few weeks.

Mr. Broughton (BRS2709) has asked us to include in these notes a statement to the effect that he is desirous of obtaining " digs " in S.W.19 or S.W.20 with any other technically minded person. He would welcome assistance in obtaining the accommodation, and any letters should be addressed to him at H.Q.

DISTRICT 14 (Eastern).

East London.—At the January meeting held at G6UT, Chingford, the attendance, which was small, included G6LB, who came up from Chelmsford, and 2AVH, of Chingford, who announced his new call sign G8JM. BRS2292, of Forest Gate, is hoping to join the Band Monitoring group. Members of the district congratulate G6DH on winning the Powditch Trophy for his 28 Mc. work. The following members took part in the recent 1.7 Mc. contest: G2CD, G2XP, G8AB and G6UT. BRS1192, of Barkingside, is applying for an A.A. permit. All new members are asked to attend monthly district meetings, or, if unable to do so, to get in touch with the D.R.

Chelmsford.—G6LB has arranged a meeting on February 18, details under " Forthcoming Events." It is hoped that members in outlying districts will attend on this occasion.

East Essex.—There was a good attendance at the January meeting held at G6CT's QRA. In the absence of the T.R., G5UK officiated. It was decided to organise morse practice for beginners, and those who have reached a more advanced stage. These will be held prior to each Southend Radio Society meeting, and, if possible, also at the monthly R.S.G.B. meetings.

Mr. Buckwell (G5UK) having now officially terminated his office as T.R., was presented with a small token of acknowledgment, subscribed for by the older membership of the district.

56 Mc. activity has temporarily diminished, as most of those interested in this band are rebuilding with the view of receiving and radiating stabilised signals.

There were two entrants for the 1.7 Mc. Contest from this area, viz., G6CT and G2LC. G5VQ is active on 14 Mc., and has received S9 from HS; G6CT rebuilding for all bands; G6IF working DX on 28 Mc., as well as 14 and 7 Mc.; G5UK shortly rebuilding for 56 Mc. work exclusively; G2MY rebuilding; G2UK back on 7 Mc.; G2LC working DX on 7 Mc. Most of the BRS and AA members are active on the key—learning the code !—either individually or at the S.R.S. meetings.

The T.R. would welcome news of activity (or inactivity) from members in this area who are not able to attend the meetings. The address is repeated here for this purpose: G2LC, 24, Percy Road, Leigh-on-Sea.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

The technicalities of television reception were ably explained by G5OG to the twenty-five members who attended the January meeting, and everyone was agreed that they had been enlightened on the subject. Following the paper, G5CV arranged for a party to visit his station to witness a television programme.

It is hoped that a talk can be arranged for the February meeting, and if details arrive in time they will be included under Forthcoming Events. It is also hoped to run a morse speed contest at this meeting.

The question of district meetings requires very careful consideration, and unless further offers of accommodation are forthcoming it will, of necessity, fall hard on those few who can manage to house them.

Two T.R.'s and one acting T.R. have arranged to be at home to receive visitors at the times mentioned in the various reports. Three T.R.'s have sent reports, which have helped to increase the total number, but individual reports to them by the 20th of the month are still required to enlarge the letter budget.

We are very sorry to hear that several members have had 'flu and some complications, and only hope that by this time they have all recovered. G6VP had rather a serious attack, while 2AXD had blood-poisoning as well. G8IH had a very bad time with pneumonia, but is now reported to be progressing satisfactorily.

January 30, the night of the area dinner, is but a memory, but what a memory. Those who supported the venture were amply rewarded, but those who stayed away missed what was undoubtedly one of the finest hamfests many of us have ever attended. The toast of the visitors was proposed by Mr. Bradley (2BAZ), and Mr. Eric Reynolds, Acting Scout Master of the 3rd Ealing Troup, very ably responded. The District was proposed by Mr. Wilberforce (G2IY), who coupled with it the name of our D.R. The D.R., in replying, paid tribute to the many members who helped to make his task lighter, and told how the district had progressed during the past eight years. Mr. Crocker (G2NN) was the proposer of the toast to the R.S.G.B., and well he did it. Mr. Clark (G6OT), responded on behalf of Mr. Clarricoats (who unfortunately was not able to be with us, owing to illness) said he could only hope to make a very poor second to G6CL. He said he had come from

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the far north to the wild west, and it was not long before everyone had made up their minds that he was very ably deputising for our worthy Secretary. Over thirty were present, and are all looking forward to the next.

