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HOW WE STAND TO-DAY

A Statement by Council

in regard to Post-War Licensing Matters

Service Certificates

FURTHER to the statement published in its last Annual Report, the Council has pleasure in informing members that satisfactory progress has been made in regard to the issue of a radio trade certificate, or its equivalent, to Service personnel when they return to civilian life. The purpose of these certificates would be to establish proof that the holder achieved a certain defined standard in a radio examination whilst on active service. As far as can be ascertained at present this evidence will be provided automatically on discharge, but, in their own interest members should see that a certificate is issued, or an appropriate entry made in their pay book, to show in which trade category they served.

The G.P.O. has indicated to the Council that persons holding these certificates or their equivalent, will be exempted from possible examinations in radio theory and/or Morse knowledge, when applying for an amateur transmitting licence.

Certain trades, such as, for example, R.A.F. Wireless Operator Mechanic, will exempt an applicant from both examinations, whilst other trades, such as R.A.F. Wireless Operator, will only carry exemption in one subject—in this case, Morse operating ability.

If any member is in doubt as to whether his Service trade category is included in the list which has been prepared by the Council, he should address an inquiry to Headquarters.

In the case of women serving in a radio trade in the W.R.N.S., A.T.S., or W.A.A.F., it is assumed that they will, on discharge, be dealt with in the same manner as men who have served in equivalent trades in the Navy, Army and Air Force.

In the event of new radio trade categories being introduced at a later date, it is thought that no difficulties will arise in having them included in the present list.

Re-issue of Licences

In regard to the period which is likely to elapse before licences are restored after hostilities have ceased in Europe and adjacent territories, members will appreciate that this is a factor which will be controlled very largely by the international situation then existing. They may rest assured, however, that at the appropriate time the Council will press for the early resumption of transmitting facilities.

In this connection the Society's representatives were informed at a meeting with representatives of the G.P.O. that subject to any new conditions which it might be necessary to impose regarding power and frequencies, there did not appear, at that time, to be any reason why licences should not be re-issued automatically to persons who had held them prior to the war. The Council has every reason to believe that the view expressed by the G.P.O. on that occasion still holds good.

Some delay will inevitably occur in issuing new licences but Council feels that the possession of a Service certificate or similar evidence should expedite matters as far as ex-Service men and women are concerned.

Although the G.P.O. is unable at present to give any definite information in regard to the frequency bands likely to be made available to British amateurs after the war, Council anticipates that licences will be renewed initially on the basis of the Cairo Convention allocations. Undoubtedly the Governments of the United Nations will arrange to hold an International Telecommunications Convention at the earliest possible date after hostilities cease, but some time will probably elapse before such a meeting can be convened.

The Council desires to record its thanks to those D.R.'s, T.R.'s and members who have made useful suggestions to them in regard to post-war licensing matters.

THE MAGIC EYE TUNER AND ITS APPLICATIONS

By H. R. HEAP, B.Sc. (G5HF).*

MANY modern receivers include a Magic Eye Tuner to assist the operator of the receiver to obtain perfect tuning; it is not always realised, however, that tuning is only one of many applications to which the Magic Eye can be put. Before discussing these further applications in some detail a brief survey will be given of the theory underlying the operation of the Magic Eye.

Theoretical Considerations

The device consists essentially of a "High- μ " triode above which is located a fluorescent target with a special control electrode connected inside the valve to the triode anode. This is shown as a theoretical diagram in Fig. 1. With zero bias on the grid of the

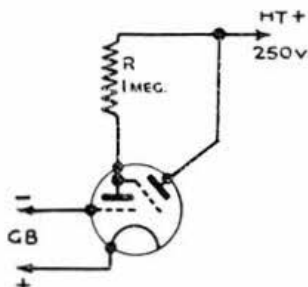


Fig. 1.
Theoretical diagram of "Magic Eye."

triode the anode draws current through the resistance R, across which is a voltage according to Ohm's Law. This biases the control electrode negative with respect to the target and causes an electronic shadow to be cast on to the target as shown in Fig. 2A. When the grid bias of the triode is made negative the anode current is reduced and the bias on the control electrode reduced in proportion. This, in turn, causes a reduction in the angle of the shadow and at about 7 volts negative (with a 6E5 valve) the shadow closes up to a line (Fig. 2B). If the bias is increased still further the shadow overlaps itself (shades of the Wonga!) and this is indicated by an increased brightness over the distance of the overlap.

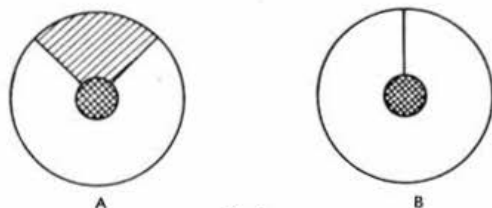


Fig. 2.
(a) Shadow angle at 0 volts grid bias.
(b) Shadow angle at 7 volts negative grid bias.

Fig. 3 is a curve showing the angle of shadow plotted against grid bias volts and from this it is plain that the valve is virtually a voltmeter which takes practically no power and therefore represents negligible load across the circuits being measured.

The following are some of the uses to which the Magic Eye can be put but obviously there is scope for ingenuity in devising other applications:—

1. Tuning indicator for A.V.C. and non-A.V.C. receivers.
2. Zero indicator for bridges.
3. Zero indicator for slideback valve voltmeters.
4. Measurement of A.V.C. voltage.
5. A.F. output meter.

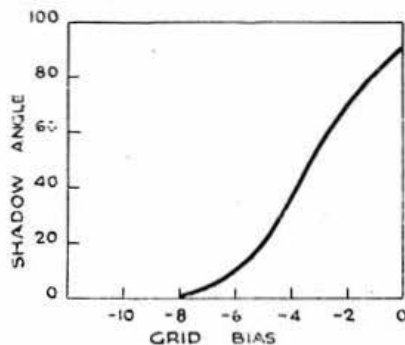


Fig. 3.
Curve showing how shadow angle varies with change of grid voltage.

Tuning Indicator

It is well known that the Magic Eye can be used for a tuning indicator on receivers employing A.V.C. with a diode type of second detector, but it can also be used in T.R.F. receivers and superhets with a biased detector valve. Fig. 4 shows the circuit normally used in which an extra resistance R3 is placed across the usual cathode resistance R4 and adjusted so that the "no-signal" voltage across R4 opens the Magic Eye to a convenient angle. This happens when R1 is shorted out, due to the grid of the Eye being positive with respect to the cathode. If R1 is now gradually brought into circuit the Eye will begin to close; it should be adjusted so that the shadow is just a thin line. When a signal is tuned in, the anode current through the detector valve rises; this increases the voltage drop across R4 and the Eye opens. If the

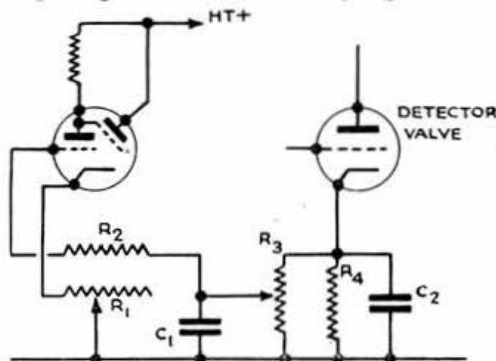


Fig. 4.
Circuit for T.R.F. Receiver Tuning Indicator.
R1 25,000 ohms. R4 50,000 ohms.
R2 50,000 " C1 .1 μ F.
R3 250,000 " C2 .2 μ F.

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voltage developed on the grid of the Eye is too large (as will be shown by the Eye opening out full and losing its sensitivity) the voltage should be reduced by means of R3. Conversely if the sensitivity is too low, a larger percentage of the voltage across R4 can be tapped off and applied to the grid of the Eye.

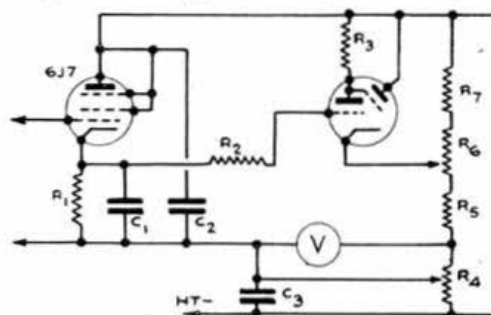


Fig. 5.

Circuit for a Zero Indicator and Amplifier.

R1	5 megohms.	R6	500,000 ohms.
R2, 4	5,000 ohms.	R7	1 megohm.
R3	500 "	C1	8 μ F electrolytic.
R5	250,000 ohms.	C2, 3	1 μ F.

Zero Indicator for Bridges

Fig. 5 shows a circuit for a zero indicator including amplifier. The grid bias and screen voltage of the amplifier are adjusted so that the valve is almost at cut-off but the small amount of current flowing through R5 will bias the grid of the Eye so that the shadow half closes. The input terminals of the amplifier are now connected across the bridge which when unbalanced will cause an increase in the anode current of the amplifier, which in turn increases the bias on the grid of the Eye and causes it to close. At correct balance the Eye will open out to the original setting. This zero indicator can be made extremely sensitive and will function on A.C. or D.C. bridges.

Valve Voltmeter

In this application the Magic Eye performs the function of a voltage balancer and Fig. 6 shows a suitable circuit. To adjust the voltmeter the slideback resistance R4 is set on the positive end so that the voltmeter V reads zero. R6 is the zero-setting resistance which is adjusted so that the Eye just closes and this is the position in which the voltmeter is set before readings are taken. If an A.C. voltage is applied to the grid of the coupling triode it behaves like a diode rectifier and C1 will be charged up to the peak value of the applied voltage. This voltage being positive, with respect to the cathode of the Eye, causes the Eye to open. The slideback resistance R4 is now operated so that the Eye just closes to its original position and the voltage can be read off from the

voltmeter V. It is important to remember that this is the peak value of the applied voltage.

If D.C. voltage is applied to the input terminals of the valve voltmeter the anode current of the triode will increase in proportion to the voltage appearing across C1 as before. Calibration is carried out in the same manner as for ordinary valve voltmeters and will not be discussed here.

As the valve voltmeter takes no current, and represents negligible load on the circuit being measured, it has many applications in receiver servicing. A.V.C. voltages can be measured by connecting the input of the meter to the cathode of the controlled amplifier valves. Audio amplifier stage gain can be checked by connecting a known voltage (at say 50 cycles) across the input of the amplifier and measuring the voltage across the output load by means of the valve voltmeter. If an audio oscillator is available the response curve of the amplifier can be plotted by measuring the input and output voltages at various frequencies. Power output from a receiver can be measured by applying an A.F. voltage from a test oscillator to, say, the second detector; a resistance load of the correct value is connected across the primary of the output transformer (the secondary of which is disconnected) and the voltage of the test signal increased until its peak value at the grid of the output valve is the maximum specified for that particular valve. The peak voltage across the anode load resistance is then measured and the power output calculated from the formula:—

$$\text{Power} = \frac{E^2 \text{ watts}}{R}$$

where E is peak output voltage multiplied by 0.707 and R is the anode load in ohms.

The 6E5 (British Equivalent Mazda AC/ME) is the usual Magic Eye for applications such as those described. As seen in Fig. 3 the cut-off voltage is about -7 to -8. A variable mu type (6G5) is also available and has a cut-off voltage of about -22 volts.

Flick!

Did you hear that one about the W./Op. who tapped a "magic eye" tuning indicator because he thought the shadow had stuck?

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OUR FRONT COVER

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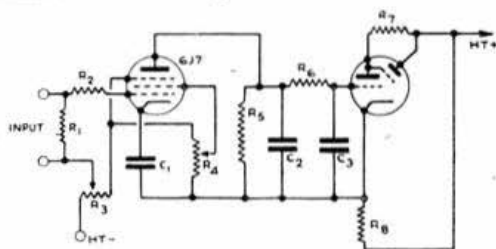


Fig. 6.

Circuit for Valve Voltmeter using Magic Eye Indicator.

R1, 3	1 megohm.	R6	10,000 ohms.
R2	500,000 ohms.	C1	2-4 μ F.
R4	50,000 "	C2	1 μ F.
R5, 7	20,000 "	C3	4 μ F.

SOME APPLICATIONS OF CATHODE-COUPLED CIRCUITS

By A. HINE, B.Sc. (TECH.), BRS4438.

PART II.

A Cathode-Coupled H.F. Amplifier

CONSIDERATION of the normal cathode-coupled circuit will suggest that the load impedance may be other than a pure resistance.

Since a parallel resonant circuit may be taken as having an equivalent "pure" resistance of L/CR ohms, where L is the inductance, C the parallel capacity, and R the D.C. resistance, it seemed that the substitution of the cathode resistance by a tuned circuit was a logical procedure.

