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# BULLETIN

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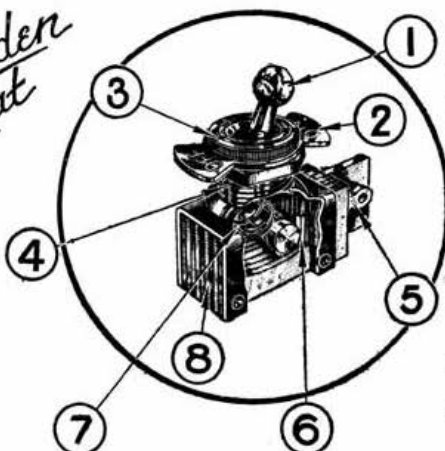
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## THE POST WAR AMATEUR MARKET

WITH Victory assured, and with our plans for the restoration of licence facilities well advanced, the time is opportune to consider what steps are likely to be taken by the radio industry to meet the demands of British amateurs. Prior to the war very few British manufacturers showed any real interest in the amateur market in spite of the efforts made by the Society to boost British-made components and valves. In those days the demand was perhaps not sufficiently great to justify the expenditure of considerable sums of money on the development of specialised lines, but if our information was correct, and we had no reason to question it at the time, several British concerns made more than a bare living from the distribution of American short wave equipment and valves. It is true that the price factor had a considerable bearing on the matter, especially in regard to valves, but as we then contended the demand existed and *could* have been met by a keenly interested British radio industry.

In 1939 the home membership of the Society numbered 3,000. To-day that figure is within easy reach of 10,000, which means that some 7,000 new members will soon be clamouring for valves, components, test sets, receivers and the like. In addition, the majority of pre-war members will wish to start clean with a brand new station embodying many of the new developments which have been brought to light during the present emergency.

We do not know what guarantees are required before a manufacturer will embark on a programme of specialised development, but we are of the opinion that our 10,000 members will spend a considerable sum of money—£250,000 would probably be a very conservative gross figure—during the first three years after licences are restored.

If this market is worth capturing and holding—and we believe it will be—then a new and progressive policy, based on a full appreciation of the value to the community of Amateur Radio, must be adopted. Design, efficiency, and selling price are the three features which will make or mar the post-war amateur market for British manufacturers.

During the war vast quantities of well designed and efficient specialised radio gear have been produced in British factories. Much of this gear will prove of considerable value to amateurs if it can be made available to them at a reasonable price.

Already the Council of the Society, with an eye to the future, has made a start to interest the radio industry in our problems by inviting the membership to suggest items of equipment which they would like to see available after the war. The suggestions have all

been carefully studied and a composite list is now in course of preparation. At an early date the list will be circulated to the radio trade, and every manufacturer known to be interested will be given an opportunity of discussing his plans privately with representatives of the Society.

Present indications tend to show that many firms, who before the war did not cater for the amateur market, will be glad to co-operate when peace returns. We feel sure they will not regret their decision.

In this issue we publish a letter from Mr. James Hunter (Scottish Records Officer) in which he focusses attention on several aspects of the problems facing British manufacturers. To his contribution we would add a plea for more progressive advertising. A glance through any American journal catering for radio amateurs will show that already they are preparing to offer the best their factories can produce. We have always considered that, generally speaking, American advertisements "knock spots" off those prepared by British firms. This applies particularly to technical advertising. One or two British firms have in the past gone out of their way to prepare really helpful advertising copy for the BULLETIN, but many others have followed stereotyped lines and have failed to appreciate that Society members are not interested in announcements of the type usually associated with National advertising.

Existing restrictions prevent us from accepting more than a small percentage of the advertisements which we know would be offered to the Society if more paper was available, but the time will come, and we hope it is not too far distant, when we shall be able to devote many pages in each issue to announcements from those companies who are anxious to assist the amateur. The more informative their announcements, the better pleased we shall be. In the meantime we leave it to our members associated with the radio trade to do everything in their power to ensure that when licences are restored, British amateurs are given the chance to purchase well-designed and efficient components, valves and assemblies at prices which compare favourably with those of foreign competitors.

### What Fun!

We learn from a report recently published by the United States Federal Communications Commission in Washington, that it is proposed to assign the band of frequencies between 460 Mc/s and 470 Mc/s to a new Citizens Radio-Communication Service. If the proposal is accepted, any American citizen will be allowed

(Continued on page 160)

# THE PROPAGATION OF RADIO WAVES

By B. H. BRIGGS (2FJD)\*

## PART IV

*Ground Wave, Sky Wave. Propagation of Long, Medium and Short Waves. Skip Distance. Choice of Frequency. Effect of the Sunspot Cycle. Sporadic-E Reflections. Fading. Scattering. Echoes.*

**I**N this Part it is proposed to apply the results of the preceding articles on the nature of the Ionosphere, to practical radio transmission.

The energy radiated from a transmitting aerial can be divided into two parts, a *ground wave* which travels over the surface of the Earth, and a *sky wave* which travels upwards away from the Earth, and which may, if conditions are suitable, be reflected down again from the ionosphere. The propagation of the ground wave depends upon the wavelength, and upon the electrical properties of the ground over which it is travelling. Its range is usually short, being longer over sea than over land. The sky wave is governed by the ionosphere and so by the sun, and it is the means by which long distance transmission is effected. The sky wave is reflected again when it returns to the surface of the Earth, and so it continues outwards from the transmitter by a succession of "hops", or successive reflections from the Earth and the ionosphere (Fig. 14).

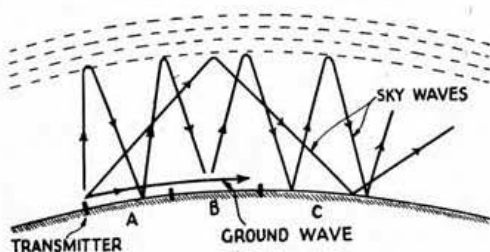


Fig. 14.  
Propagation of long waves. Region A is dominated by the ground wave, and C by the sky wave. In region B both ground wave and sky wave play a part.

At a given distance from the transmitter, waves can arrive either by a few long "hops", or many short "hops." There is a loss at each reflection, so that the strongest sky wave arriving at a given point will be the one which has arrived by the least number of reflections, and this will be the one which left at the smallest angle to the Earth's surface. This is another reason for desiring a low angle of radiation from the transmitting aerial for long distance transmission. The maximum possible distance which can be covered with one reflection depends upon the height of the reflecting layer. With angles of radiation obtainable in practice it is about 1,600 Km. for the E layer, and 3,500 Km. for the F<sub>2</sub> layer. At greater distances than this, waves must always arrive by more than one reflection.

### Propagation of Long Waves (20-550 kc/s.)

These low frequencies are characterised by a long ground wave range. The ground wave extends up to 1,000 Km., so that transmission is very reliable and subject to little variation up to this distance. Beyond 1,000 Km. the sky wave begins to predominate. As has been shown, the ionosphere behaves like a conductor of electricity for long waves, and there is

very nearly a true reflection of the sky wave from the lower edge of the ionosphere, as from a metallic reflector. Owing to the small penetration, there is very little attenuation of the sky wave in the ionosphere. The frequency is always below the critical frequency of the layers, so that sky waves are returned for all angles of incidence. The conditions of long wave propagation are summarised in Fig. 14.

### Propagation of Medium Waves (550-1,500 kc/s.)

These frequencies are about equal to the collision frequency for the E layer, so that the layer behaves in a manner intermediate between a conductor and a dielectric. Attenuation of the sky wave is so heavy during the day that it is completely absorbed in the layer and never returns. During the daytime, therefore, the range is limited to that of the ground wave, so that these frequencies are only suitable for short range services, such as broadcasting. The range of the ground wave is less than on long waves, and becomes progressively smaller as the frequency is increased. At night, when the E layer disappears or becomes much more weakly ionized, longer distances may be covered.

There is particularly heavy absorption of the sky wave around 200 metres, owing to the resonance effect of the electrons in the Earth's magnetic field.

### Propagation of Short Waves. (1,500 kc/s.-30 Mc/s.)

The ground wave range is now very small, approximating to the "visual" range. We rely, therefore, on the sky wave for transmission over any other than very short distances. Fortunately, the attenuation of the sky wave in the ionosphere becomes rapidly less as the frequency is raised, and at the high frequency end of the range it is almost negligible.

The ionosphere behaves like a dielectric for these frequencies. There is only a gradual bending, and the sky wave travels a considerable distance in the

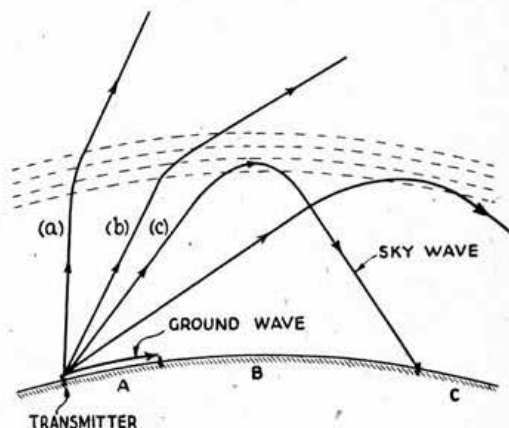


Fig. 15.  
Propagation of short waves. A.—Region where only ground wave is received. B.—Region of no signals (Skip zone). C.—Region where only sky waves are received.

\* 20 Lindley Drive, Gt. Horton, Bradford, Yorks.



ionized region. Reflection is no longer possible at all angles of incidence, but only if the wave strikes the layer sufficiently obliquely. Fig. 15 shows the waves sent out from a transmitting aerial at different vertical angles. For simplicity, only a single layer is shown. For waves (a) and (b), the bending is insufficient, and (c) is the first wave to be returned from the layer. From the point where the ground wave dies out, to the point where the first sky wave is returned, there is a region in which no signal can be received. This is known as the *skip zone*, and the distance from the transmitter to the point where the first sky wave is returned, is known as the *skip distance*.

Consider first how, at a given time, the skip distance varies as the transmitter frequency is altered. At some low frequency (the critical frequency of the layer) reflection will be possible at vertical incidence; for this frequency the skip distance will be zero. As the frequency is raised, the angle necessary for reflection becomes more oblique, and the skip distance increases. Eventually, only waves leaving at the lowest possible angle to the Earth's surface will be reflected. Higher frequencies than this will never be reflected, and so are useless for long distance transmission. This upper limit to usable frequency is in the region of 30 Mc/s.

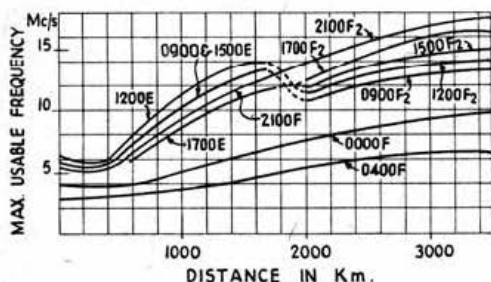


Fig. 16.

Maximum usable frequencies for various distances of transmission.  
Lat. 39° N. June, 1933.

Consider, also, how the skip distance for a transmitter working on a fixed frequency will vary at different times. Reflection will be possible for the highest angles of radiation, when the ionization in the layer is a maximum, and the skip distance will then be least. The skip will be greatest when the ionization has its lowest value. Thus, the skip distance will be less during the day than during the night, less in summer than in winter, and less at sunspot maximum than at sunspot minimum. (This generalisation ignores the anomalous behaviour of the  $F_2$  layer).

### Choice of Frequency for Transmission over a Given Distance

As mentioned previously, it is always advisable to use the highest frequency which the reflection conditions of the ionosphere will allow, for attenuation of the sky wave in the ionosphere is then a minimum. The highest frequency which can be used for communication over a given distance is determined by the skip distance, for it is no use choosing a frequency for which the skip distance is too long, so that the point to which it is desired to transmit lies in the skip zone. It is requisite, therefore, to have curves showing the skip distances for different frequencies at different times, and these must include the effect of all the ionosphere layers. Such curves can be calculated from measurements of critical frequency and virtual heights of the layers. The only difficulty is the large number

of curves required, for a curve is really required for each hour of the day, for each month of the year, and for each year of the sunspot cycle. Two sets of curves for different times of day are shown in Figs. 16 and 17. They represent summer and winter conditions for the last sunspot minimum year, 1933, and should apply fairly well at present. They give the maximum usable frequency for different distances of transmission. The reasons for the general shape of the curves should now be clear. Normally a frequency a little lower than the maximum usable frequency will be chosen, to allow a safety factor for small day-to-day variations. (The curves are *averages* for the months of June and December, and individual days of the month are normally within 15 per cent. of the average, except for disturbed periods. The effect of ionospheric disturbances will be dealt with in the next article.)

There are a few points to note in using these curves. The time marked on each curve is the *local* time at the point where reflection from the ionosphere is taking place. For a "single hop" transmission this will be half the distance of transmission away, and the time at the transmitter must be corrected accordingly, one hour being subtracted for each 15° of longitude which

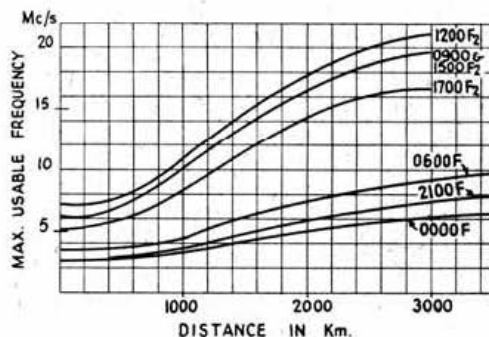


Fig. 17.