West London.—G6CO, the T.R., will be at home on Wednesday evenings, except area meeting nights. Has been listening on 28 Mc. 6WN been on both 28 and 14 Mc., and worked FM8 on the former and CP on the latter. 5FG is rebuilding transmitter. 2BAZ applied for full ticket. BRS 2239 heard VE5JK on 3.5 Mc. phone, XU and J on 14 Mc. phone, but nothing on 28 Mc.

South Middlesex.—G2NN, the T.R., reports G2KI, 2KX, 2LA, 2ZY and 6GB active. G2NN, using semi-vertical aerial from new 55-ft. mast, reports better DX. 2ZY putting out good quality telephony, while 6GB has new super-het working. 2BXC added H.F. stage to receiver, and installed new transmitter in rack. BRS2549 is now 2AXD; has done little with transmitter on account of 'flu.

Bucks.—2BVX reports work on transmitter, and will hold meetings at his QRA the Wednesday evening following the District meeting. 2AGC is now G8JK, and has had one QSO with SP. BRS2498 finds 14 Mc. very good, but little on 3.5 Mc. and 1.7 Mc.

West Middlesex.—G5JL will welcome visitors on Sunday mornings. 6VP had little time left for radio.

The T.V.A.R.T.S. lecture on January 27 was given by G6PK, and concerned experiments on 56 Mc. Mr. Pyke was the winner of the "Cooper Cup" for 1936 for the most outstanding piece of experimental work.

The Southall Radio Society holds meetings every Tuesday at the Southall Library, and open evenings are frequently held, when R.S.G.B. members will be welcome. G6WN gave a paper on 28 Mc. at the meeting on January 26. G6CL will be there on March 30.

DISTRICT 16 (South Eastern).

Will all T.R.'s please note that in the future their monthly reports should be sent *direct* to the D.R., arriving not later than the 25th of the month? We take this opportunity of thanking Mr. Chapman (G2IC) for his past work as District Scribe.

The Whitstable radio amateurs are negotiating for the rental of club headquarters on high ground near the town, with a view to 56 and 112 Mc. DX. It is to be hoped that this project will be carried through, and that much useful work will be done on these ultra-high-frequency bands. We know it is not possible for various reasons for every group to have its own clubhouse, but it is an ideal to be aimed at, and it is hoped that the good work already done at 2FA, Folkestone, will be followed by the Whitstable group.

Another interesting item of 56 Mc. news is that G2AW and 8FD are operating a station at the latter's QRA at Ide Hill, near Sevenoaks, using an MO-PA transmitter and an "acorn super" receiver, together with a horizontal rotatable beam aerial. Two-way contact has already been established with G5RD, near Watford, and with many other stations at shorter range. Will 56 Mc. stations please look out for them at week-ends and on most evenings after 22.00 G.M.T.?

Brighton and Hove.—VU2EB gave a talk on "The Amateur in India" at a meeting of the Brighton and Hove Radio Society held on January 7. The group are building a transmitter for G8IT, who has the great misfortune to be blind. [Thank you very much, OM's.—Ed.] The following are active: G2HV, 6CY, 6SU, 6RM, 8AC, 2ASC, 2BRB, BRS1852, 2074 and 1571.

Folkestone.—The "crew" of 2FA are busy constructing new gear for all bands. Their 56 Mc. beam was, unfortunately, damaged in the recent gale.

Tunbridge Wells.—The group have a PP long-lines 56 Mc. transmitter working with the call 2UJ, and would appreciate reports. Tests are carried out most evenings from 22.00 G.M.T.

We are very sorry to lose 6BD, who leaves for Trinidad early this month. We wish him the best of luck in his new job, and hope he will soon be on the air with a VP4 call. The following are active: 5OQ, 6OB, 5KV, 2UJ, 2AVN and 2AKQ.

Whitstable.—2BIB is now licensed on all bands up to 112 Mc. He has a 14 crystal for use on the 56 and 112 Mc. bands, and a RES article is promised. The following have reported: 2BIB, 2BUC, 2AMY, 2AAN, 2BJN, BRS2453 and 2661.

Eastbourne.—G2AO and 2KV report active.

Heathfield.—All are active, but have nothing special to report.

DISTRICT 17 (Mid-East).

Cranwell.—G6AC reports more departures from the C.A.R.T.S. This time it is G8DY and BRS Shewrey who have left for Usworth. We extend to them our cordial good wishes, and hope to see them on the air soon.