As the dynamic, or A.C., resistance (as the quantity L/CR is usually called), of a properly designed circuit is only large at resonance, this arrangement fulfils the conditions for a cathode follower, selective to the desired frequency only. A difference from the resistance load arrangement is that owing to the low D.C. resistance of an efficient tuned circuit, the grid of the amplifier valve will not be biased, as the D.C. voltage-drop across it is almost zero. Two varieties of the fundamental circuit are shown in Figs. 7A and 7B.

Fig. 7B is essentially an aperiodic H.F. stage and provides an excellent means of coupling the aerial to the detector stage. The gain, of course, is not greater than unity, but since the input impedance approaches infinity, the aerial circuit is not loaded, and almost the full voltage developed across the input circuit is available at the detector grid. The detector stage is

separated from the aerial and has all the advantages associated with the use of an H.F. buffer stage.

Theoretically such an amplifier, coupled to a detector, gives no greater gain than the same detector directly coupled to the signal voltage circuit, but the advantages of infinite input impedance and removal of the detector from the aerial circuit provide a very satisfactory system indeed. In fact this type of H.F. stage with its high input and low output impedances provides a means of accurately matching the aerial output to the detector input and thus reduces losses. (It is not known whether this circuit is in any way original—no other description of such an arrangement having yet been seen by the writer.) The circuit used in an actual receiver is given in its original form in Fig. 8.

By using the coil arrangement as illustrated in Fig. 9, tuned with a $0.00015 \mu F$ variable condenser, a range of 4.6 to 23.5 Mc/s. is covered in the three steps:—

- (1) 4.6 to 7.5 Mc/s.
- (2) 9.5 to 15.5 Mc/s.
- (3) 14.8 to 23.5 Mc/s.

The "transformer" arrangement of the coil is necessary in order to keep the resistance in the filament leads as low as possible. Reaction is provided by a split-stator condenser coupling the detector anode to each of the filament (cathode) windings. Reaction is very smooth and a fine control is obtained by means of R_2 . A small choke L_4 may give improved performance in some cases.* A variation of the reaction control is also shown. The aerial-earth impedance may be a choke or a resistance.

It was later found that a separate reaction winding was a great improvement and so the arrangement shown in Fig. 8A was adopted in which L_R is the reaction coil wound over L_1 , L_2 and L_3 and consisting of approximately the same turns and arrangement as L_1 (or L_2).

The capacity and resistance values are as used and could perhaps be modified with advantage.

Since the H.F. valve is working at zero bias it is necessary to apply a negative potential to the grid, of about one volt, to avoid running the grid positive.

Fig. 10 which shows a typical load line (for a dynamic resistance of 10,000 ohms) and anode characteristics, illustrates this point.

With indirectly-heated valves, a circuit similar to Fig. 7 would be appropriate and a less complicated coil than used for battery valves would result. Orthodox reaction arrangements could be applied.

A receiver using indirectly-heated valves is in hand, with a similar arrangement of valves to that shown in Fig. 8. Other more elaborate arrangements will doubtless suggest themselves, such as a cathode-coupled preselector stage in a superheterodyne receiver, which might also include an infinite impedance second detector. It will be realised that com-

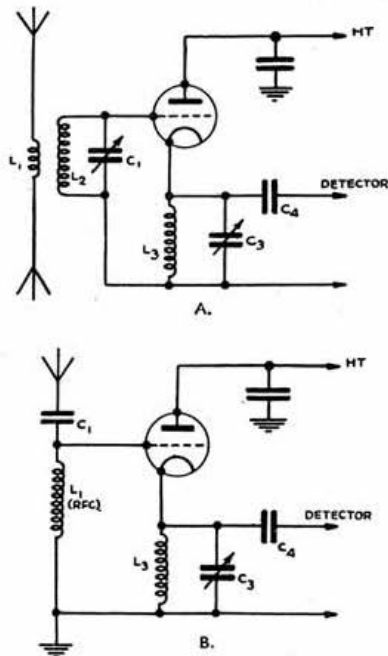


Fig. 7.

Two forms of circuit of Cathode-Coupled H.F. stage.

* This choke no longer became necessary when a separate reaction winding was used. It appeared as though in the original circuit, the cathode-anode electron stream was providing a path to earth alternatively to the path through the cathode coils, so interfering with regeneration. This was chiefly experienced around 18 Mc/s.

plications occur if an inductive impedance is used as the cathode load, e.g. a choke, since there will be a phase-change in the various voltage components introduced thereby, considerably modifying the behaviour of the circuit.

It may be pointed out here that the well-known phase-splitting circuit is a form of cathode follower, voltages at both cathode and anode being produced, which, if cathode and anode load resistances are equal, are of equal magnitude but in opposite phase. The presence of the anode load does not affect the normal working of the cathode follower.

There are of course, many developments of these circuits and these notes merely touch the fringe of possible arrangements, but it is hoped that they may stimulate interest in an interesting group of circuits.

Mathematical Notes

1. Determination of Gain

In Fig. 11 consider the simple form of circuit.

Let V_i = Input voltage.

V_G = Voltage developed between grid and cathode.

V_o = Output voltage.

μ = Amplification factor of valve.

I_A = Anode current.

Z = Cathode impedance (including load).

R_A = A.C. resistance of valve.

Now input voltage = V_G + voltage developed across Z .

$$\therefore V_i = V_G + I_A Z \dots \dots \dots (1)$$

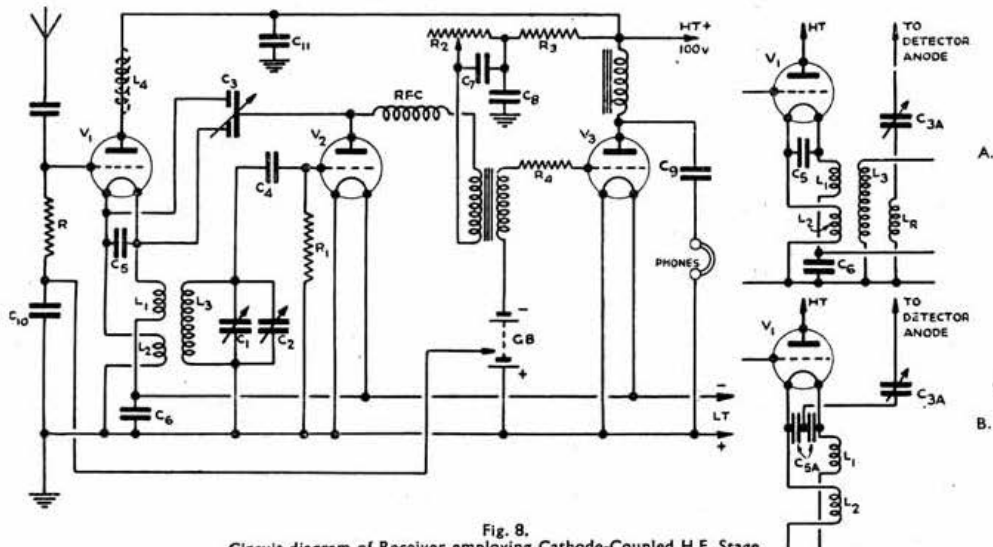


Fig. 8.
Circuit diagram of Receiver employing Cathode-Coupled H.F. Stage.

C1 .00015 (band-set)
C2 .00002 (band-spread)
C3 .00007 each half (split-stator reaction)
C4 .0001
C5 .0003
C6 .006

C7 1
C8 .25
C9 2
C10 .01
C11 .001

R1 4 megohms
R2 10,000 ohms
R3 7,000 ohms
R4 1 megohm
V1 210 HF
V2 D210 } or
V3 210 LF } similar

Capacity values in microfarads.
Coil sizes and values of band-set and band-spread condensers must be chosen to suit individual requirements.
The insets show (A) separately wound reaction coil; (B) alternative reaction control.

Bibliography

The following articles and references deal with cathode-coupled circuits:—

- (1) Infinite Impedance Detector: *Wireless World*, January 1, 1937.
- (2) Infinite Impedance Detector: *Electronics, Television and Short-Wave World*, November, 1939.
- (3) New Band-pass Circuit (Cathode-tuned Circuits): *Wireless World*, April 30, 1937.
- (4) Cathode-coupled Circuits: W. T. Cocking, *Wireless World*, December 15, 1938.
- (5) Cathode Follower Stage: E. Williams, *Wireless World*, July, 1941.
- (6) Cathode Follower Again: E. A. Hannay, *Wireless World*, July, 1942.
- (7) The Cathode Follower: J. H. Hargreaves, *T. & R. Bulletin*, May, 1942.
- (8) Television Receiving Equipment: W. T. Cocking (Iliffe & Co.), chap. viii, p. 142, chap. xvi, pp. 248-253.
- (9) An Improved Detector Circuit: *Practical Wireless*, October, 1941.

Some mathematical notes follow.

The valve may be considered to be equivalent to a generator of internal impedance R_A , developing an E.M.F. of μV_G and working into a load Z .

$$\therefore \mu V_G = I_A (R_A + Z) \dots \dots \dots (2)$$

$$\text{and } \mu dV_G = dI_A (R_A + Z) \dots \dots \dots (3)$$

Suppose now V_i is increased by dV_i so that I_A becomes $I_A + dI_A$, the corresponding change of grid voltage V_G is given by (3).

$$\therefore V_i + dV_i = V_G + \frac{dI_A}{\mu} (R_A + Z) + I_A Z + dI_A Z.$$

$$\text{or } dV_i = dI_A \left[\frac{R_A + Z}{\mu} + Z \right] \dots \dots \dots (3a)$$

The increase in output voltage, $dV_o = Z dI_A$.

$$\therefore \text{the gain of the system} = \frac{dV_o}{dV_i} = \frac{Z dI_A}{dV_i} = A$$

$$\therefore A = Z dI_A / \left[\frac{(R_A + Z + \mu Z)}{\mu} dI \right]$$

$$= \mu Z / (R_A + Z + \mu Z).$$

$$= \mu Z / [R_A + Z (\mu + 1)].$$

Now for all practical purposes $(\mu + 1)$ may be considered to be equivalent to μ .

$$\therefore A = \mu Z / [R_A + \mu Z] = \frac{Z}{\frac{R_A}{\mu} + Z}$$

$$\therefore A = \frac{Z}{Z + 1/g} \dots \dots \dots (4)$$

where g is the mutual conductance of the valve in amperes per volt

$$\text{or } A = \frac{Z}{Z + 1,000/g} \dots \dots \dots (5)$$

where g is measured in milliamperes per volt. Thus for maximum gain, g should be large and Z also should be large.

The limiting and maximum value of gain is unity when Z is infinite.

Z need not be unreasonably great for a gain nearly approaching unity as may be seen from Fig. 2, which shows that little benefit is obtained when Z is greater than about 30,000 ohms.

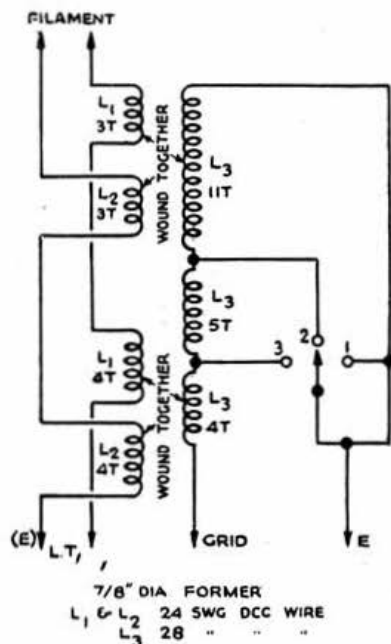


Fig. 9.
Coil for Cathode-Coupled H.F. Stage.

2. Output Impedance

$$\text{From (4)} \quad \frac{\delta V_o}{\delta V_i} = \frac{Z}{Z + 1/g}$$

$$\text{or } \delta I_A Z = \frac{\delta V_i Z}{Z + 1/g}$$

$$\therefore \delta I_A = \delta V_i / Z + 1/g \dots \dots \dots (6)$$

Thus if Z is large compared with $1/g$, almost the whole of the change of input voltage will appear across Z . This condition is easily satisfied since $1/g$ is usually of the order of several hundred ohms, consequently Z need only be a matter of a few thousand ohms. Thus a cathode follower will feed an amplifier with quite a low impedance without serious losses occurring.

3. As a Detector.

In such a circuit as Fig. 11, when $V_i = 0$, and $I_A = I_o$,

$$V_G = -ZI_o \dots \dots \dots (7)$$

For a high value of Z this negative grid voltage becomes appreciable and the valve will be operating near cut-off, behaving as an anode bend detector.

This is illustrated in Fig. 3 by the points c_1 , c_2 and c_3 .

When the valve is required to operate at cut-off, i.e., when $I_A = 0$,

$$V_i = V_G^1 \dots \dots \dots (8)$$

where V_G^1 is the value of V_G to cut-off the operation of the valve. This value is constant for any given valve and in the example chosen is -9 volts (point b in Fig. 3). If $V_i < \pm V_G^1$ inefficient rectification may take place and the introduction of extra negative grid bias may be necessary (by means of a battery, for instance).