Maximum usable frequencies for various distances of transmission.  
Lat. 39° N. December, 1933. (Figs. 16 and 17 taken from the Report  
of the C.C.I.R. Committee on Radio Wave Propagation.<sup>1</sup>)

the point of reflection is West of the transmitter, or added if the point of reflection is East of the transmitter. The *latitude* of the point of reflection should be allowed for as well, but as curves for all latitudes are not usually available, the best one can do is to make an approximate estimate of whether the ionization will be higher or lower than that indicated on the curves, bearing in mind the position of the sun. For E-W transmission this problem does not arise. The curves extend up to 3,500 Km., the maximum distance for one reflection. For distances greater than this, two reflections will be necessary, and the appropriate skip distance will be half the distance of transmission. The local times at each point of reflection must be worked out, and the maximum usable frequency at each point can then be found from the curves. The *lower* frequency of the two will be the correct one to use.

From the amateur point of view, owing to the limited choice of frequencies available, the curves are mainly of interest in showing what conditions may be expected on any amateur band at a certain time. As an example of how the curves may be used to analyse the reflection conditions in the ionosphere at any time, one example will be considered in detail. Consider the case of the 14 Mc/s. band at 12:00 hours G.M.T., during June, 1933 (see Fig. 16). The 14 Mc/s. frequency line strikes the curve marked 12:00 E at a point giving a distance of 1,500 Km. This is, therefore, the skip distance for the E layer. This distance is very nearly the maximum possible for one reflection by the

E layer, showing that the ionization is only sufficient to reflect waves which strike the layer at a very small angle. Radiation at higher angles will penetrate the E layer and be reflected from the F<sub>2</sub> layer, which has a higher ionization density. This corresponds to the second point of intersection of the 14 Mc/s line with the 12.00 curve, which occurs at 3,500 Km., the curve being now marked F<sub>2</sub>. This again happens to be near the maximum for the F<sub>2</sub> layer, so that only radiation at small angles is capable of being reflected. Radiation at high angles will penetrate both layers. The conditions are summarised diagrammatically in Fig. 18.

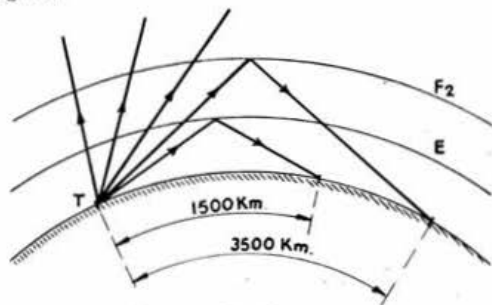


Fig. 18.

Reflection conditions of the ionosphere for a frequency of 14 Mc/s at 12.00 G.M.T. during June, 1933.

### Effect of Sunspot Cycle

To show up the effect of the sunspot cycle on radio conditions, and in particular, on the amateur bands, Table II was drawn up. It shows the skip distance for the various bands at four standard times; summer day (12.00 hours during June) winter day (12.00 hours during December), summer night (00.00 hours during June) and winter night (00.00 hours during December). These are given for sunspot minimum (1933) and sunspot maximum (1937). It will be seen that it is roughly true to say that any band at sunspot minimum is equivalent to the next higher frequency band at sunspot maximum. Thus, e.g. 7 Mc/s. at sunspot minimum has similar properties to 14 Mc/s. at sunspot maximum. At sunspot minimum the range of usable frequencies is at its lowest, so that congestion in the short wave bands is very bad.

### The Amateur Bands

The following remarks summarise the propagation conditions of the various amateur bands. (Refer to Table II.)

### 1.7 Mc/s.

The sky wave is completely absorbed in the ionosphere during the day, so that only short distance, ground wave propagation is possible. At night there may be some waves reflected, but transmission over more than a few hundred miles is exceptional. When reflection does take place, the frequency is always below the critical frequency of one of the layers, so that there is no skip distance.

### 3.5 Mc/s.

There is still normally no skip, so that the band is suitable for short distance working by means of sky waves. Longer distances can be covered under conditions of low ionization.

### 7 Mc/s.

At sunspot maximum there is no skip (except at night in winter), so that short range working is possible. The band has also good long distance properties, but these are usually spoilt by short range interference. At sunspot minimum the band becomes a true long distance band, the skip being always greater than 300 Km., so that local signals are absent.

### 14 Mc/s.

This is always a long distance band when it is "open," but reflection is not possible for long periods at sunspot minimum.

### 28 Mc/s.

This band is on the fringe of usable frequencies. It has marvellous long distance properties under some conditions at sunspot maximum, but becomes quite dead at sunspot minimum.

### 56 Mc/s.

Reflection by the regular ionized layers is never possible on this band.

### Effect of Sporadic-E Ionization

The patches of high ionization in the E layer, which occur at certain times, can cause reflection at higher frequencies than is possible from the regular ionized layers. The effect is specially noticeable on frequencies above 30 Mc/s. where sky waves are normally absent, and it can cause reflection up to about 100 Mc/s. Transmission on these frequencies by sporadic-E reflection is very erratic, because it depends upon a suitable patch of ionization being in a favourable position relative to transmitter and receiver. It is normally limited to one reflection, for the chance of a second patch being in a suitable position for a second

TABLE II.

SKIP DISTANCES FOR THE AMATEUR BANDS. DISTANCES IN KILOMETRES. X INDICATES NO REFLECTION.

Amateur Band (Mc/s.).	SUNSPOT MAXIMUM				SUNSPOT MINIMUM			
	Summer Day	Winter Day	Summer Night	Winter Night	Summer Day	Winter Day	Summer Night	Winter Night
3.5	0 F <sub>2</sub>	0 F <sub>2</sub>	0 F	0 F	0 F <sub>2</sub>	0 F <sub>2</sub>	0 F	1,000 F
7	0 F <sub>2</sub>	0 F <sub>2</sub>	0 F	500 F	500 E	300 F <sub>2</sub>	1,600 F	3,500 F
14	1,000 E	0 F <sub>2</sub>	2,200 F	2,000 F	1,500 E	1,400 F <sub>2</sub>	X X	X X
28	X	1,500 F <sub>2</sub>	X	X	X	X	X	X
56	X	X	X	X	X	X	X	X

reflection is very small. The presence of sporadic-E ionization makes itself felt on lower frequencies by a great reduction of skip, and on some occasions there may be a complete absence of skip over most of the short wave band, the critical frequency of the E layer being raised locally to a value as high as 12 Mc/s.

### Fading

The signal arriving at the receiver in long distance transmission is not a single ray, but the resultant of many rays arriving by different paths. The resultant signal depends upon whether the different rays arrive in or out of phase. Since a change of path length from transmitter to receiver of only half a wavelength (which may be only a few metres in a total path of thousands of Km.) will change the phase of a ray by  $180^\circ$ , it is clear that any slight instability in the ionosphere will cause violent fluctuations in the received signal. Fading due to this cause is very common with short wave signals. On medium waves violent fading can similarly be produced by interference between ground and sky waves. Fading can also be produced on short waves if the plane of polarization of the received wave is continually changing, as this causes a changing e.m.f. to be induced in the receiving aerial.

Owing to the extreme sensitivity of the received signals to the path length of the different rays, frequencies only a few hundred cycles apart can fade quite independently. Now a modulated wave consists of a band of frequencies, there being a carrier wave with side-bands on each side corresponding to the different audio frequencies. If any of the side-bands disappear temporarily, due to fading, the corresponding audio frequency will be missing from the modulation of the received signal. Distortion will, therefore, be produced on a telephony transmission. This effect is known as *selective fading*. It produces a very characteristic distortion during deep fades of a modulated signal.

The simplest way of combating fading is the use of automatic volume control in the receiver. This is not a complete cure, however, for the following reasons:—

(1) Its range of action is limited because it cannot deal with a signal which fades below the noise level.

(2) It cannot remove the distortion due to selective fading.

(3) It cannot be used for C.W. reception.

Fading can be minimised by suitable design of the transmitting or receiving aerials. If either or both of these have sharp directivity in the vertical plane, only signals arriving at a certain angle will be effective, and the interfering rays travelling by different paths will tend to be eliminated. It is found that the signals received in different aerials spaced 10 or more wavelengths apart fade independently. *Diversity reception* makes use of this fact by adding the signals from three or more spaced aerials, thus obtaining a substantially constant signal under all conditions.

### Scattering Effects

Signals are rarely completely absent in the skip zone of a transmitter, and there is usually a weak erratic signal to be received in this region. This is due to random scattering of the wave from the point where it enters the ionosphere. This scattering is greatly increased when sporadic-E ionization is present.

### Echoes

The most frequent type of echo is that due to signals travelling completely round the Earth, and so arriving back  $1/7$ th second later than the direct wave from a fairly close transmitter. These echoes are very distinctive, and can never be mistaken when they have once been heard. Other longer period echoes have been observed, some with a delay of many seconds. The cause of these is still speculative.

### References

1. Report of C.C.I.R. Committee on Radio Wave Propagation, *Proc. I.R.E.*, October, 1938. (This contains a set of curves of maximum usable frequencies for the years 1933–1937, i.e. the rising portion of the sunspot cycle. These should form a good basis for the prediction of radio conditions for the years 1944–1948, which are the corresponding years of the next cycle.)
2. "Distance Ranges of Radio Waves," *T. & R. Bulletin*, June, 1941.

(To be concluded.)

## Another Compact Broadcast Receiver

By M. FELIX (BRS4318)

USING a slightly modified version of the circuit described by G3PL in the September 1944 issue, it is possible to cover the frequency band 1,400–600 kc/s. The performance at the low frequency end is still adequate, since in a district at present notorious for poor reception the two Home and the two Forces channels can be received at reasonable strength on a 15 ft. aerial.

The coil is wound on a  $1\frac{1}{2}$  in. former, the primary consisting of 105 turns 28 S.W.G. enamelled with no interturn spacing. The reaction winding has 35 turns 38 S.W.G. wound on the "earthy" end with a thin sheet of cellophane between it and the main coil. The tuning capacity is a midget 250  $\mu\mu\text{F}$  condenser.

It was expected that the 9 volts H.T. specified by G3PL would be insufficient to provide reaction over the wider waveband, and so this was raised to 22 volts. As however it was then found impossible to stop the set oscillating, the H.T. was dropped to 12 volts by a 10,000 ohm resistor. To obtain smooth

reaction, a  $0.01\mu\text{F}$  condenser is used between H.T. and earth.

Experiments with the R.F. grid-leak showed that between 1 and 2 megohms gave the best results. Increasing it to 10 megohms caused the stage to burst into A.F. oscillation.

The set is built, with its batteries, into a metal cabinet  $8\frac{1}{2}$  in.  $\times$  6 in.  $\times$   $5\frac{1}{2}$  in. deep, which is larger than is necessary;  $7\frac{1}{2}$  in.  $\times$  6 in.  $\times$   $4\frac{1}{2}$  in. would be a tight fit. Until the case was earthed hand capacity was troublesome.

Good results over the whole waveband can be obtained with 1.5 volts L.T. and 7.5 volts H.T. L.T. voltages lower than this were not tried, but the set goes "dead" when the H.T. drops to 6 volts.

### OUR FRONT COVER

THE part that is being played in the war effort by "AVO" Electrical Testing Instruments is such that it can be truly said that they are actively engaged on the fighting and factory fronts. They are sharing a great responsibility with a proud sense of duty and high confidence in the future. It will be appreciated that, under present circumstances, orders can only be accepted which bear a Government Contract Number and Priority Rating. Enquiries should be addressed to The Automatic Coil Winder & Electrical Equipment Co., Ltd., Winder House, Douglas Street, London, S.W.1. Telephone: Victoria 3404-8.





correct plug and socket came to hand. The bunch of 1 watt resistances shown towards the top right of centre were fitted to replace a faulty 2,000 ohms 8 watts resistance in the KT66 screen supply.

It was anticipated that there would be some attenuation, due to the vastness of the hangar, which if confirmed would mean that extra amplification of the lower frequencies would be required if a good overall response was to be maintained. As Baker's (Selhurst) Radio auditorium type loudspeakers have a very free speech coil and cone and are able to handle considerable power, these units were chosen and

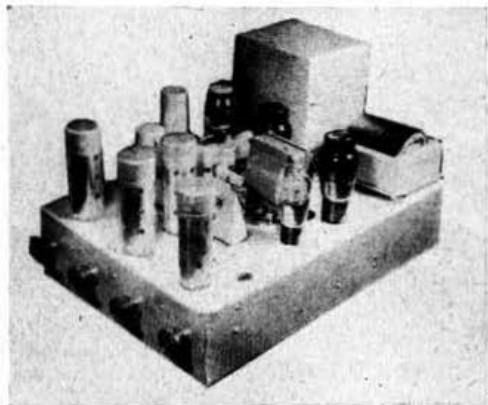


Fig. 2.  
Original chassis layout before modification. The tone control switches are mounted either side of the mixer valve. The supply transformer is in the screening box.

fitted into baffle boxes 18in. square lined with rubberised hair padding 3in. thick. This padding material appears to be very suitable as no box resonance has been apparent since the equipment was installed. The loudspeakers were mounted one on each side of the proscenium and 9ft. high. For the stage installation one of the microphones was hung over the centre front stage 6½ft. high, the other two were placed 7ft. high and half way towards the tabs and about 5ft.

from the front of the stage. The latter positions have been found from experience to be ideal for all normal shows and plays, whilst the centre microphone is just right for comedians, compères and straight vocalists. A fourth microphone of the stand type is available for crooners who prefer to caress a stand when doing their act! It is also used for off-stage work.