The number of H.F. chokes required for the club transmitter gave 6TV the opportunity of exercising his skill with a miniature cathode ray tube to determine the most efficient form this much-criticised component should take. After several hours' hard work a choke was evolved consisting of 8 sections of 42 turns 38 enamelled wire spaced 1-16th in. on a ½-in. ebonite former. This gave an improved impedance on 7 and 14 Mc. over a well-known commercial make measured under the same conditions. The insertion of these chokes in the club transmitter C.O. stage (push-pull 6A6) showed an improved performance. The C.A.R.T.S. has been promised a 70-ft. mast, so G8FC will be beginning regular transmissions by the time these notes appear. 56 Mc. activity still continues, although no success has been obtained using RFP 15's in a M.O.-P.A. circuit. 6AC, in a burst of energy, built a 1.7 Mc. transmitter, using an RFP 15 in a crystal-controlled Hartley circuit on the afternoon of the contest, and did fairly well. The C.A.R.T.S. is very concerned about their "foreign representative," who departed into darkest Africa with a 7,180 kc. crystal, but who has, as yet, failed to QSL!! They are listening expectantly for you, ST2LR!

Brigg.—8AP has been experimenting with link coupling from the P.A. to the aerial, and reports improved results with both the W3EDP and Hertz aerials. He has found 14 Mc. poor in his locality. A 25-watt permit will result in more R.F., he hopes.

Boston.—6GH has worked his first VO and also VE5AW in the Yukon, who reported the tempera-

ture to be 43 degrees below zero. What a site for an N.F.D. ! 6LH and 8BQ continue mildly active, the D.R. being in the midst of preparations for his talk on " Amateur Radio."

The D.R. regrets that the crystal register has not yet been finished, but hopes to proceed with it in the near future.

DISTRICT 18 (North Eastern)

Scarborough.—The rebuilding epidemic is again in fashion and all the following are in partial or complete re-design : G2CP, 6CP, 6TG, 2BXX. G5MV completing new 'phone modulator using A.C./H.L. driving two 2A3's in push-pull. G5GI during the last month has been delving into characteristics of " 362." RFP60, using dummy aerial, and by observation of meters in screen, anode and grid, has found how critical these valves are to a given amount of drive. (Short article, please.—Ed.) 2BMD is getting out all-American tube line up for new transmitter. 2BGO, 2BGS and all BRS's are active.

The Scarborough Short Wave Society (2BXX) recently tested out its new transmitter—CO/PA with T25D for final and after successful initial tests components are being re-assembled on more substantial wooden baseboards.

No reports were received from Hull or Bridlington.

DISTRICT 19 (Northern).

A joint Stockton and Darlington " hamfest " was held on February 12, at the Vane Arms.

Darlington.—G8HQ is active on 7 and 14 Mc. and experimenting with tuned audio-amplifiers in RX. 2BQA is learning morse and both 2BLG and 2BYY are engaged in building gear.

Stockton.—G2FO proposes running a letter budget amongst his group if support is forthcoming. He is experimenting with different 28 Mc. doubler circuits. 8CL is trying to cure second channel interference on his superhet. 5QU, 5XT and 8GL are on 7 Mc. phone, the latter on 2 watts input. 6DR is busy on a method of crystal frequency QSY by controlling temperature of the crystal. 2BQO is rebuilding in his new QRA. 2CBA is using vibrator H.T. supply, as he has no mains. BRS2664 is now 2AKH. Congrats, OM.

Newcastle and District.—G5RI has been in S.A.R.R.L. contest and made over 1,000 points on 14 and 28 Mc. 6YL has been working super DX on 28 and 14 Mc. with her QRP. However, the last gale claimed her antenna ! She is trying to hear 5QY on 56 Mc. 6MK has worked the Yukon several times on 14 Mc. He is also on 3.5 and 1.7 Mc. 5QY is testing the consistency of 28 Mc. by a daily sked with W5DRF. He is also on 1.7 Mc. and using C.C. on 56 Mc. 6IR is on 28, 14 and 1.7 Mc. Also active are 2PN, 5WZ, 6CO, 5YO. Will members in Sunderland please send in a monthly report to G5QY before the 26th of each month ? Also the D.R. would like to mention he is on 1.7 Mc. each Saturday night, for local QSO's.

Scotland.

G5YG desires to thank all those who made kind enquiries and sent their sympathies to him after his recent operation.

" A " District.—There was an excellent turn-out of members on January 27 at the monthly meeting of the combined " A " and " E " Districts, when Mr. Grinstead, of the *Mullard Wireless Service Co.*, delivered a most informative lecture on " The Design and Application of Transmitting Valves." The lecture was well illustrated by a series of interesting lantern slides. The members present appreciated the lecture very much, and our thanks are due to Mr. Wilkie, G6WZ, who arranged it. Preliminary arrangements for holding N.F.D. were discussed, and a committee was appointed to go into the details of the matter. The event will be held as a joint " A " and " E " effort, as, owing to the very scattered nature of " E," it is impracticable for this district to run, at the present, independent stations. There are three changes to record, Mr. D. Niven, BRS1705, Mr. L. T. Davis, BRS2645, and Mr. A. Q. Morton, BRS2521, having been granted the artificial aerial calls, 2CHN, 2CHJ, and 2CJH respectively.