Referring once more to the zero signal condition for the three different loads shown.

$$V_G = -6.75 \text{ volts for } Z = 5,000 \text{ ohms.}$$

$$V_G = -8 \text{ volts for } Z = 20,000 \text{ ohms.}$$

$$V_G = -8.5 \text{ volts for } Z = 50,000 \text{ ohms.}$$

indicating the relative approximations to cut-off. The input voltage is given by:—

$$V_i = V_G + ZI_A$$

As shown above, the one extreme is that which provides sufficient bias to cut-off the valve, *viz.* $V_i = -9$ volts (equation 8). The other extreme is when $V_G = 0$ (since grid current is undesirable), so that $V_i = ZI_A$.

In the three cases indicated, this value of V_i is

$$0.01475A \times 5,000 \Omega = 74 \text{ V. for } Z = 5,000 \Omega.$$

$$0.007A \times 20,000 \Omega = 140 \text{ V. for } Z = 20,000 \Omega.$$

$$0.0035A \times 50,000 \Omega = 175 \text{ V. for } Z = 50,000 \Omega.$$

The corresponding points in Fig. 3 are a_1 , a_2 , a_3 . Thus the extreme swing of input voltage is:—

$$83 \text{ volts when } Z = 5,000 \text{ ohms.}$$

$$149 \text{ volts when } Z = 20,000 \text{ ohms.}$$

$$184 \text{ volts when } Z = 50,000 \text{ ohms.}$$

Other values of V_i may be determined for appropriate values of V_G to enable the dynamic characteristics in Fig. 4 to be plotted.

It should be noted that the bottom end of these characteristics tends to become less curved for the higher values of Z .

4. As an Amplifier.

The operation as a straight amplifier involves the same considerations as given in (3) above, except that the input swing must be equal on both sides of the working point. In the three cases taken, the maximum input swing is:—

$$\pm 41.5 \text{ volts when } Z = 5,000 \text{ ohms.}$$

$$\pm 74.5 \text{ volts when } Z = 20,000 \text{ ohms.}$$

$$\pm 92 \text{ volts when } Z = 50,000 \text{ ohms.}$$

To obtain these conditions a positive bias must be applied of 32.5; 65.5; and 83 volts respectively, points P, Q and R in Fig. 4.

It should be noted that the positive bias in the case of the amplifier and the negative bias in the case of the detector are actually applied as grid-to-H.T. negative potentials or additional input voltages, whereas the "true" or grid-to-cathode bias is a very much smaller quantity and corresponds to that required by the appropriate characteristic curves.

(5) "Tuned Cathode" H.F. Amplifier.

In this circuit (Fig. 7) the impedance Z of Fig. 11 is a tuned parallel circuit L_3C_3 . When such a circuit is tuned, say, to n cycles per second, its impedance becomes equal to the dynamic resistance L_3/C_3R_0 where R_0 = the D.C. resistance.

This quantity behaves as a pure resistance and thus the circuit will behave as a cathode follower when the input voltage has a frequency n . For other frequencies the dynamic resistance will be low.

Now the "goodness" of a coil, usually known as Q is given by:—

$$Q = 2\pi n L_3 / R_0 \dots \dots \dots (9)$$

$$\text{and } Z = L_3 / C_3 R_0$$

$$\therefore Q = 2\pi n C_3 Z$$

$$\text{or } Z = Q / 2\pi n C_3 \dots \dots \dots (10)$$

Hence the necessity for a high " Q " circuit to ensure that Z is high, as well as the necessity for a high L/C valve.

When L_3C_3 is not in resonance, the circuit offers either an inductive or capacitive impedance to the anode current and V_i and V_g have therefore to be added vectorially. The consequent phase changes do not permit of the foregoing equations being applied and the operation of the circuit ceases to be that of a cathode follower.

In Fig. 10 the characteristic curves for an average battery valve are given.

Suppose for example:—

$$n = 20 \text{ Mc/s.}$$

$$Q = 100$$

$$C = .00008 \mu F$$

$$\text{Then } Z = 100 / 2\pi \times 20 \times 10^6 \times 8 \times 10^{-11}$$

$$= 100 / 50.2 \times 20 \times 10^{-5}$$

$$= 100 / 100.4 \times 10^{-4}$$

$$= 10,000 \text{ ohms (very nearly).}$$

With an anode potential of 100 volts the working point will be K since the D.C. resistance of the tuned circuit is so small that the grid bias is zero for zero signal.

AKB is the 10,000 ohm load line. To avoid running the grid positive the working point must be transferred to some such position as E at -1.0 grid volts,

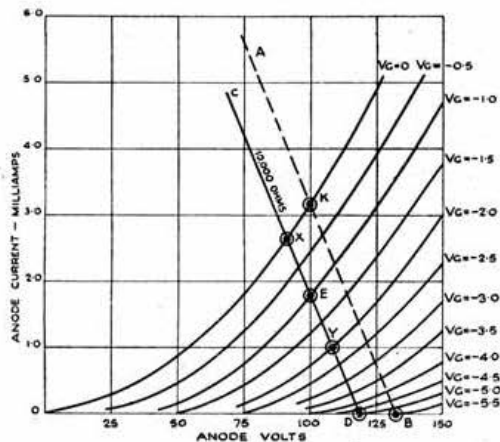


Fig. 10.

Anode Characteristics and Load Lines—Cathode-Coupled H.F. stage.

so CED is the new load line. This negative bias may conveniently be applied by a battery. E must be chosen so that equal positive and negative changes in input voltage produce equal changes in anode current (or output volts).

In this particular example, upper limit of V_i is when $V_g = 0$, i.e. V_g is increased by 1 volt. Let V_i be increased by δV_i when V_g is increased from -1 volt to 0 volt.

From equations (3) and (3a).

$$\delta V_i = \delta V_g + Z \delta I_A.$$

From Fig. 10, $Z = 10,000$ ohms.

$$\delta I_A = .8 / 1,000 \text{ amps.}$$

$$\therefore \delta V_i = 1 + \frac{10,000 \times .8}{1,000} = 9 \text{ volts.}$$

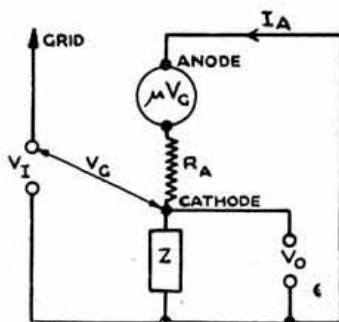
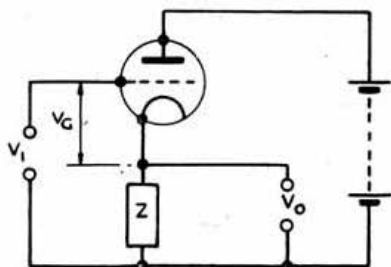


Fig. 11.

(a) Basic and (b) equivalent circuits of Cathode Follower.

This corresponds to point X.

Now let V_g decrease by 1 volt and let V_i be decreased by δV_i when V_g decreases from -1 volt to -2 volts.

From Fig. 10, $\delta I_A = -.8 / 1,000$ amps.

$$\therefore \delta V_i = -1 - \frac{10,000 \times .8}{1,000} = -9 \text{ volts.}$$

Thus input swing is ± 9 volts, and the corresponding anode current change is $\pm .8$ milliamps and the required condition is satisfied. The change in output voltage is

$$\pm \frac{.8}{1,000} \times 10,000 = \pm 8 \text{ volts.}$$

so that gain is $\frac{8}{9}$ or approx. 0.9.

(From equation 5, when $g = 1.5$ milliamps per volt

$$\text{Gain} = \frac{10,000}{10,000 + \frac{1,000}{1.5}} = \frac{10,000}{10,000 + 666.6} = \frac{10,000}{10,666.6} = 0.93.)$$

A SIMPLE SEMI-AUTOMATIC KEYING CIRCUIT

By C. W. CRAGG* 2HDU

IN America, semi-automatic keys of the Bug type seem to be very popular, and electronic types are often described in *QST* and *Radio*. Home construction of the mechanical key requires not a little skill and patience, together with the necessary tools, and the electronic keys usually are of not too simple design.

The keying circuit to be described is quite easy to set up as it contains very few parts, the relay being the most expensive item.

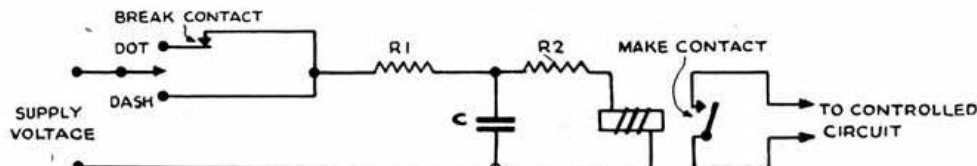


Fig. 1.
Electronic Keying Circuit.

Relay Requirements

A relay with two pairs of contacts is required, one to make, and the other to break, when it operates. The "make" contact is used as the normal key contact, while the "break" is wired as shown in Fig. 1. On connecting the supply to the "dash" side, the break contact is shorted out, condenser C charges rapidly and the relay is held down continuously. When the "dot" contact is made (i.e. as soon as the relay pulls down), it opens the power supply. A current continues to flow through R2 and the relay coil from C, thus holding down the relay for a definite period, until the voltage across C drops and releases the relay, thereby closing the break contact again and causing C to charge once more. It can be seen that as C is increased, so it will take longer to charge *via* R1, and once the relay has operated it will also take longer to discharge,

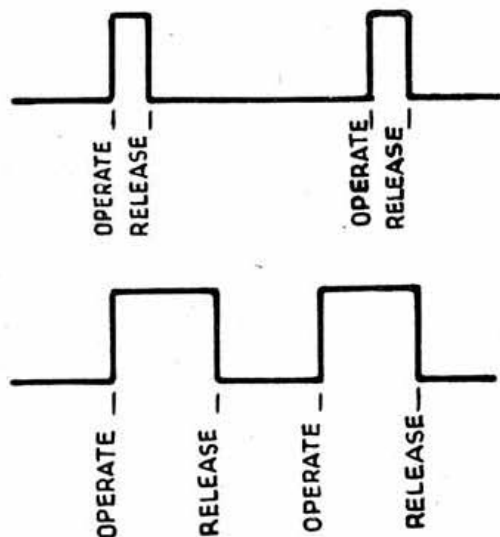


Fig. 2.

For correct "dot" spacing the "operate" and "release" conditions of the relay should be equal. (A) R2 too small. Dots short. Spaces too long. (B) Operate and release times equal.

being larger in capacity. If R2 is made too small, C will discharge quickly and charge slowly, since it is by-passed by R2 and the relay, even when charging (Fig. 2A). The ideal condition is that the operated and released conditions of the relay should be equal for correct dot spacing, as shown in Fig. 2B. If R1 is made too small, or is omitted, the dots will be longer than the spaces. Further, the relay contacts may be damaged since a very high current will flow into C as soon as the relay releases.

Adjustment of Keying Speed

All that is needed to alter the keying speed is to vary the capacity of C. This can conveniently be done by switching in different condensers. If a large variation (more than about 2:1) in speed is required, it will be necessary to change the resistance values as well, but variation of 12-25 w.p.m. will generally be ample.

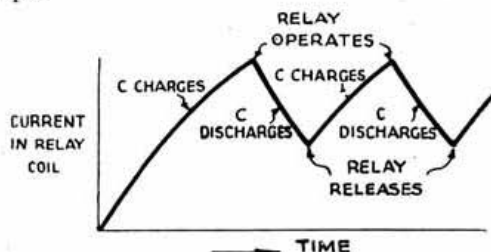


Fig. 3.

Approximate current changes in relay coil. Charge and discharge times should be equal.

It is probably most convenient to adjust the resistance and capacity values by listening to an audio oscillator which is keyed by this circuit. Better still, a cathode ray oscilloscope could be used, keying a D.C. voltage to obtain pictures as in Fig. 2A and 2B. The resistances can then be adjusted to obtain correct operate and release times.

Approx. Speed	C
12 w.p.m.	.5 μ F
15 w.p.m.	.4 "
20 w.p.m.	.3 "
25 w.p.m.	.25 "

Component Values used by the writer.

R1 1,000 ohms.
R2 400 ohms.
Supply voltage 100.

Component Values

Owing to the fact that relays differ so widely, no reliable values of components can be given, but the conditions used by the writer are tabulated as a guide. The relay had a coil resistance of 1,500 ohms and operated at a current of 7 mA, releasing at 4 mA. A component of higher resistance and lower current rating would be preferable, in which case R2 and C could be reduced, whilst R1 might be eliminated altogether. An old battery eliminator was used to supply the current.

* 11 Little Lane, Toller Lane, Bradford.