### Results Achieved

The time spent on the chassis was fully justified when the amplifier was tested, the reproduction of gramophone records being excellent and speech via the microphones uncannily real. Mains hum was inaudible, with complete stability of all circuits. The level of the gain controls was approximately the same

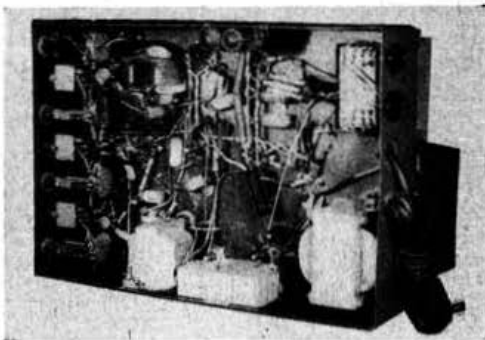


Fig. 3.  
Under chassis wiring. The microphone gain control potentiometers are below their respective jacks, with the midjet transformers over the valve holders.

for both microphones and pickup and the volume in the head 'phones ideal for monitoring purposes.

With only two hours to spare before the curtain went up, the first real test was conducted and to the relief and delight of all concerned it was an outstanding success. The show went off perfectly and reports from the audience then, and from every performance given since, have shown that everyone

(Continued on page 160)

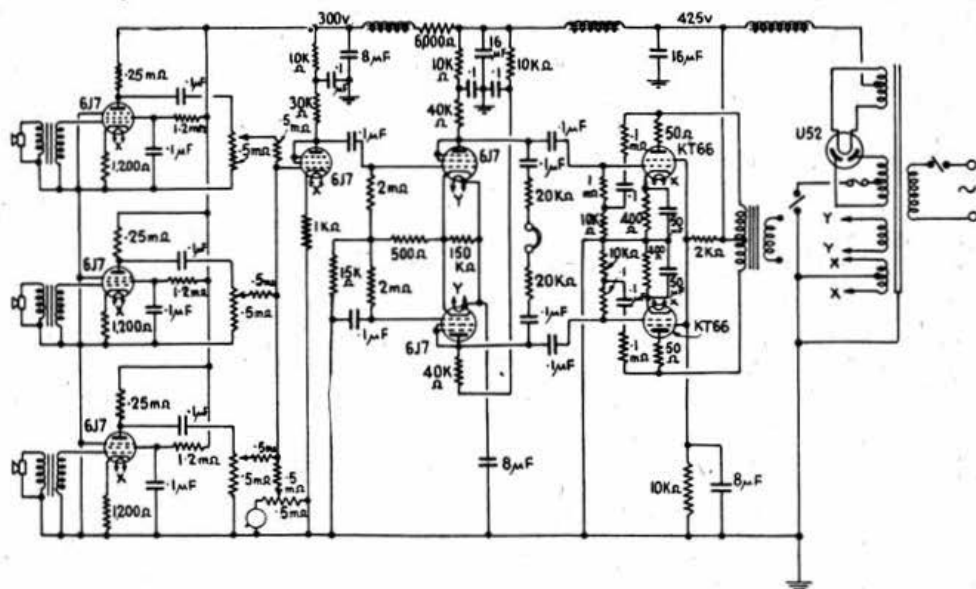


Fig. 4.  
The simplified circuit now in use.

## KHAKI and BLUE

## Cairo Conventionette

We have been advised by Mr. W. E. Marsh, SU1WM, and Major Ken Ellis, G5KW, that another Conventionette has been arranged to take place in Cairo on May 6. A most ambitious programme has been arranged including a lecture by Major E. Vast on recent developments in quartz plate processing. Frequency standards are also to be discussed.

Neither of our correspondents gives the venue for the meeting, but we surmise it will be held at the Bystander Hotel.

\* \* \*

● South London members will be interested to hear that S./Sgt. George Chiffey, G3ZJ, is now attached to the E.N.S.A. Film Service operating in the M.E.F. He wishes to be remembered to all old friends in the London area.

● L./Cpl. R. T. Jenks, 2DYZ, R. Sigs., writing from his home address in Old Colwyn, N. Wales, whilst on leave from the B.L.A., reports that a new venue has been arranged for the Reseau Belge meetings in Brussels, but no details are yet available. Ron sends his 73 to G2GV, G1SHU and all other old friends.

● L./Tel. Victor Sims, G5VS, who served on one of the first minesweepers to enter the Normandy area on "D" day, sends 73 to all old friends in Essex. He seeks news of Fred Mayer, G2LZ. Vic's present address is 14 Bridge Street, Maidenhead, Berks.

● Sig. P. Gammon, G3VB, R. Signals, reports that another meeting of amateurs took place in Gibraltar on February 6 when ZS1CK demonstrated some aircraft radio gear.

● Cpl. J. D. Baker, BRS3766, who is with H.Q. Force 139, C.M.F., wishes to be remembered to all old friends. BRS3468 and another B.R.S. member are serving with him on his unit.

● Apropos the inquiry made in our last issue, we understand from Mr. C. Simons, G5OV, that Lt.-Col. Mustill, XZ2DY, is returning to this country on three months leave. Prior to that his family address was Brookside, Kinchi Terrace, Shillong, Assam.

● Q.M.S. W.O. II H. Caunce, G6KS, now with the B.L.A., reports meeting PA0HB, ON4ED, ON4NA, ON4AH, ON4WX and ON4AW. He also mentions that ON4ED and 4AH are running broadcast stations in Antwerp and Courtrai respectively. During a recent visit to 4AW he was shown souvenirs of visits made by 4AW to London before the war. The latter wishes to be remembered to G2YL, 20A, 6DH, 8KZ and other old friends.

## Liberated Amateurs

P. Mémient, of Poitiers, F8OM, reports safe and well by letter to G8LG. His house was badly damaged in an R.A.F. raid and like many Londoners, spent the winter with no glass in his windows, unlike them, however, he also had no fuel! All his equipment was stolen by the Gestapo. He was active with the "Maquis" when he was obliged to leave home. His friend, F3BO, was seized by the Germans and was deported. So far no news has been received of his fate.

G8KZ reports having heard from ON4SG, of Antwerp, who has been bombed out of his home, but is safe. He hints at a big story of underground activity by our Belgian friends and particularly mentions ON4AA, 41F and 4SV. He himself spent several months in a German prison in company with 4BX. 41F is now in Brussels with the Canadian Army and has done sterling work with "AS"—The Secret Army.

Another card comes from Johnny Simons, ON4AW, who reports that all Antwerp amateurs are well, although some have suffered bomb damage, but there have been no casualties.

G8KZ has also heard from ON4CC, who was still safe in his home at Schilde on January 11. In his letter, Arthur de Smet said, "Next time you pass Broadcasting House, just raise your hat and thank the chaps inside for me and thousands of Belgians and Europeans!"

J. A. Rouse, 2AHL, who has been serving on the Continent with Air Formation Signals reports that the Mons Radio Club under the leadership of Mr. R. Cucke, ON4FS, 17 Rue Jules Colnet, Mons meets regularly. Members located near to Mons should make a point of contacting Mr. Cucke. 2AHL also reports that ON4MN, 2PC, 4SK, 4SS and 4VP have survived the occupation and are fit and well.

## U.S.K.A. Again Active

We are happy to announce that the Swiss National Society U.S.K.A. is again in active operation under the Presidency of Dr. R. Stampfli, HB9AD. Other executive officers are: Vice-President, E. Iselin, HB9BJ, Secretary, Dr. W. Frei, HB9AC, Treasurer, J. Egli, HB9DV, Editor, F. A. Bech, HB9CE. QSL Manager, F. Roder, HB9DZ. The official journal of the Society, *Old Man* has also re-appeared. Dr. R. Stuber, HB9T, who sends this news states that the Swiss Government has given an assurance that licences will be re-issued "Immediately after the armistice."

Dr. Stuber wishes to be remembered to his many friends in Great Britain, and looks forward to seeing many of them at the R.S.G.B. Victory Convention.

● L.A.C. F. Monk, BRS4297, 180 Wing, R.A.F., S.E.A.C. recently met W9MCM and W6QGY whilst paying a visit to the Armed Forces Radio Station, VU2ZU. Monk seeks news of G3MI and sends greetings to G3UC, 4PA, 5XD, 5ZN, 6VR, 6XN, 8ON, 8GG and all other old friends.

● Major Ken Ellis, G5KW, informs us that regular monthly meetings continue to be held in Cairo and that an average attendance of 15 is being recorded. Ken himself is still busy with the M.E. Forces Broadcast network and hopes soon to have two outside broadcast and recording vans in operation.

● S. A. Tyzack, J.R. BRS5257 (whose address is Mess E6, Box 1, H.M.S. "Garuda," c/o G.P.O., London) sends 73 to G8KK, 8VV and 81F. He has visited Colombo and India, but ham contacts have been few and far between.

● Lt. (E.) A. J. R. Pegler, R.N., BRS3182, now serving at the Admiralty after having spent time at sea on Arctic convoys, Mediterranean "trips" and a visit to the U.S., wishes to be remembered to G2XC, 6NZ, 8JB, 8WC, 8LO and all other old friends of the South Hants Radio Transmitting Society.

● Members stationed at, or passing through, No. 1 S.D. are reminded that a meeting is held there on the third Tuesday in each month at 7.30 p.m. W./O. C. Ranft, can be contacted for further details.

● Old friends of J. Cairns, G3UC, will be glad to hear that he is now holding commissioned rank (Lieutenant) in the R. Signals. He is serving at Signal Training Centres (1), Bangalore, India Command, at which address he will be pleased to receive letters.

● Cfn. J. R. Endall, BRS4692, whose address is R.E.M.E., N.A.T.M.U. at'd School of E.M.E. Kenada Sub-Area, East Africa Command, would like to contact local members of the Radio Society of East Africa, if that Society still functions.

During his journey out from England he organised an R.S.G.B. meeting which was attended by 12 members including G5MI, 2DZI, BRS5726, 6421, 6836, 7866 and 8319.

● Friends of H. E. Timmings, BRS5100, will be glad to hear that he has been commissioned as Sub-Lt. (Special Scientific) R.N.V.R.

● Sgt. W. Griffin, G6FJ, after spending just over four years in various parts of the Western Hemisphere, left Trinidad last January and is now living at Windy Heath, Lindow Common, Wilmslow, Manchester. He seeks news of Messrs. Fereday, G6FY, and Seagood, G6SG. He expects to be stationed near Southampton during the next few months.

## News from the Kreigies

● The following extract from a card recently received from Capt. Peter King, G4GY, who is in Oflag 79, will interest his friends and all who have made donations to the R.S.G.B. P.O.W. Fund. "Have just received a cigarette parcel from you and cannot say how truly grateful I am for it and the thought that lies behind it. Derek Matthey is the only other ham here but I hear that Mike Quartermaine at VIIB is still fit and busy in the theatre as I have been here and in Italy."

● Norman Druce, BRS2600, writes under date of January 8 to thank the Society for numerous parcels of cigarettes, etc., received by him at Lager XVIIA. He is in good health and wishes to be remembered to all old friends.

● Writing under date of February 2, Capt. E. S. Shackleton, G6SN, acknowledges safe receipt of tobacco parcels. "Shack" reports "all very cheerful and fit, but weary of the whole business. Looking forward to a long yarn soon." He was in Oflag IX A/2 at the time.

## Repatriated

We are pleased to announce that W/O. K. B. Wood, R.A.F., BRS 6332, of 163 Lee Street, Oldham, Lancs., has recently been repatriated. Mr. Wood, who joined the Society, while in Germany wishes to record his thanks to all members who wrote to him whilst a prisoner of war.

## Can you Help?

Mr. E. W. J. Theobald, 2DWI, 10 Eastbury Road, Fishponds, Bristol, is in search of a text book dealing fully with the basic principles of design and construction of mains transformers, push-pull output transformers and L.F. chokes.

## B.S.W.L.

Congratulations are offered to the British Short-Wave League on completing their tenth year of existence. Founded in 1935 by the late F. A. Beane, 2CUB (who lost his life on active service two years ago), the League has, in spite of many war-time difficulties, continued its activities, and its publication *Short Wave Review* still appears regularly each month.

The address of the Honorary Secretary (Mr. N. Stevens) is 53 Madeley Road, London, W.5. The annual subscription is 4s.



## Letters to the Editor

### The Post War Amateur Radio Market

DEAR SIR,—The post-war Amateur Radio market should be well worth cultivating even if the total turn-over does not bear comparison with certain other specialised markets. If British radio manufacturers hope to secure this market it is very evident that they must regard it seriously and depart from the casual manner adopted by many concerns in pre-war days.

The main points to be borne in mind are:

1. Up-to-date and sound design.
2. Good workmanship, which need not necessarily be elaborate.
3. Competitive price compared to goods of similar class from overseas.

The keen radio amateur demands that goods shall be of up-to-date design based on good engineering standards. Prior to the war the mistake was made by certain firms of placing on the market components and valves which were only slightly modified versions of items used for medium wave broadcast purposes. Cheapness will not avail if the goods are unsatisfactory in design or workmanship, for news travels fast in amateur circles and once a bad reputation has been gained for an article, sales will be poor; worse still, future models from the same firm will become suspect and much effort will be needed to establish them, even if free from defects in design, etc.

Turning to sales-policy: here again British manufacturers fell short in pre-war years. In those days the majority of amateurs had inside "contacts" which enabled them to secure goods handled through factors and wholesalers; thus the retailer gained nothing. Most of the goods sold through normal channels and based on advertised list prices, were not competitive and it was only by buying through the "back door" and obtaining the customary trade discounts that the price became more in line with goods sold direct or with those of foreign origin.

Outside London and the Home Counties and a limited number of Provincial centres there was no concentration of amateurs sufficiently great to support a local retailer who could provide proper service from stock. All that the average retailer could do was to take orders and then order the goods from his factor or wholesaler who in turn usually had to order from the manufacturer! No wonder prices remained high!

The solution to the problem would seem to be for manufacturers to appoint a limited number of agents, who would be required to carry a stock of at least the popular lines. All orders would be placed through such agents, thus cutting down the number of hands through which the goods will pass. No doubt this arrangement would cut into normal trade practice, but if British manufacturers are to secure a high proportion of the market, bold steps must be taken.

