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RADIO EXPERIMENTERS

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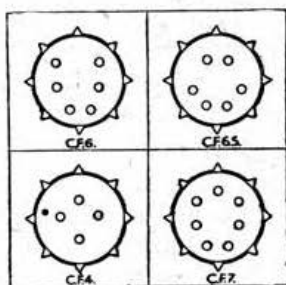
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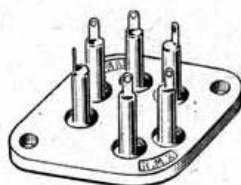


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THE T. & R. BULLETIN

OFFICIAL JOURNAL
OF THE
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OF GREAT BRITAIN



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IMPROVISATION

THESE are the days when ingenuity and resourcefulness are valued as high as technical knowledge and skill. It was not always so. When raw materials and components were plentiful, improvisation did not play a great part, but nowadays when the Services absorb almost the whole output of radio equipment, we are obliged to depart from orthodox and conventional practices.

We do not grumble about the inadequate civilian supplies or complain of the consequent enforced idleness. On the contrary, the situation stimulates our innate inventiveness.

In the years preceding the war, the range of components on the market was profuse and comprehensive. Consequently, the younger amateur entering into this luxurious state missed the broadening influence of the need for improvisation, makeshift and invention, which previously existed.

Now the situation once more demands a closer understanding of the inner nature of component parts and equipment. The commonly used parts of pre-war days are becoming more and more scarce. When the regular type of component is not available, it is the man with knowledge who devises an alternative method, while the copyist assembly man comes to a standstill. Problems of a new kind are arising, and we believe that the amateur will not fail to turn his experience and ability to good use, leading the way by the example of his ingenuity.

A similar state of affairs appears to be developing in America, for the editorial comments in the October issue of *QST* and the November issue of *Radio* speak of the growing need for resourcefulness in constructional work and recall the early days when improvisation and makeshift were a necessity.

The art of improvisation has the directly beneficial result of keeping equipment in service, of permitting the construction of new apparatus which would not otherwise be possible, and leads to a higher sense of achievement.

Improvisation is important both in the Services and at home. We already know that British amateurs have saved valuable time in establishing field stations by the application of their ingenuity where regular methods and practices could not be followed, owing to the temporary shortage of equipment. The intrinsic value of the experienced amateur is not always fully recognised, but as the demand for radio equipment continues everywhere to exceed the supply, the amateur will have his opportunity to serve and to show his worth.

S. K. L.

HOME SERVICING OF THE COMMUNICATIONS RECEIVER IN WAR-TIME

By "THE WORKSHOP MAN."

"LEAVE well alone" is a maxim all very well in its place, but it has never, fortunately for the Art, found any great favour with the average radio amateur.

It has been noticed, however, for the most part, that Mr. Ham regards his communication receiver, if he is fortunate enough to have one, as a box of mystery so deep that the very trimmers have a taboo upon them, and who is he to break it (and the seals) thereon?

Now it is not advocated that all in possession of superhet receivers should forthwith fling caution aside and delve into these admittedly complicated sets with screwdriver and pliers, moving this that and the other trimmer hazardously to see what happens. Not at all; what is suggested, however, is that with a little careful thought and the observance of a few simple common-sense rules, the performance of nearly every superhet receiver, which is other than brand new (and some that are!), can be improved almost out of recognition by a little simple trimming in both the R.F. and I.F. circuits. The purpose of this article is to try and show how this can be done without risking the loss of any precision adjustments, and with the simplest of apparatus.

The I.F. Amplifier

In the superhet receiver, the bulk of the R.F. gain is achieved in the I.F. amplifier, and any departure from accuracy of tuning here will cause a great loss in overall gain, especially when the selectivity control, if one is fitted, is placed in the "sharp" position to obtain the greatest immunity from interference. In this position, the I.F. transformers will be "single-peaking," and unless all the I.F. tuned circuits are set exactly on the same frequency, loss of maximum gain, as well as loss of selectivity, will be the result.

The first type of receiver to be dealt with is the single-signal superhet, where a crystal is brought into use for maximum selectivity. The crystal in this case is cut to resonate at the I.F., and as such, provides a frequency standard for lining up all I.F. circuits to resonance at this frequency, which is exactly what we require.

The procedure is as follows:—

1. Tune in any steady signal, preferably on the broadcast band.
2. Set the receiver controls to maximum selectivity, i.e. crystal "in" and the selectivity control, if this is separate, to "sharp."
3. Turn off the A.V.C., and reduce I.F. gain if necessary, to prevent overloading. If a steady signal can be found which is just below the overload point with the I.F. gain at maximum, so much the better, but these conditions can be produced with almost any signal if the effectiveness of the aerial is reduced to a sufficient extent.
4. Turn on the B.F.O. and set the "pitch control" to give a beat-note of between 500 and 800 c.p.s.
5. Set the "crystal-phasing" control to the mid-point of its travel.