Handwriting practice line for the sentence "HAK AND BLUE". The letters are formed by dashed lines on a four-line grid. The word "HAK" is in a bold, sans-serif font, while "AND" and "BLUE" are in a standard sans-serif font. The word "HAK" is written in a larger size than "AND" and "BLUE". The word "HAK" is written in a larger size than "AND" and "BLUE".

The considerable expansion of radio broadcasting and the parallel development of other activities involving the use of fixed capacitors has necessitated the redrafting of the original B.S.I. specification for Fixed Capacitors (B.S. 1271). The new specification covers all fixed capacitors for general purposes, whatever the nature of the electrodes and insulant, but it does not apply to capacitors for specialised applications.

If so, you are invited to attend Meetings in Hut 165 (No. 1 R.S.). Details from Cpl. Chadwick (G8ON), Cpls.' Club, East Camp.



Cairo Convention

The first Amateur Radio Convention held in Cairo since hostilities began, took place at the Britannia Restaurant, on Saturday, December 19, 1942. It was anticipated that about 40 amateurs would be present but unfortunately a military order was issued on the previous Thursday cancelling leave, for all Forces, into Cairo. This affected the attendance in the morning, but the evening meeting turned out to be a very happy surprise with no less than 54 "on parade," including many who had not written to say they were coming. The good propaganda work done in the local Services clubs by G4AH, 4LY, 2FPY and others was responsible for the improved attendance.

During the dinner an airgraph message of good wishes, sent by "Clarry," was read under most difficult conditions, due to QRM from the ground floor! If 75 or more can attend the next meeting it is hoped to shut out all interference by booking the whole restaurant!



Cairo Convention, December 19, 1942

Seated in centre, SUIWM and G5HI. Extreme left standing, G5GS and 6LK. Extreme right standing, G6CW and 5VU.

SUIRD, who was absent owing to family sickness, suggested that a collection for the P.O.W. Fund be made. Passing round the hat realised a sum equivalent to £7 14s. GW5FI sent his regrets at being unable to attend for reasons known to most of us. (We understand he is now bound for Blighty.—Ed.) G5ZJ also regretted his absence owing to the "out of bounds" order, whilst the following who had previously notified their intention of being present were held up for the same reason:—G2GB, 2LI, 3TU, 3KB, 3GY, 3MV, 4LY, 4IV, 4AR, 8OQ, 8GY, 8FW, 2HBG, 2CMJ, VE3AJT, 3ET and VK2UC.

The calls of those who attended were: G2YZ (ex SU8RS), 2YK, 3AM, HJ, NZ, 3LG, 4AH, HK, JY, 5HI, OI, QY, UH, VU, 6CW, GS, IX, LK, 8DA, KW, MD, 8RJ, 2CIB, CLD, DTQ, FDT, FPI, FPY, FXZ, HCW, BR8, 4049, 4905, 5209, VE3AKX, AKY, 3ZA, 4ANE, 4LK, 9CNE, W4HAT, 5PJ, 8JSU, 8TTF, ZL2IO, 2TL, SU1AX, 1GT, 1WM and 5 visitors. (This list does not check exactly with the list published last month.—Ed.)

It was agreed to hold similar meetings every six months until Hitler gets tired! The next will, therefore, take place at the beginning of May. A vote of thanks to SU1WM for organising the meeting was proposed by W./Cmdr. Assig, G5HI. The photograph, reproduced herewith, was taken by SU1AX.

Record attendance at No. 1 R.S. Meeting

All attendance records were shattered at the meeting held on February 17 when 246 members and guests (including W.A.A.F.s) met together to hear Corporal Gough lecture on the important subject of Aerials. Among those present were: Ft./Lt. Thorn-dyke, G6DX, 8ON, 2C8Q, DYZ, DAF, HJN, BR8626, 1108, 3791, 4169, 5004, 5143, 5243, 5295, 5330, 5467, 5486, 5690, and many other members who could not get near enough to the table to sign the register. As Hut 165 was unable to accommodate the huge assembly the school authorities, at short notice, gave permission for the meeting to be held in the Radio Block Cinema, but even that was not large enough as some 30 or 40 would-be listeners were unable to get in. Our apologies to all concerned.

Cpl. Gough handled his subject in masterly style and although speaking for nearly two hours he kept the interest of his audience to the last. He dealt with a wide variety of aerials including the Marconi, Bruce, Franklin and Rhombic. Those who had been seeking "zen" on the subject had their wish fulfilled!

The response given to a vote of thanks to Cpl. Gough provided proof of the popularity of the lecture.

Later in the evening Ft./Lt. Gately gave a demonstration of aerial feeding arrangements, illuminating bulbs to cast light on our darkness! For his demonstration Mr. Gately used short rod aerials and a U.H.F. oscillator of neat design.

The sum of 19s. was collected at the meeting for the R.S.G.B. Prisoners of War Fund.

On March 17, Sq./Ldr. L. E. Newham, G6NZ, hopes to deliver his promised talk on the history of Amateur Radio. The talk will be illustrated with lantern slides. Members at No. 1 or No. 8 R.S. should watch for the numerous R.S.G.B. notices which are now distributed around the camp. G8ON.

73.

G2RD (R. Sigs.), to G2AW, DP, KU, UJ, 3FP, OJ, STL and all the old "Bachelor" gang.

G3ST (London, S.W.2), to all old friends wherever you are.

G3XV (Wellington), to G2KU, MI, 3GS, 6KR and the Wrekin group.

G3YM (R. Sigs.), to G2RX, 3AD, SH, UH, 4AR, FS, 6BW VK, 8KZ.

G5IV (R.A.F.), to G2SO, 5MV, 2FKA and all at G16YM.

G5KT (R.A.F.), to G2IK JL, 3GH, 4KG, 5UH, QY, 6GM, XP, 8NL, GW5BI, 8WJ.

G8CK (R. Sigs.), to G2AW, 3KP, OJ, NR, 6GR, STL, G15TK and all scattered "Bachelors."

G8JI (R. Sigs.), to G2AW, 5OH, QG, ZR, 6KI, 8HO, TL.

G8RY (R.A.F.), to G2NO, 3AG, SS, 6TC, 8KL, RF, TH.

G8SD (R.E.M.E., M.E.F.), to G3VZ, 4HS, 5VG, 8CK, FW, GA, NS, ON, PO, QJ, GW2GV and 2CAJ.

GM2NQ (Kinghorn), to G2BB, 2NJ, 3SJ, 5HF, VE3DF, and BR82806.

2DBF (Maidenhead), to G6FZ, STB, 2BQC and 2HNO.

2FPC (R.E.M.E., M.E.F.), to G6VD, 8RL, SD, WI, G13JP, GM3RL and 2HDQ.

AIR TRAINING CORPS

Fifth List

THE following members are serving as officers in the R.A.F.V.R. (Training Branch) or as A.T.C. Instructors. Additions or corrections to this or previous lists should be communicated to Headquarters.

Squadron No. and Name	Name	Call or BRS
410 Edgware ..	F./O. E. R. Radford	G2IM
470 Falkirk ..	F./O. B. B. Fulton	GM4JQ
470 Falkirk ..	F./O. R. Collumbine	3993
1047 Wolverhampton	F./O. R. F. Speake	G5IQ
1217 Erith ..	W. E. Cox ..	5118
1402 Croydon ..	F. G. Hoare ..	G2DP
1402 Croydon ..	J. F. Boyce ..	G4NI
1912 Liverpool ..	P./O. L. W. Mant	5082
— Sale ..	P./O. H. Marshall	G4ND
1913 Liverpool ..	F. E. Williams ..	2DMS
1924 Croydon ..	G. A. Cooksey	4814

Mr. J. Dickson, G2HV (W. Tel. R.N.V.(WR)) is assisting the Ayrshire Sea Cadets in Morse Instruction.

MEMBERS ON ACTIVE SERVICE

Forty-second List

WE publish below our forty-second list of members on Active Service. Additional details and corrections should be advised to Headquarters as early as possible. The present list contains information received up to March 1, 1943.

Rank and Name	Regiment or Branch of Service	Pre-war Call or B.R.S.
P.O. F. D. Abbott	R.N.	5965
Cfn. L. H. Aldridge	R.E.M.E.	5981
Cfn. H. V. Anderson		5983
2nd Lt. J. A. W. Bate	Welsh Guards	G6WB
Sig. C. Beaumont	R. Sigs.	4811
Sig. R. E. Bell	R.A.	4738
Ord./Tel. J. T. W. Blyth	R.N.	5957
Lt. L. R. Borley	R.N.V.R.	6043
A.C.2 C. E. Bridgewater	R.A.F.	5987
Sgt. J. D. Budd		2BKD
S./Sgt. F. Burns	R.A.O.C.	5997
Pte. A. J. H. Burton	G.S.C.	2CXB
Sq./Ldr. T. A. Carlile	R.A.F.	6009
P.O. D. F. Chatt	"	2HKI
Cpl. R. Chipperfield		5996
Cfn. K. N. Coates	R.E.M.E.	4746
Sgt. L. H. Coe	R.A.F.	5938
Cpl. D. Cole	"	5941
A.C. K. Copeland	"	5972
Cpl. B. H. Cox	"	5990
L./Cpl. H. Cox	R.E.M.E.	4740
A./Cpl. W. Crossley	R.A.F.	5959
O./Tel. M. W. Dallman	R.N.	4751
Cpl. J. R. Davies	R.A.F.	5966
Pte. F. W. Day	R.A.M.C.	5109
Cpl. L. C. Dingle	R.A.F.	5928
Cpl. J. C. Doeker	"	5964
Cpl. J. Dufton	"	5948
L./Cpl. P. H. F. Edmunds	R.A.P.C.	5978
P.O. G. E. Felton	R.A.F.	2BFA
Tpr. D. Fergusson	Royal Tank	6037
A.C.2 W. G. Frost	R.A.F.	4725
Sig. P. W. J. Gammon	R. Sigs.	G3VB
Sub/Lt. J. Gardner	R.N.V.R.	6036
Cpl. S. Haddock	R.A.F.	5952
Cpl. D. G. Hammond	"	G4NL
L.A.C. H. D. Harrison	"	5960
Sq./Ldr. A. J. Harvey	"	5955
Pte. F. S. Holman	C.M.P.	2DAH
P.O. H. N. Holmes	R.A.F.	5962
Cpl. R. B. Hooper	"	4735
Lieut. F. H. Hunt	R. Sigs.	ZB2B
A.C.1 D. Jacobs	R.A.F.	4806
Lieut. A. A. Jones	R.E.M.E.	G3RU
Cpl. R. N. Kingscote	R.A.F.	5979
Cpl. A. T. Knight	"	4067
Sgt. J. H. Knowles	"	2FXS
A.C.1 A. P. Little	"	5949
Sig. T. N. Lloyd	R. Sigs.	G3SL
2nd Lt. J. R. Long	"	5998
A.C.2 P. S. Luckhurst	R.A.F.	6038
A.C.2 J. A. Mackie	"	6042
Cpl. H. C. Manley	"	4053
Tel. S. A. Martin	R.N.	5969
L./Cpl. C. G. Mattock	R. Sigs.	4773
Ldg. Tel. R. J. May	R.N.	5958
Cpl. E. A. Mortemore	R.E.M.E.	5940
Ldg. Tel. F. Mumford	R.N.	BERS514
Cfn. L. R. Panting	R.E.M.E.	5954
L./Cpl. K. Parker	R. Sigs.	5961
Sig. J. Patterson	"	2798
Cpl. D. R. Penney	R.A.F.	6030
A.C.1 A. J. Perkins	"	G6KP
Cfn. C. Plant	R.E.M.E.	5973
Cpl. R. Roberts	R.A.F.	5994
Seaman K. O. Rougier	R.N.	5922
Cpl. R. J. Rowbottom	R.A.F.	G3VP
Cfn. S. Oldroyd	R.E.M.E.	5923
L.A.C. F. S. Rose	R.A.F.	2DRT
L.A.C. D. Scholes	"	5951
Cfn. D. Sherburn	R.E.M.E.	5977
Cfn. A. F. B. Shergold	"	5927
Ldg./Radio Mech. C. A. Shutt	R.N.	2HGA
L.A.C. C. Smith	R.A.F.	G3YA
Lt.-Col. W. Monro Smith	R. Sigs.	6005
Ldg./Radio Mech. J. F. Stanley	R.N.	5991
Sgt. B. Stewart	R.E.M.E.	4070
Sgt. C. A. Taylor	R.A.F.	4056
O./Cadet J. G. Van Went	R. Sigs.	4737
L.A.C. D. N. Vann	R.A.F.	2HHR
Sig. H. W. Warner	R. Sigs.	G3BB
L.A.C. R. J. Webb	R.A.F.	6013
L.A.C. J. F. West	"	2CMW
Gnr. R. E. Williams	R.A.	5971
Cpl. F. Williamson	R.A.F.	2CJW
W./Cdr. T. Wilson	"	4060
Tel. T. P. Wilson	R.N.	6007
Sig. G. H. Woolner	R. Sigs.	G4BC
Sig. R. W. Wratten	"	G2JV

Prisoners of War Fund

IN MEMORY OF G6GZ.—Mrs. Dorothy Neale, widow of Reg Neale, G6GZ, commemorated his birthday by forwarding a cheque for one guinea, a gesture greatly appreciated.