Continuity of advertising is very important and the value of publicity enjoyed by goods which establish a name is greatly enhanced by "free advertising" amongst amateurs at meetings and "over the air." The value of such advertising must not be ignored as it carries considerable weight, particularly amongst newcomers who rely on the advice of experienced members.

Yours faithfully,  
JAMES HUNTER (GM6ZV).

### Restrictive Covenants Against Use of Aerial Masts and Wires

DEAR SIR,—It may interest amateurs who propose buying a house that in certain districts there is a growing tendency on the part of the original owner of the land to include a covenant in the Conveyance or Lease forbidding the erection of any form of outdoor aerial.

They should not sign a Contract of Sale until satisfactorily assured of the absence of stipulations of this kind, but in many cases it will be essential to "close the deal" as early as possible in order to secure the house, and in these difficult days one has frequently no choice.

These covenants can always be included in a Lease or Assignment of leasehold property but broadly speaking, they can only be included in a conveyance of freehold premises if either:

- (a) The Vendor retains an interest in neighbouring property, for the benefit of which the covenant is made, and
- (b) where the land forms part of a "Building Scheme" in which case the restriction is imposed for the benefit of the remaining properties covered by the scheme.

If there are no cross covenants between owners of adjacent properties, one can approach the original covenantee and request removal of the restriction. In my case I was readily granted this before contract upon my pointing out that:

- (1) I was not likely to diminish the value of my own property by the erection of unsightly and badly engineered masts, and
- (2) that the public demand for television after the war would be such that any property in a television area which could not be used for reception would depreciate in value quite considerably.

Anyone who fails to obtain a personal release from such a restriction should consult a solicitor who, if negotiations are unsuccessful will advise on the remaining steps to be taken.

Yours faithfully,  
R. V. A. ALLBRIGHT (G2JL), R.N.S.S.

### Proposed Headquarters' Station

DEAR SIR,—With reference to the suggestion to establish a Headquarters' Station, may I submit my views on this subject?

- (1) It should be situated in Central London to provide for easy access.
- (2) The power used should be as high as the authorities will permit.
- (3) It should be designed for Telegraphy and Telephony operation on all amateur bands, and be operated by any licensed member approved by Council.
- (4) It should radiate frequency standards—both R.F. and A.F.
- (5) It should include a laboratory containing test and measuring equipment for the use of members.
- (6) A room should be provided for discussions.
- (7) Various types of receivers should be installed to help members to study design and performance problems.
- (8) It should demonstrate different forms of transmission and types of aerials.

Finally, I feel that—as you suggested in the December, 1944, editorial—the proposed H.Q. Station should take the form of a memorial to those members of our Society who have made the Supreme Sacrifice. I, for one, would be pleased and honoured to be invited to subscribe towards its cost.

Yours sincerely,  
PETER BRADLEY, G8KZ.

DEAR SIR,—With reference to your Editorial in the December, 1944, issue of the R.S.G.B. BULLETIN. Mention is made of the proposed establishment of a Headquarters Station, and you ask for opinions as to how the cost of this project should be met.

You suggest two methods for financing the scheme: (a) Donations by Members, and (b) a contribution from the Post-War Development Fund.

Financial limitations may curtail the result, if it is left entirely to (a); on the other hand, many members, including myself, who are, or who have been serving members of H.M. Forces, would like to have the opportunity of paying our respects to our less fortunate comrades, quite apart from the privilege of playing some part in the erection of such an appealing project.

I suggest, therefore, that a sum should be nominated provisionally out of the Post War Development Fund to cover the approximate cost of the station and those subscriptions received from members should be set off against the final cost involved, with a record perhaps, of the list of subscribers. Then if the total amount received from members does not cover the total cost of the Memorial, the amount allotted from the Post-War Development Fund, can be called upon to supply the balance.

I hope this will perhaps help towards a satisfactory solution in some way.

Yours truly,  
B.L.A. BERNARD PILCHER.

### A Standard Receiver Advocated

DEAR SIR,—Would it be possible to design (in collaboration with A.R.R.L. etc.) a receiver that would be within the reach of the amateur with limited means, and yet at the same time provide a good standard of reception on 160, 80, 40, 20 and 10 metres?

The large number of receivers on the market before the war was evidence of the demand for a decent job, but at the prices ranging only the person with a deep pocket could obtain first-class reception.

To obviate this, and at the same time make available a good receiver at the right price, say, £10, I would suggest that some enterprising firm market a kit of parts for a superhet with crystal filter.

This suggestion would lead to standardisation of reception reports whereas in the past reports have been given from sets ranging from an 0-v-1 to an 11v. communications job.

My own suggestion (for what it is worth) is a 7-valve job (not including rectifier) consisting of: (1) R.F. amp., (2) Mixer/Osc., (3) I.F., (4) I.F., (5) Demodulator, (6) Output, (7) B.F.O., to be supplied in kit form with cabinet (not assembled) "R" meter and crystal filter, but with no speaker (that is a luxury anyway).

The objection to this is probably that the manufacturer cannot or will not produce the kit at the price suggested, but if the Society could show them a market for, say, 50,000 kits, they would do it, and be glad to.

I should be pleased to read other views on this subject so that the pros and cons could be thoroughly considered.

Yours faithfully,  
A. J. WARD (G3WD).

### Pacific Call

DEAR SIR,—THE BULLETIN is a godsend out here in the Pacific, as it is one of the few ways I have of keeping in touch with radio developments. They reach me a few months late, but are none the less welcome. I should like to express my special appreciation of your recent articles on "Negative Feedback." It is the best treatment of the subject I have seen and I found them extremely useful. More articles on the same lines would be much appreciated.

F. HOLDEN (BER508).  
F/O., R.N.Z.A.F.

## BRITISH ISLES NOTES AND NEWS

CLOSING DATE FOR MAY ISSUE  
IS APRIL 30th. REPORTS SHOULD  
BE POSTED TO REACH D.R.'s AND  
SCRIBES BY APRIL 25th.

## DISTRICT 1 (North Western)

D.R.: H. W. Stacey (G6CX), "Sandleas," Eddisbury Road,  
West Kirby, Cheshire. Hoylelake 337.

Ashton-under-Lyne.—Twenty members of the local radio society attended a meeting on Sunday, March 18. The event proved a great success and everyone seemed comfortable in the new Club-room recently acquired at 153 Stamford Street. Refreshments were supplied by individual members.

A photograph taken at a recent meeting will, if space permits, be published next month. (Too late for current issue.—Ed.) The forthcoming P.D.M. was discussed after which further demonstrations of the Cathode Ray oscilloscope were given by the Secretary, Norman Brown, B.Sc., BR88145, and Harry Lapworth, BR84681.

Best wishes are sent to all Service members. G3NX has been over on leave after some years of service in the Middle East. G5PX.

NORTH EASTERN PROVINCIAL  
DISTRICT MEETING

to be held on

SUNDAY, APRIL 22nd, 1945

at the

HOTEL METROPOLE, LEEDS.

## PROGRAMME

ASSEMBLE	2 p.m.
BUSINESS MEETING	2.45 p.m.
TEA AND BISCUITS	4.30 p.m.
OPEN DISCUSSION	5.30 p.m.

INCLUSIVE CHARGE 2/6

Reservations to Mr. C. A. SHARP (G6KU), 56 Moore  
Avenue, Wibsey, Bradford, not later than April 17th,  
1945

ALL MEMBERS CORDIALLY INVITED TO ATTEND

Rochdale.—Mr. G. T. Butler, BR87083, has offered to act as Town Representative and is anxious to hear from members in the area. Those interested should please get into touch with him at 734 Manchester Road, Castleton, so that a meeting can be arranged at an early date.

Blackburn.—Mr. J. Irwin (G4FD) has offered to act as temporary scribe. Will local members please write to him at 5 Cobden Street, Waterfall, Blackburn, to discuss the possibility of holding regular meetings? He reports that the T.R., W. Mitchell (G2TM) has left Blackburn and has taken up residence in Scotland. We wish him every success in his new sphere and thank him for his services in the past. 4FD (now married) has had an air-letter from Cliff Sharratt (4CJ) serving on the North-West Frontier of India. Cliff now sports three stripes; congrats. O.M. He is still "brass pounding," but is troubled with Super X's in the form of long, fat, blue sparks which jump from phones to earth via the ears! He has built a 2-valve receiver and a bug key. 4FD, having moved from his old address, has built a P.A. amplifier with double push pull stage using 6L6's class AB, and optional negative feedback. This, with a newly acquired moving coil microphone will form the nucleus of 4FD's post-war modulator. G8JA has added a communication receiver to his collection of gear. G3HI, now residing near Halifax, visited 4FD some time ago.

Darwen.—Mr. H. Hargreaves (G8FI) of 15 Earnsdale Road, Darwen, has been asked by local members to act as Town Representative and the D.R. has much pleasure in confirming his appointment. He has already recruited three new members and is anxious to establish a local Club in anticipation of the return of Service members to civilian life. Will local members please call on or write to him and give him their support?

Liverpool.—Mr. John Anthony (2FHB) of 32 Bowring Park Avenue, Liverpool, 16, has very kindly come to the rescue of the D.R., and has undertaken to act as T.R. for the Liverpool and Merseyside area. He has arranged a meeting for April 28 and

details will be found in "Forthcoming Events." As it is some time since a meeting was held and the Editorial published in the March issue provides much material for discussion it is hoped that the meeting will be well supported.

General.—It is gratifying to know that interest is reviving throughout the district as evidenced by the notes published above. The D.R. hopes that members in other towns will take stock of the situation and appoint new or rejuvenate existing Town Representatives.

In response to suggestions made by members the D.R. has much pleasure in announcing that the P.D.M. will be held in Manchester on Sunday, September 9th. Full details will be published in due course. G6CX.

## DISTRICT 2 (North Eastern)

D.R.: C. A. Sharp (G6KU), 56 Moore Avenue, Wibsey, Bradford. Bfd. 10772. Scribe: H. Beadle (G8UO), 13 Chandos St., Keighley.

The D.R. wishes to make special mention of what he hopes will be the last war-time P.D.M. and at which G6CL, General Secretary and members of the Council will be present. He sends a special invitation to all members in the District to attend. Invitations are also extended to prospective members and Service personnel. With post-war matters and proposed licence regulations to discuss, this should be an interesting meeting. Roll up and make it a bumper P.D.M.

Bradford.—Any member interested in starting-up local meetings should please contact G6KU. 4GJ, who recently met 3UB and 8GN, sends 73 to 3HA and all old friends in the District. 9624 was recently discharged from the R.A.F. through disability and wishes to contact local members. (Best of luck O.M. in the projected venture.—D.R.) 3MQ recently met 6BX. 3HA was pleased to hear that 3KB and 2BXS were back in England and hopes he will be as lucky in another twelve months' time. 4CL has deserted radio for awhile in favour of woodwork.

Leeds.—On March 16, G6KU gave a talk on Amateur Radio to the members of the Leeds Radio and Television Society. Local members may contact each other at the Society's meetings. The Secretary is Mr. E. Beuden, 40 Grosvenor Terrace, Blackman Lane, Leeds, 7. 6750 now has the power pack for his C.R.O.

Huddersfield.—The meeting called by G5VD at which the "Post-War Amateur Market" was discussed, was attended by G8PP, G3MBZ, G8SMQ, 2HDV and 6215. 8VK was unable to attend as he was getting married! (Congrats. O.M.) 5VD hoped to see some of the new members and in view of the query published in the January issue wonders if they read "Forthcoming Events." 8PP reports the following in town besides himself: G2RD, 8CK, 8JI, G3MBZ, 8MQ, 2CQI, 4060 and 5769. We hope to see them all at the P.D.M. 4976 is collecting components for the Eddystone S.W.2.

Morley.—The Morley and District Club are meeting monthly at Zion Street, Batley. SWP is now in India. 6709 is still having trouble with his C.R.O. 5YV and 5893 are obtaining good results with their super reg. 2½ and 1½ metre receivers. 2FQH has been bitten with the oscilloscope bug.

Keighley.—G2VO is now in Germany where he has been investigating the "innards" of a pre-1930 Telefunken receiver. He saw a small boy goose-stepping and whistling "Wir fahren gegen England" and suggests "someone ought to tell him." We are still awaiting news of 6ZN and others.

Halifax.—Local members are asked to contact A. Williamson, 7859, and W. J. Pilling, 7607, 15 Lemon Street, Queens Road, Halifax, with a view to arranging meetings. 4645 (Cpl., R.A.F.) is constructing a double beam scope using a 6 in. tube with

WEST MIDLANDS PROVINCIAL  
DISTRICT MEETING

to be held on

SATURDAY, MAY 26th, 1945

at the

Imperial Hotel, Temple St., Birmingham

## PROGRAMME

ASSEMBLE	1 p.m.
LUNCH	1.30 p.m.
BUSINESS MEETING	3 p.m.
TEA	4.30 p.m.

INCLUSIVE CHARGE 8/6

Reservations to Mr. V. M. DESMOND, (G5VM), 90  
Worcester Street, Birmingham, by not later than  
May 19th, 1945.

ALL MEMBERS CORDIALLY INVITED TO ATTEND

Puckle time base and 807 amplifier. On a recent visit to No. 1 R.S. he met Ft./Sgt. W. R. Philpot, R.A.A.F., VK3EZ. 2FIM has just completed a five foot transmitter rack. He would welcome news of 2AG0.

**Barnsley.**—P/O J. G. Shirt (R.A.F.), 6193, is busy recruiting new members. 4JJ was recently home on embarkation leave.

**Doncaster.**—L. G. Thompson, 8539, 11 Buckingham Road, Doncaster, will be pleased to see any member who cares to call after 3 p.m. Jun. Ass. C. Venables is studying for the City and Guilds Radio Exam.