If the tuning dial is now moved slowly over the frequency of the transmission, a sudden alteration

in the quality of the beat-note will be noticed at one particular, and very definite, point. Make sure this is not due to a resonance in the 'phones or loud-speaker, by changing the pitch of the beat-note by means of the pitch control.

Having recognised this "change of quality" point, keep the signal on it and turn carefully each of the I.F. trimmers in order, working either from the primary of the frequency-changer transformer through to the secondary of the transformer feeding the detector, or *vice versa*.

Each trimmer should only require a small individual movement, and the increase in volume should be quite apparent. If, after a few of the trimmers have been moved, the signal tends to overload, either reduce the I.F. gain, or the aerial input to bring the signal below the overload point, and continue the process of adjustment. If it should be found that movement of the trimmers, or other cause, tends to make the signal slip off the resonance point through "pulling" of the oscillator frequency, adopt the method of rocking the tuning dial rapidly to and fro over the frequency while turning the trimmers slowly. If this is done it will be found that the trouble will be overcome.

Do not be satisfied with one "run through" of the trimmers, but repeat the whole operation several times until it is felt that further improvement in the strength of the "change of quality" position is impossible. The I.F. amplifier may then be assumed to be, as our friends the W's would have it, "right on the nose."

The next thing to do is to check the single signal qualities of the receiver by tuning in any carrier and seeing that it is possible, with the crystal in, to eliminate entirely, or almost entirely, the signal on one side of zero-beat. This will necessitate careful adjustment of the crystal-phasing control, and again, overloading by a loud signal must be guarded against.

A c.w. signal should now peak sharply and loudly on one side of zero-beat at a strength equal to, or only slightly below, that obtainable in the non-crystal position, but with a vast improvement in the signal to noise ratio.

If the receiver is fitted with a variable selectivity control, test this also, without the crystal in circuit. In most sets, going over from "sharp" to "broad" will give an apparent increase in signal strength, but with a decrease in the signal to noise ratio; this is as it should be.

At this point it is as well to see that the B.F.O. pitch-control gives zero-beat on a signal at the mid-point of its travel. If it does not, place the knob at the mid-point and adjust the trimmer on the B.F.O. coil until zero-beat is produced at this setting.

Trimming the Signal Frequency Circuits

Having now finished with the I.F. amplifier, we can turn our attention to "hotting-up" the circuits working at signal frequency.

For the purposes of this article it is assumed that no signal generator or precision frequency measuring apparatus is available, so that it will hardly be possible to check the R.F. oscillator circuit for

accuracy of calibration and tracking. In the case of mass-produced receivers, which have dials calibrated direct in frequency, it is rarely possible for the manufacturing tolerances to permit really exact calibration. Further, it is unlikely that the oscillator trimmer, and padder (if fitted), have slipped to such an extent as to render the scale readings hopelessly inaccurate. Another reference to this point will be made later for the benefit of those who may wish to go further in this respect.

Having decided to leave well alone as regards the R.F. oscillator circuit, we now have the mixer and, if fitted, the R.F. stage trimmers, to deal with.

Trimming, that is to say the adjustment of the minimum capacity in a circuit, is always carried out at or near the minimum setting of the variable condenser tuning that circuit; i.e. near the high frequency end of each band. If the manufacturer's instruction book referring to the receiver in question is available, and moreover if it contains trimming instructions, it will state the frequencies on each band at which trimming should be carried out. If such information is not forthcoming, the following may be taken as a useful guide.

do the same with the R.F. trimmer (assuming the set possesses an R.F. stage), and then proceed to deal with the remaining frequency bands in a similar manner.

When trimming the R.F. stage, it is desirable to have connected the aerial which will be used to feed the set in the normal course of operating, as different aerials throw different loads on to the first tuned circuit.

If there should be any doubt as to the identity of the various R.F. trimmers, it is a good point to remember that in nearly every receiver the oscillator is tuned by the section of the ganged condenser nearest to the panel, the mixer by the next section back, and so on. Anyway, the task of sorting out the intricacies of the circuit beneath the chassis will be time well spent, inasmuch as it will familiarise the operator with the "internals" of his receiver, and be useful in fault-tracing if and when trouble should arise.

If the foregoing instructions have been carried out carefully, the results from the receiver should more than justify the time and trouble spent. Moreover, the operator will have the satisfaction of knowing

The President, Council and Headquarters Staff extend Seasonal Greetings and Best Wishes for the New Year to Members everywhere

On a band up to 1.7 Mc/s. trim at 1.4 Mc/s.

"	"	"	5	"	"	4	"
"	"	"	17	"	"	14	"
"	"	"	40	"	"	35	"

The figures given need not be taken as very definite; frequencies near to those mentioned will be quite satisfactory.