" B " District.—G2OX is building a new transmitter on the relay rack principle, using a 6A6 valve as an all-band exciter, followed by a 6L6G. Preparations for B.E.R.U. have been in progress at G8AT and G5YN. The former has built a new receiver, and the preparations at G5YN have taken the form of a complete rebuild of his transmitter. The receiver at G5TA has been rebuilt to use A.C. valves. Other stations active include G6VO and G6BM. Examinations have forced G5LF to QRT. BRS2436, Mr. E. F. Fowler, has been granted an artificial aerial licence.

" C " District.—Mr. J. G. Halley, G8CF, has been elected T.R. for Dundee, and we hope the members there will support him heartily. Activity in the district continues at a high pitch, all the regulars being active. G6RT is active on 3.5 Mc., as is G5NW, who is using remote control from his new QRA to his shack. Experiments with a 6L6 are being undertaken at G6LD. G6KO and G6RI are active on 28 Mc. Several members have applied for licences. N.F.D. was discussed at one of the recent meetings.

" D " District.—Meetings are still being well supported. G6JH, one of the QRP stations of the district, is doing well, recent contacts including W, 6, 7, VK, ZL, K5, and HS. DX has also been coming the way of G6XI. G6SR has raised W2, 3, and VE1 on 3.5 Mc. phone. He is about to commence a complete rebuild of his station, which will be a formidable task, as no less than five transmitters are involved. G2BD has raised W, using a 6L6 as a straight C.O. Mr. Borthwick, 2AZB, has passed the morse test, and awaits his call, and Mr. J. Cleghorn, BRS2505, is now 2CHB.

" E " District.—Mr. J. Wilson, 2AWD, has been granted the radiating call G8JW.

" F " District.—While meetings in the district have been well supported, further support from the members would be appreciated. Mr. G. L. Zech, BRS2634, is now 2CIH.

" G " District.—The District made the columns of the daily press when G6RG suffered the great misfortune of losing his entire gear in a fire which completely burnt out his station. Everyone's sympathy will go out to G6RG in his misfortune, but we are pleased to hear that he intends to put a new transmitter on the air as soon as possible. As the experiment of holding a meeting at Kelso

(*Continued on page* 384)

Empire B.E.R.U. News.

B.E.R.U. SECTION REPRESENTATIVES.

Australia : I. V. Miller (VK3EG), P.O. Box 41, Tallangatta, Victoria ; Sub Representatives : J. B. Corbin (VK2YC), 39, Mitchell Street, McMahon's Point, Sydney, N.S.W. ; R. Ohrbom (VK3OC), 22, Gordon Street, Coburg, N.13, Victoria ; A. H. Mackenzie (VK4GK), Fire Station, Wynnum, Brisbane ; G. Ragless (VK5GR), South Road P.O., St. Mary's, S.A. ; J. C. Batchler (VK7JB), 21, Quarry Street, North Hobart, Tasmania.

Bahamas, Bermuda and the Eastern Part of the West Indies : P. H. B. Trasler (VP4TA), Point à Pierre, Trinidad, B.W.I.

Burma : W. G. F. Wedderspoon (VU2JB), Government High School, Maymyo, Burma.

Canada : Earle H. Turner (VE2CA), 267, Notre Dame Street, St. Lambert, P.Q. ; W. P. Andrew (VE3WA), 1337, Dougall Avenue, Windsor, Ont. ; F. Taylor (VE5GI), 4374, Locarno Crescent, Vancouver, B.C.;

Channel Islands : J. le Cornu (G2UR), 1, Les Vaux Villas, Valley Road, St. Helier, Jersey.

Egypt, Sudan and Transjordania : F. H. Pettitt (SU1SG), Catholic Club, Mustapha Barracks, Alexandria.

Hong Kong : G. Merriman, (VS6AH), Box 414, Hong Kong.

Irish Free State : Captain G. Noblett, M.C. (EI9D), Barley Hill House, Westport, Co. Mayo.

Kenya, Uganda and Tanganyika : W. E. Lane (VQ4CRH), P.O. Box 570, Nairobi.

Malaya and Borneo : J. MacIntosh (VS1AA), Posts and Telegraphs, Penang, S.S.

Malta : L. Grech (ZB1C), 18, Constitution Street, Zeitun, Malta.

Newfoundland : E. S. Holden (VO1H), Box 650, St. John's, Newfoundland.