**Sheffield.**—Meetings continue with success and on February 28 a demonstration and discussion on the Resistance Capacity Bridge took place. The success of this meeting was due to Mr. E. Winter, 9198, and Mr. A. W. Pugh, 9498, the latter bringing along for demonstration a versatile home-built testing instrument incorporating a R.C. Bridge. A home-built R.C. Bridge was demonstrated by Mr. J. Petty, 64JW, and comparisons were made against a commercially built instrument. Bert Fashley, 6PJ has just returned to England from India. Ft./Sgt. Kirk has been to French Morocco and visited Radio Maroc. He hopes to contact 2LT on his next leave. GSUO.

### Forthcoming Events

- |          |   |
|----------|---|
| April 22 | District 4 (Nottingham), 6.30 p.m. at 2A00, 78 Henry Road, West Bridgford. "Post-War Planning."   |
| " 22     | District 5, 3 p.m. at 17 Colston Avenue, Centre, Bristol.   |
| " 22     | Provincial District Meeting, 2 p.m. at Hotel Metropole, Leeds.  |
| " 23     | District 3 (Coventry), 7.30 p.m. at the John Hough Mission (The Ragged Schools), off Trinity Street.  |
| " 24     | District 10 (Swansea), 7 p.m. at GW4CC, "Thistle Dhu," Upper Killay. (Bus from United Welsh Station. Three Crosses route passes the door.)              |
| " 25     | District 2 (Sheffield), 8 p.m. at the "Dog and Partridge," Trippett Lane.   |
| " 28     | District 1 (Liverpool), 3 p.m. at "The Stork Hotel," Queens Square.   |
| " 28     | District 7 (Reading), 6.30 p.m. at Palmer Hall, West Street.  |
| " 28     | District 15, 3 p.m. at The Excelsior Hotel, 1 Ladbroke Gardens, Ladbroke Grove, Notting Hill. Post-War Transmitters.                                    |
| " 29     | District 12, 3 p.m. at BRS4486, 390 Camden Road, Holloway, N.7. (Opposite Holloway Gaol. Trolleybuses 627, 629, 653 and bus 29.)                        |
| " 29     | District 16. Midway Amateur Transmitters Society, 2.30 p.m. at the Beacon Court Hall, Copenhagen Road, Gillingham.                                      |
| " 29     | Scotland "A" District, 3 p.m. in Royal Technical College, George Street, Glasgow, enter by Montrose Street.   |
| " 29     | District 4 (Leicester), 2.30 p.m. at G8CZ, 125 Thorpe Road, Melton Mowbray. Demonstration of D.C. equipment.  |
| May 3    | Radio Society of Northern Ireland, 8 p.m. at Belfast Y.M.C.A. Lecture, "Automatic Telephony," by Mr. F. Rowbotham (G.P.O. Radio Section).               |
| " 4      | District 15 (Harrow), 7 p.m. at BRS6527 (Mr. Mace), 153 Belmont Road, Harrow. (Harrow Met. or Harrow and Wealdstone L.M.S. and Bakerloo or bus 18.)     |
| " 6      | District 7 and 13. Combined Meeting, 3 p.m. at the Y.M.C.A., North End, West Croydon.   |
| " 6      | District 15 (West London), 5.30 p.m. at BRS6275, 51 Rushall Avenue, Bedford Park, Chiswick. G8KZ will open a discussion on Oscillators.                 |
| " 12     | District 6, 2.30 p.m. at the Y.M.C.A., Exeter.  |
| " 12     | District 7 (Reading), 7 p.m. at Palmer Hall, West Street. Morse instruction.  |
| " 13     | Scotland "C" District, 3 p.m. in Room 4, 7 Airie Place, Dundee. Lecture, Mr. R. P. Conway. "Automatic Frequency Control."                               |
| " 15     | Midland Amateur Radio Society, 6.30 p.m. at the Chamber of Commerce, New Street. Lecture, "Automatic Telephone Exchanges," by Mr. H. W. Yeats (G.P.O.). |
| " 16     | District 15 (Hayes). Venue to be arranged in West Drayton. The Acting T.R. should be contacted for details.   |
| " 23     | District 2 (Sheffield), 8 p.m. at the "Dog and Partridge," Trippett Lane.   |
| " 26     | Provincial District Meeting, 1 p.m. at Imperial Hotel, Birmingham.  |
| " 27     | District 4 (Leicester), 2.30 p.m. at G6VD, 9 Cecilia Road. Talk on Aerial Erection.   |
| June 7   | Radio Society of Northern Ireland, 8 p.m., Belfast Y.M.C.A. Lecture, "Long Distance Telephony," by Mr. E. Anderson (G.P.O. Radio Section).              |

A cordial invitation is extended to Society members to attend any of the above meetings.

### DISTRICT 3 (West Midlands)

**D.R.:** V. M. Desmond (G5VM), "The Chestnuts," Hanley Castle, Worcester. **Scribe:** E. J. Wilson (2FDR), 48 Westbourne Road, Olton, Birmingham.

**Birmingham.**—At a meeting of the M.A.R.S. held on Tuesday, March 20, members were pleased to welcome Mr. E. L. Gardiner, B.Sc., G6GR, President of the R.S.G.B., who gave a most interesting lecture on pre-war amateur equipment and those who used it. The talk was illustrated with slides, many of which were of great historical interest. After the lecture Mr. Gardiner reviewed the statement on post-war licence policy published in the March issue. Thirty-four members and visitors were present.

The D.R. has received a letter from A.C.2 Wootton, BRS6970, who has arrived in India and is anxious to contact other members.

The meeting arranged for April 17 will be held at The City of Birmingham Electric Showrooms, Paradise Street. 2FDR.

**Coventry.**—A meeting was held in Coventry on February 26, when G5GR produced the N.F.D. logs and reminisced on events grave and gay which occurred during the operational activities of the Coventry station.

The next meeting will be held on Monday, April 23 at 7.30 p.m. in The John Hough Mission (The Ragged Schools). To old C.A.R.S. members all that need be said is that it is our old H.Q. (and the same old room). To new members—The John Hough Mission is off Trinity Street, the entrance being near Owen Owen's Trinity Gate shop. G5GR.

**Rugby.**—At the March meeting G8VN gave a lecture on the Development of Radio. Eleven members attended. Regular monthly meetings will now be suspended until the autumn, but members will be notified individually if it is found possible to arrange a summer visit. Local members not on the mailing list should drop a line to G8FM, 7 Hart Close, Rugby. G8FM.

### DISTRICT 4 (East Midlands)

**Deputy D.R.:** A. E. Clifton (G8DZ), 32 Tattenbury Road, Perry Road, Basford, Nottingham.

**Derby.**—Despite an increase in membership, local meetings on the whole are still poorly attended and it is hoped that members will give more support. Those who attend, are busy designing and building such things as valve voltmeters, scopes and receivers. G6XM reports that the Morse class at RMS2 has finished owing to fluctuations of staff.

The T.R. would like to hear from members who are unable to attend the meetings. Also from those interested in Morse classes. The March meeting is reported in the Nottingham notes. G2OU.

**Leicester.**—The March meeting was well attended and those present were pleased to see a long absent friend in G2FX. BRS2793 reports that his son, VS2AR, is home again from India. 6VD has at long last managed to lower his "stick" for extending to 70 ft. and repainting. News is requested locally from BRS6029 and 7354. Sq./Ldr. Ridgway, G2RI, reports fit and well in a letter to G6VD. Next meeting, April 29 at G8CZ, 2.30 p.m. BRS5605.

**Northampton.**—The request in the February issue has brought a letter from Mr. L. A. Timbrell, BRS7888, who says he will try and get things going in this area if others are interested. His address is 177 Knox Road, Wellingborough.

**Nottingham.**—The combined meeting with Derby which took the form of a visit to the G.P.O. telephone exchange arranged by G5YY, was attended by about 35 members, a large proportion of whom journeyed from Nottingham. The visit took three hours to complete and was of great interest as members were privileged to see the carrier equipment and teleprinters. G5YY also arranged for tea at the Gaumont Palace for those members who had to travel.

The first of a series of Morse instruction classes was held on March 28 in No. 6 Canteen at Ericsons Works, Beeston, and these will continue every Wednesday at 5.30 p.m. We are indebted to Mr. B. O. Anson, the works manager and Mr. J. Clark, the welfare officer, for granting the facilities. It is hoped that as many members as possible will support the classes, which Mr. B. E. Hentsch, BRS5514, has been appointed to take care of in this area. Entrance to the canteen is via the Trent Road doors.

This month's contribution to the P.O.W. Fund is 14s. 7d. Next meeting, April 22, 6.30 p.m. at 2A00. G8DZ.

### DISTRICT 5 (Western)

**D.R.:** R. A. Bartlett (G6RB), 31 King's Drive, Bishopston, Bristol. **Bristol** 46960.

**Bristol.**—The March meeting produced a welcome increase in numbers, an attendance of 17 being recorded. Post-war licensing policy, as expounded in THE BULLETIN, was discussed at some length, after which, Mr. Dinham again held the attention of the meeting with a very able talk on "Gas Triodes" and "Cathode Ray Timing Indicators." Several most professional-like amateur-built pieces of test gear were shown and demonstrated.

2CU1 and 7383 suggested that some guidance should be given to those wishing to prepare for their post-war station. In this connection 6VF and 6RB volunteered to talk on post-war planning at the meeting to be held on April 22. It was agreed that the T.R. should be assisted by a minute secretary. 7961 volunteered for this task and was duly elected. The sum of £1 11s. was collected for the P.O.W. Fund.



In addition to those already mentioned the following attended the meeting: G2IK, 3YT, 60Z, 8PH, 2HFG, 2BAR and 2104, together with several new members not yet issued with a BRS number.

We take this opportunity of sending 73 to all members of the Bristol section on active service and would like to hear from them wherever they are. How about dropping a line to the T.R., A.A. Uppington, 2BAR, 6 Stapleton Road, Bristol? We understand 5UH is back in this country and has recently been on leave. A line comes from 9753, a new member who wishes to introduce himself, see you at the next meeting O.M.? G6RB.

### DISTRICT 6 (South Western)

D.R.: W. B. Sydenham, B.Sc. (G5SY), Sherrington, Cleveland Road, Torquay. Torquay 2097.

Exeter.—A meeting was held on Saturday, March 10, at the Y.M.C.A., when a most interesting talk was given by Mr. Wintle, of University College, Exeter, on ultra-short wave work. The lecturer brought along several interesting pieces of gear, including a magnetron. Methods of measuring extremely high frequencies were demonstrated and many questions were asked and very skilfully answered. An excellent tea followed after which a radio quiz took place with Mr. Wintle as umpire. The quiz was very well done and ended in a draw, and the compiler, G2AT, is to be congratulated on his work. The next meeting will be held on Saturday, May 12, at the Y.M.C.A., at 2.30 p.m.

Taunton.—At a recent meeting members spent a pleasant hour inspecting captured German wireless gear. A discussion followed on post-war policy. Members present included G5AK, 5LM, 6LY, 4OM and 2DRW.

Cornwall.—We are pleased to be able to publish a report from this area after a long interval, thanks to G6ZT, who reports that 4SF, 5VB and 80M, have visited him recently. 4CT has built an audio amplifier, and is now trying to remove the howl. 3CC has bought a Tobe and is therefore hoping that the bands will be the same after the war. 6LV has bought an RME 69.

G5SY.

### DISTRICT 7 (Southern)

D.R.: W. E. Russell (G5WP), "Milestones," Mayford, Woking, Surrey. Woking 1589.

Reigate.—After an absence of three years G8MP has returned from overseas. He is fit and well in spite of learning that 5LK had "cooked" the transformer in his receiver! 8HH is back also and visited the T.R. for a rag-chew. VE1FQ, Le Briton Fader, has spent some leave with 5LK and is anxious to contact members in the Guildford area. Address from 5LK, 6 Madeira Walk, Reigate, who will also welcome material from the Reigate area for inclusion in these notes.

Coulston.—BRSS8766, a new YL member, reports for the first time. During the last two years she has been serving with the W.R.N.S. as a Radio Mech. and hopes in the near future to attend a local meeting. 3179, with the B.L.A., has still to meet a "ham"—the nearest he got was the discovery of an attic which by the "junk" had once served as a shack, but the "bird had flown." 8953 is on the technical staff of the B.B.C.

BRSS3003.

Croydon.—By a misprint last month's meeting place was given as the Y.V.C.A. in error for Y.M.C.A. We trust no one went astray! Welcome to the new members who came to the Croydon meeting, also to 2HR. The T.R. has received letters from 2NS and 2RD. The latter hopes to be home soon.

At the last meeting the circuit of 2DP's 56/112 Mc. Converter, which had been drawn on the blackboard, was corrected as various omissions were detected by those present. Many present expressed the wish that THE BULL should carry an article on U.H.F. Converters. (Offers to contribute please.—Ed.) 2FWA presented a ticket which was raffled for the P.O.W. Fund raising, together with the usual collection, £1 6s. See "Forthcoming Events" for the next meeting. G2DP.

Reading.—V87RP was unable to give his talk on radio activity in Ceylon at the February meeting, but has promised to make good the omission at the March meeting. The gathering was most interested in 2YI's account of his "ham" life. 2BTY acted as question master succeeding in bringing to light all the details of 2YI's murky past!

2BTY, the popular Chairman of the meetings, has very kindly donated a silver cup to be competed for by local members who attend the local meetings. Entries will be judged by 2BYZ at the September meeting which gives plenty of time to get busy in the workshop. The award will be for the best article of equipment which must work as well as reveal skill.

WSTYC called in and was most welcome as will be, of course, any other of the W's if they come along. See "Forthcoming Events" for details of future meetings. BRSS4573.

General.—G8MF (Kington) with S.E.A.C., is at present on what he terms a "bigbiz radio job" in company with W4EBZ. Once again he deplores the lack of Thames Valley news in this column. Sgt. Clayton, BRSS8341, writing from the Middle East, where he is in the R.A.F., looks forward to returning home and going on the air. G5WP.