THANKS.—The General Secretary acknowledges, with thanks, on behalf of Council, receipt of donations from:—G. Spence, G6MRZ, 5s.; H. J. Smith, 3044, 2s. 3d.; J. H. Cradlington, 4072, 2s. 6d.; F. O. Catling, 4823, 5s.; A. H. Broomfield, G6OQ, 10s.; E. R. Martin, G6MX, 5s.; R. F. R. Clark, G5PY, 5s.; No. 1 R. S. Mtg. per G8ON, 9s.; P. C. Mortimore, G8KI, 6s.; H. G. Lapworth, 5043, 2s. 6d.; H. W. Fisher, 2CKP, 5s.; G8CY and Family, 13s.; Belfast Y.M.C.A. Radio Club, per G15HU, 10s.; Anon, 3s. 4d.; L. A. Parnell, G8PP, 5s.; J. Higham, 3172, 2s.; P. Phillips, 2739, 1s.; T. M. Gaye, 3587, 1s. 2s. 6d.; RME70, £2 10s.; No. 1 R. S. Mtg. per G8ON, 19s.; District 7, Croydon, per G2DP, 7s. 6d.; District 13, per G3ST, 13s.; J. M. S. Watson, G6CT, 5s.; Mrs. D. Neale, £1 1s.; Cairo Meeting and Egyptian Amateurs, per SUISG, £15. Receipts to date, £753 9s. 3d. Expenditure to date, £242 12s. 9d. Balance in hand as at February 28, £510 16s. 6d.

PARCELS.—Parcels were sent in January to 21 Members, and 4 Non-Members.

DONATIONS.—In an airgraph letter to H.Q., Mr. Frank Pettitt, SUISG reports that after the Cairo Convention held on December 19, when the sum of £7 14s. 0d. was subscribed for the P.O.W. Fund, the members of the Experimental Short Wave Club of Alexandria, made a further contribution of £5 6s. 0d., which amount represented the cash assets of the Club when it closed down at the outbreak of the war. The members of the Club associated with this gift are SUIDB, IAX, IWM, 1RD, 1JM, 1SG and 2JR. To make the sum sent to London up to an even £15, SUISG and SUIRD added £1 each. Our thanks are recorded to Mr. Pettitt and his associates for their generous gift.

News From the Kriegies

L.A.C. Snowy Campbell, VK3MR, reports the safe arrival of several R.S.G.B. Fund parcels, as well as letters and cards from G members. He also received a Xmas food parcel from the British Red Cross and a welcome letter from Eric Trebilcock, BEK5195.

In a letter from Lager VIII B, Germany, L.A.C. Arthur Richardson, 2CXT reports the receipt of no less than ten P.O.W. Fund parcels. He writes: "The playing cards were very welcome as we play bridge almost night and day. The car racing game works very well with a couple of radio mechs. on the cars and a wireless op. running the book! As a matter of fact it has brought our cigarette ration up to nines plus!" He has met no members recently, the two who were with him having been transferred. He wishes to be remembered to all old friends.

The first intimation that Trooper N. F. Druce, BRS2600 (Croydon), is a prisoner of war in P.G.65, Italy, was the receipt at H.Q. on February 8 of a P.C. dated November 11, 1942. Apparently Druce wrote last July but his letter went astray. Parcels are now being sent.

An Appreciated Service

Since November, 1940, Mr. Philip Wade, 2BPJ has, with the assistance of six helpers, provided more than 1,000 full length 16 mm. film shows for troops in isolated units around the Leeds area. 467 shows were given last year. Mr. Wade is a civilian liaison officer attached to Northern Command. The members of the party use their own equipment.

Books Received

THE RADIO AMATEURS HANDBOOK. (20th Edition.) Published by the American Radio Relay League, Hartford, Conn.; 10s. 6d., through R.S.G.B.; delivery three months.

The current edition contains 480 pages divided into three main sections covering: (1) Principles and Design; (2) Construction and Data; (3) Operating and Regulatory.

Chapters 1 and 2 are devoted to the story of Amateur Radio and Electrical and Radio Fundamentals. A new chapter gives details of equipment for the War Emergency Radio Service. Extensive cross references enable the reader to find his way around the book with the greatest of ease.

This edition—the 20th—is as good as ever. It needs no boosting.

BASIC ELECTRICITY AND MAGNETISM. (One of Pitman's Pocket Handbooks.) By W. C. Frid, B.Sc. (Hons.). Pitman; 1s. 6d.

A grand little book. Ideal for the youngster groping in the dark for an easy-to-follow explanation of the basic principles of "elec. and mag." Neatly illustrated and well produced. The first of a new series of Pitman publications.

ELEMENTARY ELECTRICITY FOR RADIO STUDENTS. By W. E. Flood, M.A. Longmans; 1s.

A first book of electrical theory for wireless operators. Exercises are given at the end of each chapter—a useful idea. Chapter headings: Fundamental Facts, Ohm's Law, Cells and Batteries, Energy and Power, Magnets and Magnetic Fields, More about Coils, Condensers, Alternating Current, Revision Problems. Excellent value.

HEADQUARTERS CALLING

January Council Meeting

Resume of the Minutes of a Council Meeting held at the Institution of Electrical Engineers on Monday, January 18, 1943, at 6 p.m.

Present.—Mr. A. D. Gay (President), Messrs. E. L. Gardiner, H. A. M. Clark, A. J. H. Watson, F. Charnan, D. N. Corfield, J. Hunter, W. H. Matthews, E. H. Simmonds, and J. Clarricoats (General Secretary).

Apologies were received from Messrs. G. A. Jessup, J. W. Matthews, W. A. Searr and A. E. Watts.

1. One hundred and forty-six applications for membership were accepted (25 were supported by references, 121 were sponsored by Corporate members). An application from Mr. C. F. Haberer for Life membership was approved.

2. The Council accepted an invitation from the Association of Scientific Workers for the Society to be represented at a Conference dealing with The Planning of Science.

3. Messrs. Milne and Gee were authorised to prepare an historical account of British Amateur Radio with a view to its publication by the Society after the war.

4. The President of the China Amateur Radio League solicited the assistance of the Society in providing exhibits for a forthcoming Convention in Chungking. (This matter was dealt with in the February issue.) It was agreed to send a letter of good wishes to the C.A.R.L.

5. Post-war licensing matters were discussed and an agenda prepared for a forthcoming meeting with G.P.O. representatives.

6. It was agreed to order a further 20,000 copies of *The Amateur Radio Handbook*. It was reported that 6,500 of the 10,000 copies forming the 8th printing had been reserved prior to publication.

7. Messrs. S. K. Lewer, G6LJ, W. H. Matthews, G2CD, and W. E. Russell, G5WP, were co-opted to serve on Council.

8. It was recorded that the Australian Government had set up an emergency communications network manned by amateurs.

I.E.E. Meetings

Ft./Lt. T. R. Theakston, B.Sc., 2DBK will deliver a lecture entitled "More about Maths" at the meeting to be held on March 27, at the Institution of Electrical Engineers, Savoy Place, London, S.W.1. The lecture will commence at 2.30 p.m. Those who were fortunate enough to hear "The Maths Master" deliver his previous talk on Radio Maths need no reminding of the easy style which he adopted in explaining his subject.

There was an attendance of about 50 at the meeting held on February 27 when Mr. H. V. Griffiths, Engineer-in-Charge, B.B.C. Receiving and Measurement Station, delivered his lecture on "Diversity Reception." The Chair was taken by Mr. A. D. Gay (President), and a vote of thanks to the lecturer was proposed by Mr. E. L. Gardiner, Executive Vice-President. Mr. Corfield seconded the motion which was carried with acclamation.

Messrs. Higson, Cullen, Forbes and Winsford contributed to the discussion. Mr. Griffith's paper will be published in a later issue of the Society's Journal.

Deputy D.R. for South Wales

Council has been pleased to appoint Mr. Hugh Phillips GW4KQ, 82 Cotterell Road, Roath, Cardiff, Deputy D.R. for South Wales. Mr. Phillips is already well known to many members as Manager of the U.H.F. and V.H.F. Group of the Experimental Section.

Sales Department

For the information of newer members we give below a list of items available from Headquarters:—

Amateur Radio Handbook	..	Cloth Cover	6	s. d.
	..	Paper Cover	4	0
Radio Handbook Supplement	..	Cloth Cover	5	6
	..	Paper Cover	2	9
Car Plaque (T. & R. Emblem)	..		3	6
Kilocycles to Metres Conversion Tables in pocket book format	..		1	6

All prices quoted include postage.

American Publications

The following American publications may be ordered through the Society:—

QST	..	..	17	6	p.a.
Radio Amateur Handbook (A.R.R.L.)	..	..	10	6	
Antenna Handbook (A.R.R.L.)	..	..	4	0	
"Radio" Handbook (E. & E. Ltd.)	..	..	12	0	

Delivery can be expected in about 3 months from date of order. Service addresses must not be used and cash must accompany each order.

Subscriptions to "Radio" cannot be accepted at present.

Journal of the Brit. I.R.E.

Mr. L. H. Bedford's paper entitled "The Theory of Units," read before the London section of the Institution at the Federation of British Industries on October 23, 1942, is published in the current issue of the *Journal of the British Institution of Radio Engineers*. The same issue also contains Dr. Blakey's paper entitled "Notes on R.F. Attenuator Design" read before the North-Western section of the Institution on October 17, 1942.

The address of the British Institution of Radio Engineers is now 9 Bedford Square, London, W.C.1.

Proposed History of Amateur Radio in Britain

Two well-known members, Arthur Gee, G2UK and Arthur Milne, G2MI, have undertaken the task, with the approval of Council, of preparing an authoritative History of Amateur Radio in Great Britain. In this connection members are invited to look through their station records to see whether they have any documents of historical interest which they could loan to the editors. Information concerning important first contacts, early days on the high frequencies and assistance rendered to expeditions, etc. would be welcomed. Old photographs, amusing or interesting anecdotes are also needed.

Please write to A. O. Milne, G2MI, 29 Kechill Gardens, Hayes, Bromley, Kent. Telephone, Hurstway 1877.

Are you Serving or Going Abroad?

In an airgraph letter from Bulawayo, an ex-member laments the fact as that his parents cancelled his subscription when it became due three years ago, he has been deprived of THE BULLETIN. We have frequently pointed out to relatives that if they cancel a Service member's subscription, they must assume full responsibility, as it is not now possible to supply back issues of the Society's journal when a member rejoins. We would urge all members serving or going abroad to make arrangements for their subscription to be renewed in order to avoid missing THE BULLETIN.

We think it only right to record that a large number of members have made arrangements for their subscription to be renewed and many kind letters have been received from parents and relatives in this connection.

Book Review

HIGH FREQUENCY THERMIONIC TUBES. By A. F. Harvey. Chapman & Hall; 18s.

The few years immediately preceding the outbreak of the present war, witnessed rapid strides in the practical development of radio waves of extremely high frequency, but unfortunately the few textbooks available to the public were in general confined to the theoretical aspects of the subject. For this reason alone Dr. Harvey's new book will be welcomed by the growing number of experimenters, amateurs and professional alike, whose interests lie in the practical development of V.H.F. circuits.

The author opens with a description of the operation of normal types of thermionic tubes at very high frequency, and then proceeds to deal with the Magnetron in two lengthy chapters, which incidentally form the major section of the book. It is in this field that Dr. Harvey is able to draw upon his own extensive researches. As Dr. E. B. Moullin points out in his foreword, the complete behaviour of Magnetrons is by no means easy to explain on purely classical theoretical lines, a fact which makes Dr. Harvey's experimental data all the more acceptable.

Turning from a field in which the author is obviously completely at home, to the later sections of the book, which deal with velocity modulation tubes (such as the Klystron), wave guides and horn radiators, we are left with the impression that he has rather hurried through a number of subjects which are so closely related to the design and use of V.H.F. tubes as to merit more detailed treatment. It may be, however, that the exigencies of war economics have been responsible for this, and we look forward to expansion in this direction when a second edition is prepared. We do feel, however, that much of the material contained in the first chapter could well have been assumed to be known by most readers of a book of this character. In particular the inclusion of details of audio frequency amplifier design (carried right down to the calculation of iron cored audio frequency transformers) does not, in our opinion, merit the space it absorbs.

An extensive bibliography containing a large number of references to recent V.H.F. work is included at the end of the book.

H.A.M.C.

Trade Note

Stratton & Co., Ltd., have recently published an instructional booklet covering their 358 type receiver. Printed on art paper and profusely illustrated this booklet should appeal to all who own, or aspire to own, a 358.