New Zealand : R. T. Stanton (ZL3AZ), 17, Martin Avenue, Beckenham, Christchurch.

North and South Rhodesia : R. A. Hill (ZE1JB), P.O. Box 612, Salisbury, S. Rhodesia.

North India : J. G. McIntosh (VU2LJ), Bukhia Tea Estate, Letekujan P.O., Assam.

South Africa : W. H. Heathcote (ZT6X), 3, North Avenue, Bezuidenhout Valley, Johannesburg.

South India : J. S. Nicholson (VU2JP), c/o Kanan Devan Hills Produce Co., Ltd., Munnar P.O., Travancore.

Australia

By VK3EG *via* G6CJ.

The 3.5 Mc. tests were for some reason not very successful. At VK3EG a constant watch was kept from 17.00 to 20.00 G.M.T. during the first week-end, and G2PL near 3500 kc. was heard S4/5 at 1825 and again S6 at 18.40, whilst G6HB on 3500 kc. was S5 at 19.35 G.M.T. Three other stations were heard, and one was thought to be G5VF (R3S5). No QSO's resulted. The writer was in Melbourne during the second week-end, when a watch was kept from VK3MR. EI8B was heard S6/7 at 19.30 G.M.T. Sunday, but no G signals. On the intervening Tuesday 3MR heard two D4 stations at S6. VK4WH kept watch the first week-end, but heard nothing of interest.

The 7 Mc. band is now picking up from 1900 G.M.T. and on 14 Mc. it is now possible to work G as early as 1030 G.M.T.

By VK4GK *via* G2HQ and G2IM.

Queensland B.E.R.U. members welcome Mr. J. T. Love, VK4JL, and Mr. W. O. Laughlin, VK4OL, to membership, and congratulate VK4AP on qualifying for his 28 Mc. W.B.E. BERS345 is now VK4PY.

During the holiday season we were pleased to welcome three of our country members, VK4BO, 4DB and 4EI, the last-named lives about 1,000 miles from Brisbane.

A record VK4 entry for all B.E.R.U. contests is expected.

Irish Free State.

By EI9D.

At the time of writing EI is getting ready for the B.E.R.U. tests. More than usual activity prevails at most stations. EI8G has built a new receiver, which he hopes will help him to do the trick, while EI5F, whose gear has long since demonstrated its capabilities, contents himself by asking for more log sheets !

The I.R.T.S. " B.E.R.U." Cup is up for competition, and will be awarded to the leading EI station in the Senior event.

In the Junior contest it is expected to hear something from EI5J and 7J in Sligo, while EI6L, in Dublin, is known to be getting things ready.

DX conditions on 3.5 Mc. have been very good recently, and EI9D has worked VE and W with 12½ watts, grid modulated 'phone.

Kenya, Uganda and Tanganyika and Nyasaland

By VQ4CRH.

Congratulations are extended to BERS377, who lost no time in obtaining his call sign, VQ4CRI, and BERS137, who is now VQ4BAM.

Arrangements have been made to bring Nyasaland under this Zone Representation, and it will be appreciated if members in that country will forward notes for inclusion in these columns to VQ4CRH.

VQ4KTA is at present away on safari with Lord

Furness' camp and is operating a portable on 7 Mc. for three months under the call of VQ4FUR. He is maintaining communication with VQ4CRE in Nairobi, who is authorised to use the call sign VQ4RUF for the same period.

Malaya and Borneo

By VS1AA.

There has apparently been little activity, as only one report has come to hand, and that from 1AF. 1AA has been putting some more finishing touches to his Broadcast Superhet. He has not touched the key for several weeks owing to pressure in other directions.

We welcome BERS382, J. W. Lucas, of Kuala Lumpur, and wish him the best of luck.

Malta

By ZB1C *via* ZB1C AND G5NM.

The two most important items of news this month come from ZB1C and ZB1H. Both stations have been granted special permission, the former to use the 28 Mc. band, and the latter to use telephony, they are busy rebuilding their transmitters and hope to be on the air soon.

The January meeting of the Malta Group was held at ZB1H's QRA and was well attended. During this meeting final arrangements for the B.E.R.U. Contests were discussed. The following stations are partaking: ZB1C (7150 kc.), ZB1E (7026 kc.), ZB1H (7185 kc.), ZB1J (7105 kc.). All the stations are C.C. and will be on both 7 and 14 Mc. Owing to the contests the February meeting is postponed. This month we extend a hearty welcome to G6UR, who has just arrived from England.

Stations active: ZB1C, 1E, 1H, 1J, 1K, 1L, and 1M.

New Zealand.

By ZL3AZ.