### DISTRICT 10 (South Wales & Monmouthshire)

Acting D.R.: H. H. Phillips (GW4KQ), 80 Cottrell Road, Roath Park, Cardiff. Cardiff 4512 during business hours.

Cardiff.—A prominent feature in the discussion at the March meeting was the eagerly awaited statement on post-war licence policy issued by Council and all present expressed gratification and approval of the basis on which it is hoped licences would be re-issued. Recent meetings have been well attended and although the most important topic has been the development of amateur radio in the immediate post-war years, considerable discussion has ensued on past achievements and future reconstruction.

The next meeting will take place on Sunday, April 29, at 2.30 p.m. and will be held at the home of GWSUH, 29 Ladysmith Road, Roath Park (off Penylan Hill) Cardiff. In extending a cordial invitation to all members to be present, the writer feels sure that he may express the thanks of all those who, during the past four years or more, have experienced the hospitality afforded by Mr. and Mrs. Dyer, GWSUH, in accommodating local gatherings. The refreshments thoughtfully provided have, on every occasion, been most welcome and we should like to put on record the appreciation of all who have been present.

Swansea.—It is hoped that by the time these notes appear, arrangements will be complete to inaugurate the first meeting to be held here since the early days of war. Those members interested in receiving details should communicate with W. Bowen, GW4CC, Thistle Dhu, Upper Killay.

Pembrokeshire.—Apologies for an earlier issue, G5FN, now located in this District, is endeavouring to arrange a meeting (in conjunction with GW2OP) to be held at a convenient location. Will all members in this area desirous of attending the proposed function communicate with S. Howell, G5FN, c/o E. R. O. Hakin Point, Docks, Milford Haven? For convenience, telephone Milford Haven 340 at either 9.30 a.m. or 5 p.m. prompt daily. GW4KQ.

### DISTRICT 11 (North Wales)

Deputy D.R.: C. Spillane (BRSS1060), "Woodside," Meliden Road, Prestatyn.

F./O. Williams, 2C8X (Llandegfan, Anglesey) now at South Cerney, Glos., is building an A.C.—D.C. midget and a twin power pack for 350 and 500 v. outputs. He reports no meetings as yet with members in his present area. I. Wynne Jones, BRSS8588 (Caernarvon) now with the B.B.C. at Leominster, reports on his movements following his employ. He has worked at many B.B.C. stations, and was previously at Penmon, Anglesey, where he was closely associated with Ron Ashton, GW5YB. 8588 reports writing to Eimac recently for their booklet on "Electronic Telesis" described as in layman's language. The joke was on him when he received a copy printed entirely in Spanish. 2HIY (Prestatyn) reports sitting and passing a board for Radar/Mech. Training, and expects soon to commence a 10 months' course. He is still stationed in District 17 as a W./Op.

GW4CK, recently home on 14 days embarkation leave, followed this by an interview and board in London for another course. He was surprised to find that the Sq./Ldr. on the board was G5UM. Chief Radio Officer Priest, BRSS5520 (Rhyll) still on the high seas, finds very little hopes of a trip home this year, but a bright note in his life was the arrival of eight issues of THE BULLETIN and Q.S.T. BRSS157, L.A.C. Hughes (Pestiniog), stationed in the District, reports two other members at the same station. He is at present building a new receiver. News at last from Sgt. Roy (Topper) Brown, BRSS4410, in C.M.F., with Para. Sigs. Bde., reports another spell in hospital after an incident, also describes some captured German gear which they have put to good use. 4410 seeks news of 3044, 2731 and others of the old gang and sends 73 to all.

The writer still in District 17 spotted a BULL among some mail in the camp. Following up this clue he discovered Cpl. Handley, 7458, of South London. This now makes the sixth member at this station and three more coming up. It is hoped soon to organise some rag-chews on the camp. BRSS1060.

### DISTRICT 12 (London North and Herts)

D.R.: S. Buckingham (G5QF), 41 Brunswick Park Road, New Southgate, N.11. Enterprise 3112.

A meeting will be held on April 29 at BRSS4486, when Mr. Mervin Whithers, B.A., will give a talk on "Modern Developments in Electrical Time Keeping." This should prove very interesting and calls for good support from the District as a whole.

Arrangements for the North London P.D.M. are nearly completed and full details will be published next month.

The D.R. and G6CL are pleased to record a visit from War Correspondent Reg Pidsley, G6PI, of the B.B.C., who has been home on short leave. His experiences should make good reading when the ban is lifted.

Welcome home to Capt. "Jimmy" Mathews, G6LL, after a long spell of duty abroad.

Letters have been received from BRSS4974, 7508, 8256, 9075 and 9620, who send their 73 and looking forward to attending District meetings.

St. Albans.—Local reaction to Council's statement of licensing policy appears to be one of approval and hope that negotiations

with the G.P.O. will be successful. The T.R. has been pleased to receive visits from 4477, 7238 and 9093, who has lately returned from Italy; also a letter from 5036. Considerable assistance from 7238 is acknowledged in the mechanical side of the construction of the T.R.'s new nine-valve superhet now almost ready for first tests. A meeting will be held on Sunday, June 3—details next month. G5QF.

### DISTRICT 13 (London South)

Acting D.R.: S. E. Langley (G3ST), 19 Elm Gardens, Mitcham, Surrey.

At the March meeting which was attended by 17 members, including G2DP, 2HP, 2HR, 2UA, 2VB, 4NI, BRS112, 1545, 3003, 4458, 6894, 7943, 8417, 8996, 9004, 9110, 9563 and two visitors. G2DP brought along his 56/112 Mc/s. converter, and gave a very detailed talk on its construction and uses. Questions came from all parts of the room during the talk, showing that this type of apparatus is of great interest to amateurs. The converter has been very carefully constructed, the soldering of the connections being especially praiseworthy. We thank 2DP for an excellent presentation.

News is scarce in the District, but this does not mean that we are idle. 2HHD is constructing a 9-valve superhet, communications type, and his thoughts are divided between this task, and his small son. 2VB, evidently optimistic, and rightly so, has his own design of QSL card ready and samples have gone round the District. News by air mail, comes from Ft./Lt. G. A. Neville, R.A.F., India. Congrats to our Secretary-Editor, G6CL, on his election to Southgate Borough Council. A live wire in the right place without a doubt. All new members are welcome at Croydon meetings. G3ST.

### DISTRICT 15 (London West, Middlesex and Buckinghamshire)

D.R.: H. V. Wilkins (G6WN), 539 Oldfield Lane, Sudbury Hill, Greenford, Middlesex. Byron 3369.

Last month's attendance of 27 members constituted the largest at a District 15 meeting since the early part of the war. Present: G2TJ, 5LN, 6PR the T.R. for Slough, 6WN, 8KZ, 2ADL, 2CWL, 3318, 4473, 4781 the A.T.R. for High Wycombe, 5027, 5056 the A.T.R. for Ashford, 5246 the A.T.R. for Hayes, 5301, 6014 the A.T.R. for Aylesbury, 6275 the A.T.R. for West London, 6447, 6527, 7754, 8503, 8971, 9094, the A.T.R. for Hounslow, 9244, 9422, 9573, 9574 and one Associate. A very interesting discussion on Frequency Measuring Apparatus took place.

West London.—Among those present at the last meeting were G3NR, who gave a very able talk on the manufacture of Quartz Crystals, 3YY of Barnet, 6PR, 2ADL and 6275. 81H serving with the Navy would like to express his thanks to ZS1T and ZS1BM for their hospitality. 2BMV has been visiting the Indian Jails—no not an inmate. 2FCJ is still in Suffolk. 7250 sends his comments on "Our Plan." 9087 is in Italy and not India as quoted last month.

Pinner.—G3QK has only had one response (from 8503) concerning a meeting. 3718, who is estranged in Wellesboro, sends 73 to 8KZ and 2FUX.

Harrow.—A meeting has been fixed. 4IH reports fit and well in India and sends 73 to all his friends. 4994 is in Norfolk and sends 73 to 5BC whom he used to listen to.

Hounslow.—The A.T.R.'s address last month should have read Springwell Road. 9689 is serving with the R.A.F. in Lincolnshire.

Twickenham.—G2NN is unable to carry on with the job of T.R. and would like someone to take over. What offers? 2KI is back in Yorkshire again.

Edgware, Bushey, Stanmore and Kenton.—Mr. Radford (G2IM), 1 Gibbs Green, Edgware, has agreed to act on behalf of 3HT, who is serving with the R.A.F. He proposes to hold a meeting of local members early in May. Those interested should write him at the above address.

Staines.—Meetings have already started so contact the A.T.R. for times and venues.

Hayes.—The first meeting was a splendid success with 2DN, 3BR, 3RH and 2689 as visitors from No. 1 S.D., R.A.F., and 3SU, 3XD, 6WN, ex-VE3DG, 2CILL, 5246, 6447, 6527, 9244, 9422, 9573, 9574, a prospective new member, and one associate. Future meetings will be arranged in Southall, Uxbridge and West Drayton.

High Wycombe.—9369 and 9556 write as new members. The latter is serving with the R.N.V.R. as Sub-Lieutenant.

District Workshop.—Mr. Mace (6527), 153 Belmont Road, Harrow (telephone Harrow 4534) has very generously put the facilities of his home workshop at the disposal of the District until such time as the District might institute one. Members should make their own arrangements with Mr. Mace, the only stipulation being that damage to tools must either be repaired or replaced—this is only fair. A lathe and drilling machine are already available and it is hoped to instal a bench bender.

Several letters and telephone calls have reached the D.R. with comments and congratulations on the post-war plan.

Many meetings are now being held throughout the District and details will be found under "Forthcoming Events."

G6WN.

### DISTRICT 16 (South Eastern)

D.D.R.: W. A. Searr, M.A. (G2WS), 8 Beckenham Grove, Shortlands, Bromley, Kent. Scribe: E. H. Trowell (2HKU), 27 Unity Street, Sheerness, Isle of Sheppey, Kent.

Sgt. S. J. Avis (R.E.M.E.), BRS8986, is working on Radar gear and has met Sgt. W. Grimes, 2FAA, who is an electrician at their camp near Durham. Sgt. Avis would like to hear from members in the Sidecup area. Capt. Baird (R.E.M.E.) is anxious to re-align a McCarthy PP9AW and would appreciate assistance in obtaining data for this purpose. Signm. G. Haylock (R. Sigs.), 2DHW, has been to meetings in Huddersfield and is now at Catterick. S. C. Terry, an associate, asks for news of members in the Barnhurst area. F./O. Clarke, (R.A.F.), 2AAN, is building power packs for post-war use and is stationed in Yorkshire. Signm. C. Merrett, of Evesham, Worcestershire, now in C.M.F., mentions that he is very interested in Frequency Modulation. A. G. Smith, G8WP, of Huddersfield, points out that his call appeared in these notes for January last as being near 2DHW, whereas he has been in India for months past. He has met several U.S. and a few British amateurs.

Gillingham.—A meeting took place at the home of Mr. W. E. Nutton, G6NU, on March 25, when the following were present: G2CM, 6NU, QC, 2AFT, DOH, FYD and HKU. As a result of this meeting it has been decided to re-start the M.A.T.S. (Medway Amateur Transmitters Society) and a meeting for this purpose has been called for April 29 (see "Forthcoming Events"). It is hoped that local members, especially new BRS, will give their support. Those intending to be present should send a postcard to G6NU, 42 Richmond Road, Gillingham, Kent. (6NU and his wife are thanked for the excellent tea provided at the meeting.)

Sheppey.—W./O. R. Johnson (R.A.F.) 9415, is in the area and hopes to contact local members. P. O. E. Vaughan, G2VA, is experimenting with a vibrator. 3GW is building an oscilloscope and sends 73 to the "top band gang" including 2KT, 3OA, OJ, 6AB, NU and 8HV. H. Beach, SBO, is working in Rosyth, Scotland, on a radio job and would like to contact members there. 2HKU has enjoyed visits from SBO and 2BWP.

Herne Bay.—Members in this area are asked to get in touch with Mr. H. W. Palmer, 2BWP, Gwelo House, Beacon Road, Tel. H. Bay 667 who would like to help start some activity in the area.

Sussex.—L.A.C. Nugent (R.A.F.) 2FTS, stationed in Middlesex is taking his City and Guilds Exam. at the end of March and mentions that there are meetings in his camp. He has met G3RH, 5BY and R.F. F. E. Wingfield, 3CX, who is working in a radio research laboratory somewhere in Worcestershire, says there are 78 amateurs there, including W1-9, VE, VK, ZL and G! He sends 73 to G2AX, 4FV, GW8WJ (who was with him for one day whilst overseas) and 7412, of Eastbourne.

Brighton.—From W./O. Barnard (R.A.F.) G8AC, we learn that Ft./Lt. H. Lunson (R.A.F.) 3WR, was home on leave recently looking very fit. G6MNH and other GM's will be pleased to know that 3WR still retains his jocular outlook. SAC recently enjoyed his first contact for four years with Sgt. Clacy, 6CY, at the latter's temporary home in New Barningham. The latter has completed a resistance capacity bridge of interesting design.

Members in and near Gillingham are asked to make a special effort to attend the meeting referred to above as we want to get things going again as soon as possible, ready for the "day." 2HKU.

### DISTRICT 17 (Mid East)

D.R.: A. C. Simons (G5BD), Admiralty Road, Mablethorpe, Lincs. Phone 69.

Grimsby members will regret to learn of the death of Mr. W. H. "Bill" Gooderham, G3ZG, who took an important part in the activities of the local club. G3VP who was stationed in the district for a while is hoping for a temporary release owing to the death of his father. 1080 has a small "colony" at his station, including 7458, 4882, 9032, 9034 and 9045. Congrats to 7117 on being gazetted Pilot Officer. 2DRT bemoans the lack of contacts at his (Surrey) station, but attends Croydon meetings. G2FT's latest effort is a "pukka" frequency meter to match his very special receiver. 5272 stationed in the Lincoln area would like an invitation to visit local amateurs. 8562 is to represent his squadron at the London A.T.C. Rally. (Warm congrats. G6CL.)