The 358 receiver is of the superhet type specially designed for reliable reception of telephony, and telegraphy signals even under bad conditions. It has a tuning range of 31 Mc/s. to 40 kc/s.

Copies of the booklet are available from *Webbs Radio*, Soho Street, London, W.1, price 2s. 6d. each.

NEW MEMBERS

Home Corporates

- F. LEES (G3PD), 26 Bargap Road, Oldham, Lancs.
 C. SMITH (G3YA), 25 Rotherham Rd., W. Melton, Nr. Rotherham
 D. G. HAMMOND (G4NL), 25 Welbury Street, London, E.8.
 COL. E. S. COLE (G51W) (re-elected).
 E. J. ALLAN (G6M5NW), 27 Cedar Rd., Broughty Ferry (re-elected).
 A. J. PERKINS (G6KP), 67 Thurlstone Ave., Morden, Surrey (re-elected).
 R. F. STANBRIDGE (G8NT), 49 Westfield Ave., Woking, Surrey.
 G. E. FELTON (2BFA), 40 Church Walks, Llandudno.
 J. D. BUDD (2BKD), 39 Bedford Road, Reading.
 J. W. GREEN (2CSG), 9 Springhill Road, Burnley.
 H. WALLS (2DAT), 83 Langdale Rd., Sefton Pk., Liverpool, 15.
 T. J. EVANS (2DFX), 5 North Parade Tce., Monmouth (re-elected).
 E. THORNE (2F8J), Police H.Q., West Hill, Winchester.
 R. W. SHEPPARD (2FUF), 6 Verulam Avenue, London, E. 17.
 G. K. DUNN (2FUD), 722 Fulham Road, London, S.W.6.
 J. H. KNOWLES (2FXS), 38 Grosvenor Place, N. Shields.
 D. A. STEWARD (2HAB), 9 Weymouth Street, Apsley, Heme Hempstead.
 H. A. WILSON (2HAQ), 1 Lady Margaret Road, Southall.
 C. A. SHUTT (2HGA), 11 Monks Park Road, Northampton.
 D. N. VANN (2HHR), 10 Woodvale Road, Sheffield, 10.
 D. F. CHATT (2HK1), 23 North View, Sherburn Hill, Co. Durham.
 J. BROWN (2HLL), 87 Irvine Rd., Kilnarnock, Ayrshire.

A CORDIAL WELCOME IS EXTENDED TO THE

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NEW MEMBERS WHOSE NAMES ARE LISTED

Home Corporates (B.R.S.)

- R. C. MAYMAN (859), 27 Tennyson Avenue, Hull (re-elected).
 W. M. FORBES (901), 25 South Road, Wick, Caithness (re-elected).
 K. A. ROUGIER (5922), 80 Primrose Ave., Chadwell Heath, Essex.
 S. OLDROYD (5923), 10 Sunnybank Dr., Greatland, Nr. Halifax.
 D. WITHERS (5924), 285 Cottingham Road, Hull, Yorks.
 G. BROOKE (5925), 50 Air Ministry Estate, Carterton, Oxon.
 W. H. FOSTER (5926), 73 Lamby Road, Liverpool, 17.
 A. F. SHERGOLD (5927), 4 Coten End, Warwick.
 L. C. DINGLE (5928), 137 Stretfield Rd., Kenton, Middx.
 W. T. BURRAGE (5929), 46 Gressell Lane, Lea Hall, Birm., 26.
 G. S. SQUIRES (5930), 6 Beechfield Road, London, N.4.
 J. A. MARSHALL (5931), 18 Crescent Ave., Overhinton, Bolton.
 R. VREKLAND (5932), South View, Southwell Rd. E., Rainworth, Notts.
 G. BENNETT (5933), Sunlea, Morton, Gainsborough, Lincs.
 J. MATHIESON (5934), 31 Reid St., Bellshill, Lanarkshire.
 S. L. BROWN (5935), 12 Hilda Vale Road, Farnborough, Kent.
 D. C. W. CLAYE (5936), 23 Wilton Cr., Wilton Rd., London, N.10.
 G. M. REXFORD (5937), 12 Clyde Road, Frampton Cotterell, Nr. Bristol.
 L. H. COE (5938), R.A.F.
 G. L. LISTER (5939), 29 Selborne Grove, Keighley, Yorks.
 E. A. MORTEMORE (5940), 135 Crayford Way, Crayford, Kent.
 D. COLE (5941), R.A.F.
 J. H. PRINCE (5942), 2A Hyndford St., Perth Rd., Dundee.
 J. A. BIRD (5943), 79 High St., Hadley, Wellington, Shropshire.
 A. BERGOL (5944), 294 Brookvale Rd., Erdington, Birm., 23.
 W. D. OLD (5945), 83 Trevenon Rd., Pool, Carn Brea, Redruth.
 D. ROBB (5946), 50 Arnold Road, Woking, Surrey.
 A. D. ROBINSON (5947), 22 Newcombe Rd., Handsworth, Birm.
 J. DUTTON (5948), 7 Pearson St., Shield Row, Stanley, Co. Durham.
 A. P. LITTLE (5949), 23B Manse Road, Netherthorn, Wiltshire.
 W. N. GAY (5950), 182 Park Avenue, Purbrook, Portsmouth.
 D. SCHOLES (5951), 44 Fixby Road, Huddersfield.
 S. HADDOCK (5952), 20 Fife Ave., Chester-le-Street, Co. Durham.
 D. A. GLOVER (5953), 15A Queensborough Road, London, S.E.26.
 L. R. PASTING (5954), 18 Evelyn Terrace, Richmond, Surrey.
 A. J. HARVEY (5955), Brownleys, Lea Rd., Dronfield, Sheffield.
 P. J. CADWELL (5956), 26 Essex Road, London, E.10.
 J. T. W. BLYTH (5957), Rectory Rd., Hockering, East Dereham, Norfolk.
 R. J. MAY (5958), 40 Rosslyn Road, Newport, Mon.
 W. CROSSLEY (5959), 266 Saddleworth Rd., Greatland, Nr. Halifax.
 H. D. HARRISON (5960), School Lane, Appleby, Cumbria.
 K. PARKER (5961), 18 Hawthorn Dve., Burnage, Manchester, 19.
 H. N. HOLMES (5962), The Chalet, Langwith Drive, Langwith, Notts.
 G. O. J. ROBSON (5963), c/o 35 Strathmartine Rd., Dundee.
 J. C. DOCKER (5964), Loxley, Hermitage Lane, Mansfield.
 F. D. ABBOTT (5965), 6 Kingscourt Road, London, S.W.16.
 K. R. DAVIES (5966), 5 Nixon St., Chell, Stoke-on-Trent.
 J. TIDY (5967), Quarry Hill, Falmouth, Cornwall.
 J. G. DODD (5968), 77 Foxley Lane, Purley, Surrey.
 S. A. MARTIN (5969), 180 Henega Road, Grimsby.
 F. G. HARDING (5970), 22 Hutching Cres., Clowne, Nr. Chesterfield.
 R. E. WILLIAMS (5971), 10 Denmark Rd., Aylestone Pk., Leicester.
 K. COPELAND (5972), 6 Blomfield Street, Bury St. Edmunds.
 C. PLANT (5973), 2 Rhoda Street, Armley, Leeds, 12.
 R. G. SILSON (5974), Norwich, Tyton Lane, Boston.
 R. ALCOCK (5975), 25 Red House Lane, Aldridge, Staffs.

- E. R. BIRD (5976), 11 Hereford Road, London, W.2.
 D. SHERBURN (5977), High Street, Kippax, Leeds.
 E. P. H. FAIRBAIRN (5978), 6 Victoria Road, West Point, Manchester, 19.
 R. N. KINGSCOTE (5979), Willoughby, Huddersfield, Nr. Gloucester.
 W. C. BARRS (5980), 33 Granby Road, Luton, Beds.
 L. H. ALDRIDGE (5981), Rodboro, Cowley Rd., Uxbridge, Middx.
 M. SHARMAN (5982), 5 Kings Drive, Hassocks, Sussex.
 H. V. ANDERSON (5983), 14 Earnock Ave., Motherwell, Lanarks.
 E. ROWLAND (5984), 45 Dixon Lane, Leeds, 12.
 T. PLUMMER (5985), Glen View, Hurst Green, Blackburn.
 R. T. PALEY (5986), 29 Milner Croft, Retford, Notts.
 C. E. BRIDGEMAN (5987), 19 Bernard Avenue, London, W.13.
 W. E. PARKES (5988), 54 Audon Avenue, Chilwell, Notts.
 J. BARRY (5989), 139 Bevedean Crescent, Brighton, 7.
 B. H. COX (5990), 234 Penns Lane, Sutton Coldfield, Birmingham.
 J. F. STANLEY (5991), 35 Station St., Sutton Coldfield, Birm.
 MRS. P. RICHARDS (5992), 7 Pollards Nurseries, Henlow Camp, Henlow, Beds.
 W. DORIS (5993), Southbrook Farm, Whimpey, Devon.
 R. ROBERTS (5994), 44 Manor Rd., Blaenau Ffestiniog, N. Wales.
 R. W. HUGHES (5995), 40 King Street South, Rochdale.
 R. H. C. CHIFFERFIELD (5996), 7 St. Stephens Cottages, Rumburg, Halesworth, Suffolk.
 F. BURNS (5997), 3 Edge Fold Road, Walkden, Manchester.
 J. R. LONG (5998), Thornwell Bank, Loxley, Nr. Sheffield.
 C. J. MACPHERSON (5999), 8 Dean Tce., Bo'ness, West Lothian.
 W. O. SIMPSON (6000), Laurel Cottage, Brampton, Nr. Carlisle.
 W. H. ADKIN (6001), 65 High Street, Old Basford, Nottingham.
 F. CROSDALE (6002), 11 Orwell Avenue, Denton, Manchester.
 J. W. BEATHAM (6003), 4 St. Johns Rd., Ben Rhydding, Yorks.
 R. W. AYLING (6004), Ottery, Shopwhye Road, Colchester.
 W. M. SMITH (6005), 9 Capel Road, Colinton, Edinburgh.
 M. S. CROTHALL (6006), 4 Chart Road, Folkestone.
 T. P. WILSON (6007), 370 Ivy Ctee, Hartshill Rd., Stoke-on-Trent.
 W. GREATORREX (6008), 11 Park Terrace, New Earswick, York.
 T. A. CARLILE (6009), c/o Lloyds Bank, Grey Street, Newcastle-on-Tyne, 1.
 I. C. WALKER (6010), 9 Minerva Rd., Kingston-on-Thames, Sy.
 E. R. WELCH (6011), 209 High Street, Herne Bay, Kent.
 R. E. DURRANT (6012), 15 Red Hill Ave., Ross Rd., Hereford.
 R. J. WEBB (6013), 48 Grasvenor Avenue, Barnet.
 C. R. LAST (6014), 91 Molefield Estate, King Edward Avenue, Aylesbury, Bucks.
 R. ALEXANDER (6015), 6 Albert Street, Aylesbury.
 C. A. COOK (6016), Whitecot, Forty Green, Marlow, Bucks.
 R. A. DOLBEAR (6017), 43 Nightingale Rd., Southcourt, Aylesbury.
 F. G. DUNNETT (6018), 211 Buckingham Road, Aylesbury.
 V. J. COX (6019), 16 Weedon Road, Aylesbury.
 R. H. ARDING (6020), 36 Bilton Hill, Aylesbury.
 K. BOSELEY (6021), 49 First Avenue, Amersham, Bucks.
 MISS W. HOLLINGSWORTH (6022), 36 Station Road, Stoke Mandeville, Bucks.
 F. J. KIRK (6023), 123 Molefield Estate, Aylesbury.
 L. P. CORTE (6024), c/o A.I.D., M.A.P., Aylesbury.
 F. B. CHESHIRE (6025), St. Brelades, White Hill, Chesham.
 E. G. ROLFE (6026), 61 Buckingham Road, Aylesbury.
 H. F. W. HEAD (6027), 2 Walton Way, Aylesbury.
 H. L. WATTS (6028), A.I.D., M.A.P., Aylesbury.
 D. H. LORD (6029), 13 Waverley Avenue, Heaton, Nottingham.
 D. R. PENNEY (6030), 268B, Portland Road, Hove, 3.
 MRS. R. E. SIMPKIN (6031), c/o Bird & Bird, 5/11 Theobalds Rd., London, W.C.1.
 C. H. MERRILEES (6032), 164 Great Junction Street, Leith, Edinburgh, 6.
 W. G. BARNES (6033), 26 Dulwich Common, London, S.E.21.
 J. BROADHURST (6034), 19A Duffield Road, Derby.
 W. M. FERRIER (6035), Balrownie, Balbardie Road, Bathgate, W. Lothian.
 J. H. E. GARDNER (6036), Weybrook Cottage, Sherbourne St. John, Basingstoke.
 D. FERGUSON (6037), 3 Keith Way, Hornchurch, Essex.
 P. S. LUCKHURST (6038), 159 College Road, Deal, Kent.
 MISS A. B. SLIGHT (6039), 9 Chambers Road, Southport.
 T. H. M. OFFER (6040), 35 Lovelace Gardens, Surbiton, Surrey.
 F. A. SWAIN (6041), 96 Prestbury Road, Cheltenham.
 J. A. MACKIE (6042), 14 Smith Avenue, Inverness.
 L. R. BORLEY (6043), 36 Chapel Street, Buckland, Portsmouth.
 J. F. WEST (6044), 49 Dawlish Drive, Leigh-on-Sea.
 R. E. IRELAND (6045), 78 Calthes Road, London, S.W.12.
 J. BAILEY (6046), 11 Birch Street, Bury, Lancs.
 J. W. LISTON (6047), 102 Moss Lane W., Moss Side, Manchester 15.
 C. C. KING (6048), 230 Tunnel Avenue, London, S.E.10.