Owing to the fact that his position as a surveyor has taken him out of town for long periods, Mr. C. W. Parton (ZL3CP) has relinquished his post as B.E.R.U. Representative for New Zealand, and the position will now be occupied by ZL3AZ. Thanks are due to ZL3CP for the good work he has done in the past, and it is regretted that his work has forced him to give up his B.E.R.U. duties.

An endeavour is made in the following notes to chronicle some of the recent events and conditions in this country. 28 Mc. has been dead, according to ZL3DJ, a well-known worker on this band. 14 Mc. has taken a new lease of life again, and December saw many new stations poking their heads above the horizon. The second South African station heard at ZL3AZ in six years was ZS6A, calling CQ, on November 21, at 18.00 G.M.T. Alas! He went back to ZU1T.

Recent DX coming in has been I1IT, CR9AB, HS1PJ, HS1RJ, ZP6AB and VQ8AH. ZL3GN deserves a pat on the back for working ZU6P with 25 watts to a single 46 in the final stage. This on 14 Mc. Contacts such as these are very good. Frantic efforts by the rest of the locals resulted in nothing more than a few VKs. 7 Mc. is cluttered up with VK 'phone, making it seem like 3.5 Mc. at times. Consequently most of the DX is done on 14 Mc.

ZL3AZ made a contact with VQ8AH at 13.10 G.M.T. on December 19. This is only the second VQ station ever heard on any band. His signal came through very well indeed, considering that he uses 80 volts dry batteries on a PX4 valve, with an input of 3-4 watts in a TPTG circuit. His signals were RST 457 in Christchurch.

N.Z.A.R.T. has just concluded another year of its life, with the financial position stronger than has usually been the case. This is due mainly to the arrangements made for the printing of their official organ, "Break In." The magazine is printed in Christchurch for Headquarters in Wellington, and arrangements were made whereby the cost of the issue each month is at a set figure. This has permitted of a much better magazine, as the printers handle the whole of the advertising also, thus taking the burden of this item off the shoulders of N.Z.A.R.T. Indications point to an even better year in 1937. At present a ballot is being taken on the matter of 14 Mc. 'phone. Most amateurs here consider that 'phone operation should be allowed, and hopes are felt for the success of the ballot. The result of course will go before the Post and Telegraph Department, who control the operation of amateur radio in this country, and the final decision rests with them.

Rhodesia

By ZE1JB.

Throughout the earlier part of January DX conditions were rather erratic, but on 28 Mc., during a cold spell of about three days in Bulawayo, considerable work was done, especially by ZE1JJ. Many of our amateurs competed in the S.A.R.R.I. DX contest.

ZE1JB has completed a low-power Heising modulated 'phone outfit. JD has, we understand, been transferred to Northern Rhodesia. 1JE and 1JF are believed to be active, but nothing has been heard of them.

ZE1JH has decided to discontinue radio for the time being, and so is merely retaining his call sign. 1JJ has succeeded in working VE3AW on 28 Mc., thus giving him the final contact for his WBE Certificate. He worked about 50 DX stations during January, thirty of them during the cold spell. Most of the contacts were with Europe, although America was coming through. Congratulations to ZE1JJ for being made a member of the A.R.R.I. A1 Operators' Club.

ZE1JN has finished the transformer for his power supply, and hopes to be on the air soon, in the meantime has been doing sporadic 56 Mc. work with 1JS.

ZE1JS has been endeavouring to find new methods of matching his feeders to his full-wave aerial on 14 Mc., and was heard by ZL1HY, but was unable to make contact as ZL1HY was inaudible. ZL1HY seems to hear a lot of stations, and the writer received a letter from him recently, forwarding cards for ZE1JV and ZE1JR, and saying that during April and October last year, conditions for contacts between Southern Africa and New Zealand were good. Most of the Southern Rhodesia amateurs have received cards from New Zealand, but very few of them have succeeded in establishing contact. It is claimed that JJ's contact with VE3WA is the first ZE-VE contact on 28 Mc.

JS was using his 5-Metre Hertz aerial for his 14 Mc. transmitter, and succeeded in working three W stations, which shows that when conditions are satisfactory any piece of wire will do.

ZE1JT is on leave pending transfer to Northern Rhodesia. 1JU is waiting for his new receiver. 1JV is said to be hearing ZL stations regularly on a home assembled superhet originally sold to him by 1JN, although other stations in Umtali using Commercial receivers of some repute are apparently unable to hear the New Zealanders.

ZE1JY is on the air again at last, with a pair of 801's in push-pull in the final, and is having excellent results on 14 Mc. The transmitter works perfectly on 28 Mc., but until his new receiver comes he is doing no work down there. He finds that to get satisfactory results with a 14 Mc. crystal it is necessary to have a high C tank circuit, and that with the usual low C tank the crystal appears to be useless. He now finds that he gets better output direct from the crystal than he previously did when doubling from 7 Mc.