The following had an enjoyable time at the Gainsborough meeting: G4GX, G3OS, G3WB, G5BD, 2CGL, 9588, 9580, 9596, 9333 and 4315, the latter taking the pie prize. Thanks are recorded to the ladies for their excellent catering arrangements. The sum of 25s. was raised for the P.O.W. Fund.

The D.R. would appreciate offers of assistance to get meetings going at Lincoln, Boston, Sleaford and elsewhere if there are sufficient members. G5OI and G8SH (Signals and Radar officers respectively at a nearby station) were welcome visitors to the D.R. recently. G5BD.

### DISTRICT 18 (East Yorkshire)

District Scribe: S. Davidson (G6SO), 10 Sidney Street, Scarborough.

Hull.—The nearest approach to an R.S.G.B. meeting in the town since 1939, took place after a recent Electronics Society meeting, when a gathering of members present were unanimous that meetings should be started again.

VE3RW/9EW is at present in the town. Various members are building simple VHF receivers but no DX has been heard to date! BRS1948 is still in this country and 4530 has again been on leave. 3PL managed to persuade a super-regen one-valve receiver to function up to 80 Mc/s. using a battery triode. Members contacted recently include 8UL, 5120, 6895 and 5839 (via G3PL). G6SO.

### DISTRICT 19 (North-Eastern)

**D.R. : R. J. Bradley (G2FO), 36 Baby Road, Stockton-on-Tees, Newcastle-on-Tyne.**—2ACP, who is now at Chatham, would like to get in touch with members in that town. BRS9531 has met several members at Farnham. ZB1AA (identity please.—Ed.) reports the arrival of a junior op.—Congrats. O.M.!

**Sunderland.**—BRS6849 has been on an engineering course, but is now back at his old address. Before leaving he had visits from Sgt. Rose, L.A.C.R. Williamson and 2ACP. 6849 hopes to arrange regular meetings in the near future and asks local members to get in touch with him at 40 Netherburn Road.

**Darlington.**—2HMK is building a U.H.F. receiver and has almost completed a bug key. BRS6943 now has his 0-v-1 working satisfactorily and is contemplating a seven-valve super.

**Stockton-on-Tees.**—2FXA now at Doncaster reports that 2FZU is at the same station. He spends most of his spare time servicing B.C.L. receivers and has built a nine-valve super and a kit bag portable.

**Catterick.**—GSRF sends news of activity at Catterick Camp. Weekly meetings have been organised and the response has been gratifying. Twenty-five were present at the first meeting. During the past month talks have been given by G5DQ, GSRF, VU2EU, and SU1DM. Will any member who wishes to attend please note that the meetings are held every Tuesday, at 7 p.m. in the "Quiet Room," Y.M.C.A., Bagdad Lines, Catterick Camp. G2FO.

### Northern Ireland

**D.R. : J. N. Smith (G15QX), 19 Hawthornden Drive, Belmont, Belfast, N.I. Phone 63323.**

**Belfast.**—Local members hope soon to meet ZLIGX, who is stationed on the same site as BRS8388. 2DZG, a P.O.W. in Germany since 1940, has just heard he was promoted Corporal that year. G15UR received two replies to his recent appeal for news of 2YY, one came from B.L.A. Congrats to VE4TJ on his promotion to C.P.O., R.C.N.

The R.S.N.I. have arranged for lectures to take place on May 2 and June 7, see "Forthcoming Events" for details.

G15QX.

### Scotland

**Scottish Records Officer : J. Hunter (GM6ZV), 51 Camphill Avenue, Glasgow, S.1. Langside 237.**

**"A" District.**—At the March meeting, Mr. D. Macadie, GM6MD, was re-elected D.O., whilst Messrs. A. J. Jones, BRS4684, I. B. Jamieson, BRS6752, R. Kennedy, BRS8637, J. D. Gillies, 2FZT, W. Gray, GM4NK, J. K. McDowall, GM3AR, W. J. McMichael, BRS7931, were elected members of a committee to assist the D.O. It is hoped that the new arrangements will prove fruitful. Later a discussion took place on Council's post-war licence policy.

**"C" District.**—Aerial design was the subject for discussion at the March meeting. Mr. R. P. Conway will speak on "Automatic Frequency Control" at the meeting to be held on May 13. Mr. P. Tinto has left the district for District 3.

**"E" District.**—Mr. David Walker, 1 Garden Place, Troon, BRS6140, has kindly undertaken to act as T.R. for Troon and will be glad to hear from members in Ayrshire with a view to organising meetings. GM6ZV.

### Side Slips

How many mistakes did you spot in the circuit diagram on page 136 of the March issue? We can only suggest that buzz bombs must have been coming over thick and heavy when that one got through!

The following points, if corrected will assist in the operation of the amplifier:—

- (1) The output transformer should be centre tapped to H.T. +
- (2) V2 should be a tetrode, the H.T. connection being moved from control grid to screen.
- (3) The milliammeter should be inserted after the last condenser.
- (4) The 6V winding of the mains transformer should be 6-3V and have an earth-connected centre tap.

The author (Mr. L. A. Saunders) has sent some comments regarding points which have arisen since the amplifier was first built.

It was found that the signal on Grid 2 of V1 was not exactly the opposite of that appearing on Grid 1 due to the presence of R18 and C11, which reduced bass response. These were replaced by a 0.5  $\mu$ F condenser which has improved things considerably.

It was also found desirable to replace the automatic bias on the 6V6G's by fixed bias obtained from the mains transformer secondary through 80,000 ohms, a metal rectifier and two 10,000 ohm variable resistors with their sliders taken to the earthy ends of grid resistors R7 and R8, suitably bypassed. This also improves bass response.

### Book Review

**RADIO VALVE VADE-MECUM.** 4th edition. By P. H. Brana. Published by "Algemeene en Technische Boekhandel," Antwerp. Approximate price: Frs. Belg. 70. 194 pages.

This book, written in four languages, contains one of the best collections of receiving valve characteristics yet issued. In fact the writer has certainly never seen so complete a list of British, American and Continental valves. The book is divided into five sections, the first two of which give "static" characteristics and the best working conditions by actual use of the most popular types and British types not so common on the Continent. For convenience of comparison, all abbreviations are identical throughout and "slope," in all cases (including American types), is given in mA/V.

The third section is necessitated by the fact that identical valves are made by different makers but issued with different type numbers. This table gives a quick common reference to Sections (i) and (ii). The fourth section contains a very comprehensive "equivalents and modifications chart," while the fifth contains a table of valve base connections cross referenced from Sections (i) and (ii).

In addition to the wealth of information on almost every type of receiving valve given in the tables, there are six very informative pages of instructions and remarks written in English describing how to use the various sections. Any reader at present on the Continent is strongly advised to obtain a copy through the nearest bookseller. 2AHL.

### Fine Achievements

Congratulations are offered to Sgt. T. R. Nisbet, R.A.F., GM3SW, upon being elected an Associate Brit. I.R.E. after passing the Graduateship examination and on winning the Mountbatten Medal and President's Prize of the Institution. He has also passed Grades II and III of the City and Guilds of London Institute examinations in Radio Communication.

Bearing in mind that Sgt. Nisbet has been on active service in India for the past four years, where conditions for study are far from easy, his achievements are all the more outstanding.

### U.S. and Canadian Broadcast Stations

Mr. A. G. Dunn, G3PL, 79 Hayton Grove, Hull, appealed recently for a list of U.S. and Canadian Broadcast stations. G2JK and FR5104 responded and he is now in a position to loan a printed list, containing details of short-wave and frequency modulated broadcast stations, to any member who cares to apply.

### An Offer

C.Q.M.S. E. J. Buick, G3XJ, 84 Otlands Drive, Slough, Bucks, having had some 35 years' experience in many parts of the world in erecting aerial systems, will be pleased to give advice to members on the cheapest and best methods of constructing aerial masts for erection in large or small spaces.

### Can You Help?

W./C. H. Cecil Page, G6PA, who is at H.Q. M.A.A.F., C.M.F., is in urgent need of an 6887 valve. Any member who can supply or can suggest a source of supply is asked to advise Headquarters.

### Congrats

● To Sq./Ldr. and Mrs. H. A. M. Whyte, G6WY, of Beckenham, Kent, now the parents of a third son—Stephen Timothy.

● To Ft./Lt. E. S. Wilson (retd.), G5CW, of Finchley, London whose wife has presented him with a son—Andrew.

● To Mr. and Mrs. L. Weiland, BRS5082 (late of Southsea, now of Liverpool), on the safe arrival of Ian Graham on March 4, 1945.

● To Mr. J. Milstead, BRS9357, of Swansea, whose wife presented him with a son—Anthony John—on February 27, 1945.

● To Lt./Cpl. H. S. King, BRS4786, of Bicester, on his engagement to Miss L. Thierens, of Barnet.

● To Sgt. Ron Dabbs, G2RD, of Sanderstead, who was married recently to Miss Kathleen Franklin of Watford.

### Silent Keys

It is with deep regret that we record the passing of these members:—

Mr. C. P. P. Elliott, BRS1450, of Prestatyn, North Wales.

Mr. W. H. Gooderman, G3ZG, of Cleethorpes, Lincs. Signalman H. Hardstaff, Royal Artillery, BRS4885, of Hucknall, Notts.

L.A.C. G. G. Hayden, R.A.F., BRS4588, of Holt, Norfolk.

Leading Radio Mechanic B. E. J. Mitchell, Royal Navy, BRS7179, of Exeter, Devon.



## HEADQUARTERS CALLING

## COUNCIL 1945

## President:

ERNEST LETT GARDINER, B.Sc., G6GR.

Executive Vice-President: S. K. Lewer, B.Sc., G6LJ.

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Honorary Treasurer: A. J. H. Watson, F.S.A.A., G2YD.

Honorary Editor: Arthur O. Milne, G2MI.

Immediate Past President: A. D. Gay, G6NF.

\* \*

Members: F. Charman, G6CJ, D. N. Corfield, D.L.C.(Hons.), G5CD, Lt. Col. K. Morton Evans, GW5KJ, F. Hoare, G2DP, E. H. Laister, BR5386, S. E. Langley, G3ST, W. E. Russell, G5WP.

G.P.O. Liaison Officer: A. E. Watts, G6UN.

General Secretary: John Clarricoats, G6CL.

## February Council Meeting

*Resume of the Minutes of a Meeting of the Council of the Inc. Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, February 19, 1945, at 6 p.m.*

*Present.*—Messrs. E. L. Gardiner (President), S. K. Lewer, H. A. M. Clark, A. O. Milne, A. J. H. Watson, A. D. Gay, A. E. Watts, F. Charman, D. N. Corfield, K. Morton Evans, F. G. Hoare, E. H. Laister, S. E. Langley, W. E. Russell and J. Clarricoats (General Secretary).

1. It was unanimously resolved to elect 254 Corporate Members (56 accompanied by references, 195 proposed by Corporate Members), 19 Associates and 8 Junior Associates. One Junior Associate was transferred to Corporate Membership. Applications for Life Membership, received from Messrs. Geeson, G2SO, Gill, G6NP, J. Stewart Mark, G3BDD, were approved, as was an application for affiliation received from the St. Pancras Radio Society.

2. The Monthly Balance Sheet and Statement of Account were presented, examined and approved.

3. It was reported that Handbooks and Supplement sales continued to be satisfactory.

4. The Hon. Treasurer reported that a refund of £77 is due for Excess Profits Tax paid last year.

5. It was reported that a further meeting had taken place with the G.P.O. and that as a result of the meeting, a statement dealing with post-war policy had been prepared. The statement was read and approved for publication in the March BULLETIN.

6. It was reported that the F.C.C. had recommended that certain specified channels between 28 Mc/s. and 30,000 Mc/s. should be assigned to A.R.R.L. amateurs. It was agreed to inform the G.P.O. of the recommendations.

7. In accordance with the requirements of Article 11, a Ballot was conducted for the election of Mr. Leslie McMichael (Founder) to Honorary Membership of the Society. The Ballot proved unanimous in favour of Mr. McMichael.

8. It was reported that Provincial District Meetings had been arranged to take place in Birmingham (May 26), Nottingham (June 23), Barnet (June 30), and Exeter (July 21).

9. It was reported that letters of greetings had been received from the Presidents of R.E.F. (France) and R.B. (Belgium) and that suitable replies had been sent. The Secretary stated that he had written to the Censorship authorities requesting permission for the Society to send its Journal to amateurs in liberated countries.

10. It was agreed to inquire from the B.B.C. whether a talk addressed particularly to members serving overseas, could be given by a representative of the Society.

The meeting closed at 8.45 p.m.

## Literature to France and Belgium

We have been informed by the Censor-in-Charge of the Posts and Telegraphs Department, Liverpool, that despatches of Society publications can now be made under cover of our Permit B.305, to civilian addresses in France and Belgium. The limit of weight for letter post is 4lb.

Members who desire to send copies of our publications to their friends in France and Belgium, should forward their order to the General Secretary, who will arrange for despatches to be made under Permit.

Society publications cannot be posted by individual members to France and Belgium, but subscriptions from amateurs in those countries can now be accepted at the Foreign members' rate of 12s. 6d. sterling. Application forms can be obtained from Headquarters free of charge and can be sent to France and Belgium without permit.

## Post War Licence Policy

All members who have written offering congratulations to the Council on the progress made in connection with post-war licence arrangements are thanked for their interest, as are those who have offered constructive criticism. Their comments will be carefully considered.