Dominion and Foreign

- LT. R. THORNTON (VE2AR), Canadian Army.
 S./SGT. W. H. PROBST (W8KCG), U.S. Army.
 M. H. PLASSCHAERT (W9KQJ), 421 South Front St., New Ulm, Minn., U.S.A.
 LT. F. H. HUNT (ZB2B), R. Signals.
 CPL. K. S. EDGINGTON (ZL4CP), N.Z.R.A.F.
 L. F. MUMFORD (BERS514), 7 Plo Quinto, Zabbar, Malta.
 G. F. ALEXANDER (BERS515), 140 Jameson Ave., Salisbury, S. Rhodesia.
 LT. J. M. REILLY (FRS66), U.S. Army.

Associates

- R. A. ASHBE, Shores Corner, Kettlewell Hill, Horsell, Surrey.
 P. D. WHITAKER (Junior), Kledang, Sandon Road, Grantham.
 A. J. SHEPPARD (Junior), 2 Market Street, Newbury, Berks.
 R. C. RICHARDS (Junior), 60 Well Street, Ryde, I.O.W.

BRITISH ISLES NOTES AND NEWS

DISTRICT 1 (North Western)

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

Ashton-under-Lyne.—Cfn. Twigg (4519) reports that he is taking a Radio-Mech. course in Lincs. 3FF is believed to be in the R. Sigs. 30C dropped in for a chat with 6DV the other day wearing a white flash: the last time he was in the district was after his escape from Dunkirk.

At a recent meeting of the Ashton Radio Society it was decided to hold meetings monthly instead of weekly as at present. The Secretary is Mr. K. Birch (2FOS) of 95 Prince Edward Avenue, Denton, who has taken over from 3PM. (via G5PX).

Bolton.—As only three members attended the February meeting held at 2BDA it is hoped that better support will be forthcoming in the future. 2ABT, at present on a course somewhere in the South, hopes to return soon. 4DK, the latest visitor to the town, called on the T.R. recently, and an enjoyable chat ensued. No news has been received from 4HL, 2CQL or 2FPI for some time; the T.R. would appreciate a postcard from them.

The next meeting will be at 2BDA, 18 Morningside Road, Bolton (B.N. or O. Tram route) on Sunday, April 4 at 2.30 p.m. (via 2DVQ).

Bury.—The D.R. has received a letter from Sgt. Lever (G8QS), (who is in hospital at present) complaining of the absence of notes from his home town. He sends his regards to 8NL, 8NF, 2GA, 3ZN, 2GA and 2DH. His address is 946717 Sgt. Lever R.B., B.2 Ward, Royal Herbert Hospital, Woolwich, S.E.18. G6CX.

DISTRICT 2 (North Eastern)

D.R.: C. A. Sharp (G6KU), 316, Poplar Grove, Gt. Horton, Bradford. Bfd. 10772. Scribe: H. Beadle (G8UO), 13, Chandos St., Keighley.

Barnsley.—G2BH is fully occupied with C.D. duties and his school. 6PY has been very ill, we hope he is now well on the way to complete recovery. 8TZ and 2DQL are in R. Sigs. 6XL (Q.M.S) 6LZ (Sgt.), 8PK, 5KM and 3PR are all in the R.A. 2AVX is overseas with the R.A.O.C. 8NM, 8LJ, 3YA are in the R.A.F. 2BFJ is in the R.N. 5DW is in the Nottingham area on radio work. 5UA is on work of national importance. 5IV (pre-war T.R.), who sends the above news, is with the R.A.F. in Scotland. He has also visited GI and has happy memories of the Belfast Radio Club. He sends 73 to all Barnsley members. 4JJ (R.A.F.) is planning to build a resistance-capacity bridge, oscilloscope, and pocket B.C.L. receiver. Deepest sympathy is extended to 2BEJ in the loss of his wife. The Barnsley Club is now virtually non-existent and their bank balance has been invested in war savings.

Leeds.—3572, an L.A.C. with the R.A.F. Regiment, sends 73 to the T.R., 2DGD, 2XY and 8WS. 5YV thinks all Morley members must have left the land of the living as he has only heard from 5893, a new member who can now receive "Press" 100 per cent. 5YV has recently completed a 60-watt high gain 6L6 modulator.

Sheffield.—3RZ is spending most of his time at local hospitals as a student doctor. 3YV (R.E.M.E.) recalls happy memories of his contacts when stationed in Bournemouth and sends 73 to all old friends. 3RU (Lieut. R.E.M.E.) has covered most of the South of England but has not yet contacted any hams. He sends 73 to Barnsley and Sheffield groups, particularly to 3OU and 3FX. 3YV and 3RU would be pleased to hear from local members. Letters should be forwarded via home QRA's which may be obtained from G2LT, who would like to start a letter budget for Sheffield and District members.

General.—4412 and 5GJ are stationed together again and enjoy many rag chews. 4MC is now in the M.E. 6YU of Coventry has been in Bingley for the last 18 months. 2AND is now in London and hopes to visit H.Q. 4976 wishes to get in touch with Huddersfield members and will reply to all letters received. 5YD sends the following news: 6RO is now in Bradford. 8CW and 3GT are in the R.A.F. 8YK in R. Sigs. 8YF is in Manchester and 8OF with M.A.P. 3GD is on war work. 5YD nearly lost his slack when an H.E. missed the house by 25 yds. 5448 is with the R.A.F. in the M.E. He says 5ULAX is befriending and helping everyone he contacts. 3HJ and 5OI are with him. We are sorry to hear of 28U's illness and wish him a speedy recovery. 5842 is with the R.A.F. Many years ago he operated from Y12GW near Baghdad. 4224 and 8UO enjoyed an interesting visit to the D.R. on his recent "At Home" day. Another letter budget will soon be going the rounds. G8UO.

DISTRICT 3 (West Midlands)

D.R.: V. M. Desmond (G5VM), The Chestnuts, Gilbert's End, Worcs. Scribe: E. J. Wilson (2FDR), 48 Westbourne Road, Olton, Birmingham, 27.

Birmingham.—At a meeting of M.A.R.S. held on Sunday, February 7, Mr. H. M. Hart (Treasurer) tended his resignation on his appointment to a post in the north. Mr. Bernard George was unanimously elected in his place.

At this meeting Mr. C. Naylor Strong, F.R.C.S. (President), gave a most interesting lecture on the reactions of the ear to sound. Many of those present realised for the first time why, when they acknowledged R9 signals, they only got a report of R5! 2FDR.

DISTRICT 4 (East Midlands)

Deputy D.R. W. M. Vandy (G6VD), 9 Cecilia Road, Clarendon Park, Leicester.

Leicester.—It is gratifying to note that the attendance at meetings is steadily increasing and it is hoped, now that numbers warrant it, to arrange something interesting for the future. Suggestions from members will be welcomed.

Nottingham.—An interesting discussion on amplifiers provided the main topic for the February meeting. Little has yet been seen of many of our newer members but it is hoped that they will endeavour to support future meetings. 4LY reports fit and well in an airgraph from the M.E. 8CZ and 2A00 are now on part-time duties in the communications section of the N.F.S. G6VD.

DISTRICT 5 (Western)

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

In an interesting airgraph letter to the D.R., G5UH, who is now in the Middle East, reports attending the Christmas Conventionette organised by SU1WM in Cairo. He has met G2FC (Bristol) and 8DA (Cheltenham). G8FW is in his squadron.

Bristol.—At the meeting held on February 21, we were pleased to welcome G5KT, who was on sick leave after a spell in hospital. Next meeting on Sunday, March 21, 3 p.m. at 17 Colston Avenue, Bristol. There is nothing to report from other parts of the District. G6RB.

DISTRICT 6 (South Western)

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

G2AT reports that his famous A.R.R.L. mast, which has stood up to all sorts of weather since the outbreak of war, at last fell a victim of the recent severe weather. And what did the gardener say about the mess? 2AT will now have to possess his soul in patience till 3BI, 2SH, and 5QA can be once more on the spot to raise "the old faithful."

North Devon.—2FWB will soon be moving to Bude; although this place is in Cornwall it is hoped that he will be able to get in touch with members in Holsworthy and N. Devon. G5SY.

DISTRICT 7 (Southern)

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

Bournemouth.—Hearty congratulations to 4LJ and his XYL (2FHD), on the arrival of a daughter. All concerned are doing very well. (via 2HNO).

Coulsdon.—Local members, particularly those who have attended Croydon meetings during the past 18 months, will wish to extend their sympathy to Mr. Hoare, 2DP (T.R. for Croydon), upon the sudden loss of his mother. Mrs. Hoare was largely responsible for the catering side of meetings held at 2DP's QRA. Capt. Herbert, 6RF, R. Sigs., who was stationed locally, has now left for an over-seas destination. (via BR83003).

G4LY, who came to live at Cheam shortly before the war, reports via airgraph from Persia. As he finds "ham" interest at a low level in his locality he would welcome letters from home; QRA from 5WP.

Croydon.—The February meeting held at 5BT's was attended by 2DP, 2VB, 2FWA, 1545, 3003, 4814 and two prospective members. We welcome 8ID and hope to see him at meetings. 2600 is a P. of W. in an Italian camp. It has been arranged to

T. R. Theakston, B.Sc. (2DBK)

will tell us

"MORE ABOUT MATHS"

at the meeting to be held

On SATURDAY, MARCH 27th, 1943

at

The Institution of Electrical Engineers
SAVOY PLACE, VICTORIA EMBANKMENT
LONDON

COMMENCING AT 2.30 P.M.

Bring your note books and your problems!

hold future meetings at the Y.M.C.A. in Croydon. By the time these notes appear in print the first meeting will have taken place. See "Forthcoming Events" for the time and date of the next.

Maidenhead.—2DBF, "Crendon," Lock Lane, Maidenhead, has kindly offered to act as T.R. Will members in that area please report to him? With genuine co-operation it should be possible to arrange local meetings. L.A.C. Cannon, 5779, is in the area at the moment whilst 2BCQ, 81B, and 4NL have now moved to new QRA's. G5WP.

DISTRICT 8 (Home Counties)

Deputy D.R.: L. W. Jones (G5JO), 16 Leys Road, Cambridge. Tel.: Cambridge 3406.

Every member in the District whose address is known to the writer has been invited to attend the meeting to be held on Saturday, March 20, at the Milton Arms Hotel, Milton Road, Cambridge. If by any chance your name has been missed, please send a p.c. immediately if you intend to be present. Lady friends will be welcomed, but it is absolutely essential that all bookings should be received by G5JO prior to March 18, in order that final arrangements can be made for catering.

Members are asked to foregather at 3.45 p.m. after which tea will be served at 4.30 p.m. As the lounge will be available for the remainder of the evening please bring along your problems for discussion. The success of the meeting depends upon the support given by members now resident in or near to Cambridge. Service members will, of course, be very heartily welcomed.

Although a number of members have sent in reports recently there appears to be very little actual radio activity going on at the moment. Perhaps after the meeting we shall have more to write about. G5JO.