There is an Italian station signing IUP, who seems to be on practically the whole day about 14,360 kc., and appears mostly to be working IBF. He is extremely strong and causes a considerable amount of interference, so it is hoped that the I.A.R.U. is taking steps to have his frequency moved out of the Amateur band. (We have protested about this station to the G.P.O.—Ed.)

South Africa

First Division.—The Italian commercial IUP has been causing terrific interference at the top end of 14 Mc. (This station has twice been reported by us to the G.P.O., who, we understand, are in communication with the Italian Government.—Ed.)

ZS1B has experienced creeping frequency trouble when using a 6L6 which is becoming a prime favourite in South Africa as a C.O. ZS1AH has his new HRO installed.

DX times on 14 Mc. for the period December-January were: ZS and U.S.A., early mornings; ZS and G, 17.00-20.30 G.M.T.

Division Five.—The 7 and 14 Mc. bands have provided plenty of good DX recently, but duplex phone on 7 Mc. spoils many QSO's.

ZS5Z is rebuilding, ZS5U has blown up his RK20, ZS5AK has been active on 28 Mc., ZU5AC and ZS5M are putting out first-class telephony. Most B.E.R.U. members are busy polishing up their outfits for the Contest. The following have been active: ZS5R, ZT5R, 5Y, ZU5AF, 5D, 5Q and 5V.

ZU5Q.

Division Six.—The outstanding feature of the Johannesburg "Golden Jubilee" international DX contest was the excellence of the telephony work on 28 Mc. Stations in Chicago and New York were heard with clarity in Johannesburg, and were worked with ease. This is remarkable in view of the fact that not so long ago it was almost impossible to receive even CW on 28 Mc.

German amateurs were heard in the contest and they appeared to be some of the keenest competitors.

With regard to South African entrants, it is difficult to gain a true idea of the leading figures, though it is stated that the highest scores to date have reached 6,000 points, while the greatest number of prefixes logged is 25!

ZT6X is working regular 14 Mc. telephony schedules, and still continues to add to his list of DX.

ZS6C has built a 56 Mc. transceiver, and hopes to make contact with amateurs on this band. He has been responsible for the excellent A.R.R.U. bulletin telephony transmissions on 7 Mc.

ZT6K has been active on 14 Mc., and reports received on his CW are satisfactory. ZS6Q still maintains his excellent telephony. He contacts coast stations regularly. ZU6P can be heard almost any time of day on 28 Mc. His telephony reaches a high standard of perfection.

ZT6AD is contemplating an increase in his power to the region of 40 watts input.

ZS6T has been off the air, but will be heard again as soon as his new outfit is completed. ZT6AQ has been busy in the DX contest, and from information received it will be some time before he has finished posting his QSL cards. ZT6M, on CW, has contacted numerous W stations on 28 Mc. ZU6V has been on vacation; future activity will be on 28 Mc., with a CW outfit.

Mr. Broadhurst, BERS373, is studying Morse with a view to obtaining his licence.

ZU6V.

South India

By VU2JP *via* VU2AU and EI5F.

Activity in India has been somewhat curtailed owing to the new regulations, but these are being eased in some cases.

VU2AU, who has passed his exam., awaits cards to claim 28 Mc. W.B.E.; his receiver seems to function better on this frequency than on 14 Mc.! 2DF is active as was 2AK in December, but the latter has closed down pending his exam. 2EB is now in G, BERS288 is now 2FH, and awaits contacts with Europe and South America for W.A.C. VU2JP is on 14350 kc. daily, and is carrying out aerial tests, using two Zepps and a current-fed Hertz. Reports will be welcomed.

Interference from IUP on 14350 kc. is causing considerable inconvenience to VU7JP and others working at the H.F. end of 14 Mc.

BATTERY DRIVEN TRANSMITTER—

(*Continued from page* 347.)

Results.

This transmitter has been mostly used on 14 Mc. and the following DX has been worked using 9 watts or less on the P.A. :—W at R6, VE at R6, J at R4, VK at R4, CR9AB at R6 and PK4RK at R6. All Europe and North Africa has been worked at R7. Lest it be thought that G6RI has a wonderful aerial it must be stated that most of these contacts were made with a 33 foot aerial, 35 ft. high at one end and 12 ft. high at the other. The 7 Mc. band has been seldom used because of the great difficulty in erecting a 66 feet wire, but good reports have been received from Europe.

In conclusion, it may be said that a similar rig is being experimented with by 2CCC and results on the artificial aerial show that the R.F. output is the same as that obtained by the writer.