## American Publications

The Society is in a position to accept orders for the following publications which are ordered individually from America:

"QST" (Official monthly publication of The American Radio Relay League). By subscription, per annum 17s. 6d.

"The Radio Amateur's Handbook" (A.R.R.L.) 1945 Edition 10s. 6d.

"The Radio Amateur's Handbook"—Special Defence Edition (A.R.R.L.) 8s. 6d.

"The Antenna Handbook" (A.R.R.L.) 4s. 0d.

"A Course in Radio Fundamentals" (A.R.R.L.) 3s. 6d.

"The Radio Handbook" (Editors and Engineers Los Angeles) 1943 Edition 12s. 0d.

"Radio" (Monthly publication of Radio Ltd.) per annum 21s. 0d.

Orders must be accompanied by a remittance made payable to the Society and rates and prices are subject to alteration without previous notice. Delivery can be expected in about 12 weeks from date of order. Service Addresses must not be used. Single copies of text books only may be ordered.

Members who change their address during the currency of a subscription to QST or Radio should advise the publishers direct.

## R.S.G.B. Prisoners of War Fund

The Council, acting on the advice of the Hon. Administrator of the R.S.G.B. Prisoners of War Fund (Mr. C. H. L. Edwards, G8TL), has decided to withhold, for the time being, the despatch of parcels to members held prisoner of war in Germany. Parcels normally take six months to reach their destination, by which time it is hoped the war in Europe will be over. Donations to the Fund are still invited.

**DONATIONS.**—The General Secretary acknowledges with thanks, on behalf of Council, receipt of donations from: District 7 (Guildford), £1 18s. 8d.; District 4 (Nottingham), £1 2s.; District 7 (Reading), £1 16s.; R. Pointon, 10s.; G. Musk, 2FPA, £1 18s.; J. D. Cairns, 2FOV, 5s.; A. C. Wilberforce, G21Y, £1; J. Hamilton, 2BLJ, 15s.; R. Atkinson, BERS44, £1 3s. 6d.; R. Figg, 9469, 10s. 6d.; J. C. Wicks, 2BIR, 5s.; K. Sly, G4MR, 2s.; H. J. Long, G5LO, 5s.; W. D. Ingle, G2BD, 5s.; Ashton-u-Lyne R.S. per BRSS145, £1 4s.; C. J. Orme, 8375, 5s.; Arch-Bishop Holgate R. Society, 6s.; E. L. Whalley, 5s.; R. C. White, 6116, 10s. 6d.; L. Parnell, G8PP, 5s.; E. W. Theobald, 2DWI, 5s.; H. B. Gault, G6GA, £1; Anon, 6s. 8d.; District 13 per G3ST, £1 6s.; J. Conibear, 4750, 5s.; L. Frank, G4NV, 2s. 6d.; I. M. Selwyn, 7926, 6s.; No. 1 S.D. per W/O. Ranft, £1; J. Garner, 2BGG, 15s.; Anon, £1 1s.

**Total receipts to date £1,512 5s. 6d. Total expenditure to date £921 0s. 9d.; Balance in hand as at 28th March, 1945: European fund £221 4s. 9d. Far East fund £370.**

## Magnetrons and Rhumbatrons

The General Editor will be pleased to consider for publication an article, or a series of articles, dealing with the design, construction and operation of magnetrons and rhumbatrons. Offers should be made prior to commencing the preparation of the manuscript.

## Notation and Nomenclature

Those members who, in pre-war days, experienced difficulty when checking reports from U.S. amateur stations because of the different method used in America for writing the date, will no doubt be interested to read the reply given by the Prime Minister in the House of Commons on March 23 in answer to a question addressed to him by his son Major Randolph Churchill, M.P.

Major Churchill asked his father if he realised that 1/10/45 meant October 1, 1945, to an Englishman, and January 10, 1945 to an American. The son asked the father to instruct all Government departments to adopt forthwith the system current in the British Army which avoids all confusion "by putting first the day of the month in figures without suffix, second the month in letters and last the year."

The Prime Minister replied that "Uniformity of notation and nomenclature is of course of high value between Allies in war and progress has been made in many directions." The Prime Minister further said, "I am not aware that any serious difficulty has arisen in this particular instance, but inquiries will be made."

We can assure the Prime Minister that difficulties have frequently arisen in amateur radio circles when an amateur has disclaimed a contact with someone "across the pond" because he has been unable to correlate the date given on the card with his log.

Major Churchill's suggestion is sound, and if generally adopted would overcome the difficulty referred to.

## EDITORIAL—(continued from page 145)

to apply for a licence to operate "walkie talkie" equipment in this exclusive band. Only the minimum requirements of the Communications Act plus a few minimum traffic rules will be set up. No doubt the service will be used for serious purposes, but we cannot help thinking that it will provide many opportunities for "fun and games"! It should prove especially popular in the case of married couples when the O.M. has a pressing engagement with his pal round the corner!

We should hate to think that the manufacturers of "walkie talkie" gear had anything to do with this bright idea." J. C.

## SOUND REINFORCEMENT AMPLIFIER—(continued from page 151)

hears perfectly, in fact there are still some regular visitors who have yet to realise that almost all of what they hear is *via* a loudspeaker, except when items are transmitted directly into the stand microphone. An organ sounds like an organ, pedal notes are exceptionally realistic with the stage trembling at the bass response, while violins have a natural bite. The "Meica" moving coil microphones which have been used have proved to be very satisfactory and are superior in performance to what had been expected.

## EXCHANGE &amp; MART—ADVERTISEMENT RATES

MEMBERS' private advertisements 2d. per word, minimum 3s. TRADE advertisements 4d. per word, minimum 6s. Box Numbers: 6 words, plus 1s. TERMS: Cash with order. All copy and payments to be sent direct to Advertisement Managers, PARRS Advertising Ltd., 121 Kingsway, London, W.C.2, by the 30th of the month for following month's issue.

Advertisers and buyers are reminded that under Defence Regulations 1939, Statutory Rules and Orders 1940, Number 1689 a permit (T 99 G) must be obtained before sale or purchase of certain electrical and wireless apparatus, particularly such valves and apparatus as are applicable to wireless transmission.

ALL KINDS OF PRINT, especially QSL Cards.—Send your inquiries to G6MN, Castlepoint, Workson.

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FOR DISPOSAL.—Small quantity first-class new and second-hand amateur gear, including two Muirhead S.M. dials and U.S.W. components.—BR85075, 77 Boxtree Road, Harrow Weald, Middx.

MEMBER.—R.A.F. Officer, age 26, 10 years practical, theoretical and constructional radio experience, requires post-war employment on release.—Box 554, PARRS, 121 Kingsway, London, W.C.2.

MONOMARK service.—Permanent London address. Letters redirected. Confidential. 5s. p.a. Royal patronage. Key tag 9d.—Write BM/MONO7A, W.C.1.

NEW Valves.—80, 11s. 5Y39, 11s. QP22B, 12s. 6d. 2D2, 5s. 6d. VPEB, 9s. TDD2A, 7s. 6d. TDD2, 7s. 6d. VO2, 10s. 6d. 2108PT, 11s. Wanted: Philips neon indicator, 17 x 52 mm. SES.—LYALL, G8SG, Ewart, Wooler.

SALE.—Amateur going overseas, selling surplus gear, much now unobtainable, including valves, Mallory vibropack, 12 watt class A amplifier.—Write Box 563, PARRS, 121 Kingsway, London, W.C.2.

SALE.—E.M.I. Audio Oscillator, range 50 to 10,000 c.p.s. With calibration and instructions. As new. Best offer over £20. Cambridge Unipivot Galvanometer, 120 millivolts (240 microamps), with thermal scale. As new. Best offer over £20.—Box 564, PARRS, 121 Kingsway, London, W.C.2.

SALE.—0-1 mA. 3½ in. scale and instrument rectifier for same. Unused. Offers S.A.E.—BR86882, 31 Prebendal Avenue, Aylesbury.

SALE.—Eddystone "E.C.R." communication receiver, instruction manual and speaker, little used, as new, £45.—G51Q, 126 Merridale Road, Wolverhampton. (Phone: 20971.)

TWO new R.C.A. 955 acorns, 35s. each.—BR87228, Coed Mawr, Rhos-y-cae, Nr. Holywell, N. Wales.

TELE-RADIO (1943) LTD. for brand new good quality components at manufacturers list prices. Suppliers to British and Allied Services and Government departments, professional constructors and amateurs who want only the best. Weston meters 0-1 mA, £2 10s. 0-500 micro amps, £3. 0-100 micro amps,

A few modifications to the original circuit have since been made in an effort to simplify the design. For example, as the response with the *Rothermel* crystal pick-up was satisfactory and the microphone circuits did not require correction, the tone controls have been taken out. It was also realised that the L.F. transformer would be a difficult component to obtain, so this was replaced by resistance capacity coupling, with little loss in gain and none in quality. After this modification had been made it was found that the telephone circuit caused the frequency characteristic to alter when the 'phones were plugged in; to overcome this trouble, two resistances were connected in series with the 1  $\mu$ F. coupling condensers. The volume in the 'phones dropped very slightly but the quality was unimpaired. The modified circuit is shown in Fig. 4.

The best compliment received to date was from Mr. Gordon Harker and his manager after a performance of "Acacia Avenue," when they stated that the station possessed the finest sound equipment they had ever heard.

Thanks are recorded to the authors of the various articles that provided ideas for the design. The present writer feels sure that if any reader constructs similar equipment he will receive the same measure of appreciation that has been accorded to him at his present station.

£3 15s. 0-15 micro amps, £4 10s. 1 mA instrument rectifiers, 12s. 6d. "Spot-on" wire wound precision resistors plus or minus .05 per cent., 5s. 6d. each to 50,000 ohms only. Single pole 12 position switches, 3s. 6d. each; 4 pole 3 way, 3s. 6d. each. Cathode Ray Tubes, G.E.C. 1½ in., £2 15s. Cossor 23D, 2½ in., £3 6s. Cossor 26D, 4½ in., £6 10s. Cossor GDT4B gas filled triode, 24s. 4d. High voltage rectifiers and condensers. Potentiometers carbon, 4s. 6d.; with switch, 6s. 6d.; wire wound, 6s. 6d., all usual values. Crystals 100 Kc./s., 45s. (P.O. Permit). Rothermel crystal pick-ups, £3 13s. 6d. and £3 18s. 9d. (high fidelity Red Label, 10s. extra). Celestion, Goodman and Vitavox speakers. Wearite P. coils and I.F. transformers. Wave-change switches, variable condensers and trimmers, etc. Comprehensive stocks of British and American valves. Steel racks, chassis, panels and cabinets, any specification (callers only). Unlimited resources for technical information to callers. Postal inquiries acknowledged same day. Cash or C.O.D. orders, if in stock, 24 hours service. Postage and packing extra on all goods.—TELE-RADIO (1943) LTD. 177A Edgware Road, London, W.2. (Corner of Edgware Road and Sussex Gardens.) Phone: Pad 6116. Telegraphic address, "Goahead" Padd, London.

URGENTLY required for work of National importance.—Any back numbers from 1936 to 1944 of any British or American radio magazines such as *Radioactive*, *Radio News*, *Communications*, *R.C.A. Bulletin*, *Radio*, *Wireless Engineer*, *Electronics*, *Bell Telephone Journal*, *Proceedings of I.R.E.*, etc. Best prices will be paid. These are required to complete technical research library.—Reply to MR. BERNARD, Bernards (Publishers), Ltd., The Grampians, Western Gate, W.6. Telephone: Shepherds Bush 2581 (day and night).

WANTED.—One or two type 813 valves, condition immaterial provided electrode assembly and base intact.—Box 557, PARRS, 121 Kingsway, London, W.C.2.

WANTED.—Used communication receiver and A.C. 230v gramophone motor with turntable. State price, maker and model and list price when new. If unserviceable state fault.—STEVENS, G3YH, 24 Hall Street, Bristol, 3.

WANTED.—Standard rack and black crackle panels. Details and prices.—KNOWLES (2FXS) 22 Coronation Villas, Cranwell, Lincs.

WANTED.—Hallcrafters SX28. Price, fullest details; also SX17 or SX23 type speaker in matching cabinet as supplied with these models. Good price paid for either in good condition, as new.—Details to 14 Common Road, Evesham.

WANTED.—Vibrator pack 6 or 12 volt input, 110 or 230 volt A.C. output. A.C. gramophone motor. Good condition essential.—Box 562, PARRS, 121 Kingsway, London, W.C.2.

WANTED.—Meissner Signal Shifter, complete, 230v, A.C. or similar oscillator.—H. A. SPASHETT, 38 St. Mary's Street, Bungay, Suffolk.

WANTED.—Two 83 valves. Price to RICHARDS, 3 College Street, Burnham-on-Sea.

## PATENTS AND TRADE MARKS

KING'S Patent Agency Ltd. (R. T. King, G5TA, Mem. R.S.G.B., Reg. Pat. Agent), 146a Queen Victoria Street, London, E.C.4, Handbook and Advice on Patents and Trade Marks free. Phone: City 6161. 50 years' refs.

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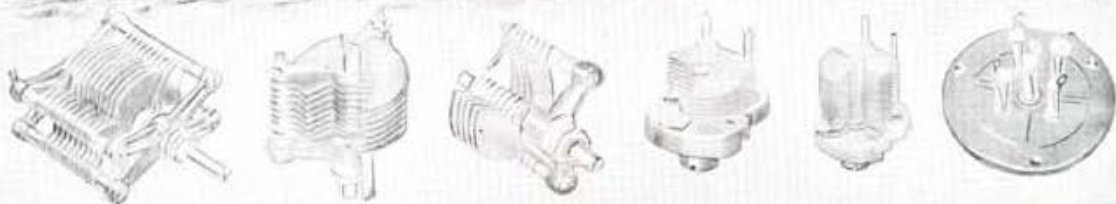


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