Forthcoming Events

- | | |
|---------|--|
| Mar. 20 | District 8, 3.45 p.m., at Milton Arms Hotel, Milton Road, Cambridge. Tea at 4.30 p.m. Service members cordially invited. Reservations to G5JO, 16 Leys Road, Cambridge, immediately or phone Cambridge 3406. |
| Mar. 20 | District 15, 6.30 p.m., at VESDG, 39 Monmouth Road, Hayes, Middlesex (near Hayes G.W.R. Buses 55, 83, 90, 120 or 140). |
| Mar. 21 | District 4 (Leicester section), 2.30 p.m., at G6VD, 9 Cecilia Road, Clarendon Park, Leicester. |
| Mar. 21 | District 4 (Nottingham section), 6.30 p.m., at G8CZ, 14 Epperstone Road, West Bridgford, Nottingham. |
| Mar. 21 | District 5, 3 p.m. at 17 Colston Avenue, Centre, Bristol. |
| Mar. 21 | District 11, 3 p.m., at "Vale View," Meliden Road, Prestatyn. |
| Mar. 21 | District 13, 3 p.m., at 2HHD, 85 Bedford Hill, Balham, London, S.W.12. |
| Mar. 21 | District 14, 3 p.m., at G8DG, 8 Bosgrove The Ridgeway, N. Chingford. |
| Mar. 27 | London Meeting, 2.30 p.m., at the I.E.E. "More Facts about Maths," by Ft./Lt. T. R. Theakston, B.Sc. (2DBK). |
| Mar. 28 | District 10, 3 p.m., at GWSUH, 29 Lady-smith Road, Roath Park, Cardiff. |
| Mar. 28 | Scotland "A" District, 3 p.m. in Royal Technical College, George Street, Glasgow. Enter by Montrose Street. |
| Mar. 28 | Scotland "C" District, 2.30 p.m., in Dundee Wireless College, 7 Airle Place, Dundee. Lecture by G6M3NH on Aerials. |
| Mar. 28 | District 12, 3 p.m., at G6CL, 16 Ashridge Gardens, Palmers Green, N.13. |
| April 4 | District 7 (Croydon), 3 p.m., at Y.M.C.A., North End, West Croydon. (For further details phone THO. 2849.) |

DISTRICT 9 (East Anglia)

D.R.: H. W. Sadler (G2XS), The Warren Farm, South Wootton, Kings Lynn, Norfolk. Castle Rising 233.

Congrats are extended to 4991 of Yarmouth, who was married on February 10 to Miss Kirby. The bridegroom is now with the R.O.C. Mr. Buck is still busy with superhet experiments.

No other news. What about it Norwich and Ipswich? G2XS.

DISTRICT 10 (South Wales & Monmouthshire)

Deputy D.R.: H. H. Phillips (GW4KQ), 82 Cottrell Road, Roath Park, Cardiff. Cardiff 2697 during business hours.

Cardiff.—The next meeting is to be held at 3 p.m., March 28, at the home of GWSUH, 29 Lady-smith Road—off Penylan Hill—Roath Park, Cardiff. SUH reports a pleasant evening spent

with 20P at Pembroke Dock. 4FW is at a seaside resort in District 5. 5FN is still in the District but news would be welcomed from 2UL and 2HHS. 2AGH and other Service members will be cordially welcomed at local meetings if they make their number.

Newport.—Congrats, and good wishes to 2XX on his recent marriage. 5673, engaged in studies for A.M.I.R.E., would welcome a meeting in Newport in the near future.

Seamsea.—A welcome is extended to 5882 who has joined since the last notes appeared. Any volunteers to arrange a local meeting?

Haverfordwest.—5369 has joined the Services and is now stationed in District 2, where he hopes to contact members in the Beverley area.

20P would be glad to meet members stationed near Pembroke Dock. The suggestion to hold a representative meeting in the District during the Summer months, should sufficient support be forthcoming, is being considered. GW4KQ.

DISTRICT 11 (North Wales)

Deputy D.R.: C. Spilane (BRS1060), "Woodside," Meliden Road, Prestatyn.

The February meeting in Prestatyn produced only a small attendance, GW3GF, 2DGO, BRS1060, 3044, 4762 and 5730 being present. The next meeting will be held on March 21st at 4762, "Vale View," Meliden Road.

BRS1060 has had the luck to be posted within a few miles of home. GW3CF is at the same station. 4CK is instructing on a beam approach course in Wiltshire. 2HIY is on a further W./Ops. course in Herefordshire. 4444 has had a long spell in hospital and is now convalescing (we wish you a speedy recovery o.m.). 1060 recently met 5050 whilst "going the rounds." He is stationed in the District. GW5FU, although working in Derbyshire gets home most weekends to lend a hand in the bar at his establishment. We welcome 2DAH to membership and hope to meet him at local meetings. BRS1060.

DISTRICT 12 (London North and Herts)

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

The meetings held at The Cock, Cockfosters, were apparently too successful, for Mine Host has informed us that due to staff and catering difficulties, he is unable to allow us the use of accommodation on Sunday afternoons. It is very unfortunate, because ambitious plans were being made for the spring and summer, but all good things must come to an end sooner or later. If any member is in a position to suggest alternative accommodation, similar to that which was provided at Cockfosters, the D.R. will be glad to hear about it. Meanwhile the next meeting will be held at G6CL, 16 Ashridge Gardens, Palmers Green, N.13, on Sunday, March 28, at 3 p.m.

There was an attendance of only 10 at the February meeting but the smallness of the gathering did nothing to reduce the variety of subjects discussed. Our thanks are recorded to Mr. and Mrs. Laister, 3386, for their hospitality. G5QF.

DISTRICT 13 (London South)

A.R.'s: (South Eastern and Central), S. E. Langley (G3ST), 62 Dumbarton Road, S.W.2. (Western), E. H. Simmonds (G8QH), 17 Roodean Crescent, Rochampton, S.W.15. Prospect 1920.

South Central and Eastern Areas.—The 17 members and friends who were present at the February meeting (held at the home of G4KY) were particularly pleased to welcome W8MFN (Cincinnati, Ohio) who accepted an invitation to describe his station and amateur conditions in the U.S. 4111 (Northern Ireland), who was also present, is now on a special R.A.F. course in G. Later in the proceedings our host demonstrated his home-built superhet receiver bringing in several American broadcast stations at R9 plus for the benefit of W8MFN. G4KY then described the special circuit features of his "masterpiece," which incidentally seems to incorporate most of the latest ideas. 4324 has commenced work on a similar receiver. A coil winder which he is constructing was on display at the meeting. The sum of 13s. was collected for the P.O.W. Fund.

Reports are scarce but we understand that 4603 has obtained some interesting data as the result of experiments carried out on the U.H.F.'s.

For details of next meeting see "Forthcoming Events." G3ST.

DISTRICT 14 (Eastern)

D.R.: R. L. Varney (G5RV), 184 Galleywood Road, Chelmsford, Essex. Chelmsford 3394.

Chelmsford.—VE4AAV was present at the February meeting which was also attended by 6LB, 6ZC, 5HF, 5RV, 3555, 3650 and 5242. We were also happy to have with us Ft./Sgt. Glass, R.A.F. and Sgt./Pilot "K" of the Polish Air Force. The latter gave a most stirring account of his experiences from the beginning of the war to the present day, including his escape from two concentration camps! There is little other news this month. Nothing further has been heard from 280 since his fleeting re-appearance some weeks ago! "Tiny" Trenaine, 8PB, has been home on leave looking fitter than ever, his recently completed superhet works well.

Chingford.—G8DG reports a successful meeting last month with 2HR, 2DXL, 4210, 5679, 5684 and 5726 present at his QRA.

Next meeting at 8DG on March 21st at 3 p.m., when it is hoped to compare the wear on records due to metal and thorn needles by microscopic tests.

Will scribes please note that notes must reach me by the 27th of each month? G5RV.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

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

Those present at the last district meeting held at 2ADI, had the opportunity of welcoming W9LZV and VE3DG; the latter has recently joined the society. Our host is thanked for his hospitality.

The High Wycombe Group seem to be making their meetings half-day affairs, the February one having lasted for seven hours! We thank Mr. and Mrs. 4781 for their hospitality and for providing refreshments. Those present were interested in 6IF's bug key which can be converted to a straight key at will. Also on view were 4782's home-built test meter and field telephones for use with the Home Guard. 4781 produced his bug and two straight keys which he has constructed and also his three-valve stand-by receiver, 5666 is rebuilding his receiver. 4781 would be pleased to hear from all H.W. members in or out of the Services. There will be no meeting during March.

2DZN mentions in an airgraph report from the Near East, that he has met VE5PT, GW2DO, G2ZY, 2FYV and 2HBN. Cpl. Dingle of Kenton, a new member, writes from No. 1 R.S., having been five years in the R.A.F. 3795, who is also in the R.A.F., wants to dispose of his gear before it becomes useless. (Try a small ad. in the BULL.—Ed.) 1225, who has rejoined, spends his time on Civil Defence. 5688 of High Wycombe is stationed in Norfolk.

G8BW, who is starting a club at his factory at Aylesbury also hopes to be able to arrange meetings outside the works for the benefit of local members. 8BW has done fine work enrolling new members and has offered to act as T.R. for that part of the District. The D.R. welcomes this offer. Local members are asked to contact him at 91 Molefield Estate, King Edward Avenue, Aylesbury.

G3UQ has received an airgraph from 3XI. 3UQ and 8KZ have been ill, but both have now recovered. 5LN has regained possession of the Excelsior Hotel.

A welcome is extended to all new members. We look forward to seeing them at our meetings. A p.c. to say you are coming is all that is necessary. G6WN.

DISTRICT 17 (Mid East)

D.R.: Dr. A. Gee (G2UK), "Stonehaven," Horncastle Road, Boston, Lincs.

Sgt. Coupland, 2BQC, is still at W.W. and 8BQ at W.D. 5167 would like to meet Grimsby members. 4315, who now writes from Salop, reports meetings with 5741, 6SR and 2NQ (Congrats on your promotion, o.m.). 6TV is believed to be overseas. 2DRT of Spalding is at Sidmouth. His only ham contact so far has been with 8F1HA. 5MT is anxious to arrange a meeting in Grimsby. Members interested in this proposal are asked to communicate with him via the D.R. 2AUR, writing from Thirsk, reports a meeting with 3BW's father. 3BW is overseas. 2AUR sends 73 to 6GH, 2AAS and other old friends. 6LH recently adopted a 10 months' old boy—Christopher George. G2UK.

DISTRICT 18 (East Yorkshire)

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

Scarborough.—Congrats to Henry Wiggins, G2CP (R.N.V.R.), on his promotion to P.O. He is at present stationed in the M.E. 8KU (R.N.V.R.) reports the safe arrival of his second Society P.O.W. parcel of smokes. 2DDA (R.A.F.) visited G6SO whilst on leave.

Hull.—R. C. Mayman, 859 (ex 2ABK), who rejoined the society recently, is anxious to meet local members. He is on full time duty on the communications side of the N.F.S. Members are invited to visit him any Tuesday or Saturday evening at 27 Tennyson Avenue, Charterlands Avenue. His only local contact has been with G2QO who he says has been experimenting with a very clever automatic morse sender. 859 requests the address of Ken Winsor (G2FS), believed to be living in Hesse—can anyone help?

More reports would be appreciated.

G6SO.

Northern Ireland

D.R.: J. N. Smith (G15QX) 19 Haithornden Dries, Belmont, Belfast.

Hearty congrats to D. G. Wright, 5806, who was recently married whilst on leave. New arrivals in GI include 5424, W2HYZ, 6ASM, 8AVA, 8KCG, 9NOP and 9KQ; all have visited the Y.M.C.A. Radio Club, Belfast.

G15HU, after tackling pre-selector problems, has an efficient model at work. (How about an article Bob?—Ed.) 6TK is again in action after his serious illness. He lost his mast in a recent gale. 6VG when he visited the D.R. recently told of an exciting experience with a "tin fish." The operator on the ship that brought him home was PAOAC. G15QX.

Scotland

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

"A" District.—Members will learn with sorrow that Bob Frew, GMSR, is reported missing, presumed killed. At the January meeting a most interesting lecture was delivered by Sgt. Valehera on Vibrators. Demonstrations were given on an oscilloscope. 4JO has been elected D.O. in succession to 3AR.

"C" District.—The first of the new series of meetings brought together fifteen members to hear GMSCF discuss transmitters. Tea is to be supplied at future meetings, which will commence at 2.30 p.m. to suit Montrose members. 2FXN has temporarily left the district and 3NH takes his place on the local committee. 5SC is back in harness, while 5760 hopes for leave on discharge from hospital. A reference library of "BULLS." from June, 1936, to date being almost ready, the D.O. claims the "Amateur Bookbinders Certificate" for his labours! Future lectures are to cover many more subjects, GM4HR being the latest contributor with one on Workshop Practice.

"H" District.—GM3SW, with the R.A.F. in India, now holds the rank of sergeant. When at home recently 2NQ contacted 4AN and 6JJ. We welcome D. Brabner of Cupar to Associate Membership. Far North members also welcome another new member in the person of "Fergie"—5668. On the sick list at present is 5598. We wish him a speedy recovery. GM6ZV.

Silent Key

We record with deep regret the death at the age of 61 of Mr. Percival Bevan, GWSH, of Gower, Glamorganshire. Essentially a practical man with a vast engineering knowledge, Mr. Bevan had been an enthusiastic and active amateur since the early days of broadcasting. He was also very interested in speed-boat racing and introduced that sport to his side of the Bristol Channel.

Mr. Bevan was a member of the Motor Agents Association and an Associate Member of the Automobile Engineers.

Our sympathies are extended to his sons and daughter. GW3AX.

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