If this little story proves helpful to some other amateur in enabling him to get going it will have served its purpose.

THE MONTH ON THE AIR—

(*Continued from page* 356)

directed on London, which with 1 kw. input should give the effect of 50 kw. on peaks. He wants to put a better signal into G than the broadcast stations; this comes from G6YR. At present 1.7 and 3.5 Mc. operation is limited to flood traffic stations in U.S.A., says W2BDN.

HS1PJ states that all Siamese stations are under the control of their G.P.O. or Navy. 1PU is a 100-Watt MOPA located at Laksi, 12 miles north of Bangkok, and 1RJ is a 50-watter at the Operators' Training School at Saladeng, where 1PJ is also located. The latter is operated in order to communicate with a Siamese student at the Marconi College, Chelmsford, and will soon stop CQing, as Sangiem Powtongsook, the operator, also has to keep B.C. station HS8PJ, and several commercial rigs, on the air.

G5YH has a 2-lb. egg-shaped crystal complete with a curse of its own. It is rumoured that he is using the curse to persuade the Cairo Conference to open up a ham band at 1 kc. so he can use the thing.

Some enthusiasm is shown for GI6TK's "Contacted all Counties" scheme, but the main objection is an apparent lack of transmitters in Hereford, Merioneth, Bute, Dumfries, E. Lothian, Inverness, Kincardine, Kinross, Nairn, Orkney, Ross and Cromarty, Shetland, Sutherland, W. Lothian, Armagh, Fermanagh and Londonderry. Including the Channel Isles and I.o.M., there appear to be 94 counties in the U.K. Has anyone worked more than 70? With which deep thought I must leave you to start the B.E.R.U. preparations. Good luck to the entrants in the Junior, and I hope that those in the Senior had a good time.

Stray.

Gi6TK (Belfast) would appreciate reports on his 14:384 and 14.084 kc. telephony transmissions, all reports will be acknowledged.

DISTRICT NOTES—

(*Continued from page* 380.)

proved unsuccessful it has been decided to continue to hold the fortnightly meetings in the Maxwell Hotel, Galashiels. Mr. T. Purves, BRS2280, has been issued the call 2CGY.

"H" District.—At the time of writing no report has been received from this district.

Northern Ireland

We have to welcome GI5SJ as Belfast town representative, and hope the members in his area will accord him their active support. In future all information for these notes should be submitted to 5SJ by the 24th of each month, so that he can forward same to the D.R. by the 26th.

GI6YW has completed building an all mains single signal superheterodyne. It is a really "hot" job, and has a remarkably low noise level.

GI6TK asks us to state that he is the Northern Ireland representative for the World Friendship Society of Radio Amateurs, from whom particulars can be obtained. He records visits from ex-VU2BA and G5CK.

Strays

G6PJ will be pleased to send a card to any transmitter, BRS or A.A. who has failed to receive a reply to a QSL sent.

The Italian radio amateur, Dr. Ing. Ognibene Roberto, informs us that his new QRA is Via S. Nicolao N. 1, Milan.

EMPIRE CALLS HEARD.

C. R. Emary, c/o 37, Delvino Road, Fulham, London. (Station at Haifa, Palestine.) From November 17 to December 14, 1936. 0-v-1.

14 Mc.: g6xw (579), 5hh (569), 2ft (448), 8ac (449), 6yl (568), 8ct (578), 2yb (559), 6td (569), 6xi (448), 5ss (558), 5bj (448), 2zq (559), 5ka (569), 5jo (569), ei3J (579), zu6l (559), gi6tk (578), zl2jq (579), zl1dm (569), gi5sj (459), vq4snb (557).

7 Mc.: g5iw (579), 8hi (458), 8gd (469), 5nk (579), vk2px (559), vk3ky (578x).

From October 26 to 31. Rx 0-v-2.

14 Mc.: G2ol (958), 2it (956), 2jf (858), 2yb (955), 2lk (856), 2lu (844), 2io (844), 2yl (844). G5xw (955), 5sr (958), 5kj (957), 5ri (959), 5kf (957), 5rv (957), 5mi (956), 5yg (957), 5yv (956), 5jx (956), 5jo (957). G6xf (945), 6jz (955), 6xw (955), 6zn (944), 6cj (956), 6rb (957), 6uf (956), 6py (958) 6bm (955). G8as (845). ZL1ke (845), 1bc (955) 2cw (955), 2ou (94 4/5), 3jx (944), 3kg (934) 4bq (945). VK6fl (845), 2hf (944), 3eg (955) 3mr (3eg), 2fx (945), 2eg (944). ZS6aj (946) ZU6af (945).