Starting on the lowest frequency band, find a steady signal on or near to the trimming frequency selected, and set the controls as follows:—

- (1) Selectivity switch to "sharp."
- (2) Crystal "off."
- (3) B.F.O. "off."
- (4) R.F. gain at maximum.

There now comes the question as to where to place the A.V.C. switch; on or off. If the receiver is fitted with a meter indicating signal strength, or some similar device, leave the A.V.C. on, and use the meter as a means of indicating when the trimmer has been moved to the optimum position. If no signal measuring device is fitted, A.V.C. should be turned off to avoid the apparent broadening of response obtained when attempting to trim a circuit in which A.V.C. is operative. Under these circumstances, strong signals must be avoided, as they may cause overloading, with its attendant difficulty of telling when the circuit is truly in resonance. Summing up, it is suggested that either a really weak signal be used, or that trimming be carried out while listening not to a transmission, but to background noise.

Having found the position of the mixer-trimmer giving loudest results on the lowest frequency band,

that the improvement is due to his own unaided efforts; always a more satisfactory state of affairs than paying somebody else to do it for you.

Aligning I.F. Amplifiers not Incorporating a Crystal

In considering the case of a receiver not incorporating a crystal, it will be realised that without frequency measuring apparatus or a calibrated oscillator, an exact figure for the intermediate frequency cannot be arrived at.

Two courses of action present themselves here. The first is to tune in a signal and reset all the I.F. trimmers until the signal strength is at a maximum, regardless of the *exact* I.F. thus arrived at. The second is to make up a small uncalibrated oscillator which may or may not be modulated, and use this as a signal generator at I.F. as described later.

The first method risks the production of an I.F. other than that with which the set was designed to work, with its consequent adverse reflection upon the tracking of the R.F. circuits. It is not suggested that this maladjustment is of no consequence, but it must be remembered that in any case the receiver under consideration will have a selectivity well below that of a crystal superhet, and that deviations from the correct I.F. will not have such serious results as they would in a more highly selective receiver.

Another way of looking at the problem is this:— "The receiver is working fairly well at the moment, and there is no telling what the *real* I.F. is at present, so if I do something which gives me a greater signal strength, it's an improvement." This is certainly

true, and the reader can rest assured that it works out surprisingly well in practice.

To do the job in a more accurate and scientific manner, it is suggested that a small R.F. oscillator be constructed to give output on a frequency band covering that of the I.F., and that calibration be carried out by checking the second harmonic against known stations in the broadcast band. This is assuming that the I.F. falls in the 450/470 kc/s region, as is common with modern receivers.

The output lead from the anode of the signal generator may then be placed near to the grid-cap of the mixer valve in the set, and the signal thus obtained used for tuning the I.F. amplifier to resonance. As mentioned before, the small oscillator may be tone-modulated, or the I.F. circuits may be aligned on the carrier hiss alone. Any trimming that may be required in the signal frequency circuits may be carried out as previously described.

Checking the Dial Calibration

Reference was made earlier to checking the R.F. oscillator frequency, and thus the calibration of the tuning dial of the receiver. In the ordinary way, an accurately calibrated signal generator would be used for this operation, but as we are assuming this to be unobtainable, other methods must be employed.

A short digression will be made here to discuss, briefly, a few points regarding the methods used to "track" the oscillator in a superhet receiver.

As is well known, the superhet operates by virtue of an R.F. oscillator which is tuned to a frequency differing from that of the signal by the amount of the I.F. This difference may be produced by setting the oscillator to either a higher or a lower frequency than that of the signal to be received, but for various practical reasons a frequency higher than that of the signal is almost invariably employed. This means that if the range of frequencies to be covered on a given band is, for example, 2 Mc/s. to 6 Mc/s., and the I.F. is 450 kc/s., then while the signal frequency circuits are covering this range, the R.F.O. has to be tuned between 2.45 and 6.45 Mc/s., i.e. the ratio of minimum to maximum frequency in the signal frequency circuits is 1 to 3, while that of the oscillator is 1 to 2.63.

Without going into the theory of tracking the oscillator circuit it may be said that, assuming a ganged variable condenser is being used in which all the sections are similar, then just reducing the inductance of the R.F.O. coil will not be sufficient in itself to ensure that circuit keeping "in front" in a frequency sense, of the other tuned circuits. Consequently some modification of the capacity range of the oscillator tuning condenser must also be made.

This may be done in two ways; the shape of the condenser plates may be modified, or a "padding" condenser may be connected in series with the section of the ganged condenser across the oscillator coil. Assuming that the latter expedient is employed, then the setting of the padder, when the ganged condenser is at maximum capacity (lowest frequency) will determine the lowest frequency to which the oscillator will tune on that particular band, and provided the inductance has been correctly chosen, the modification of the "law" of the oscillator tuning condenser will ensure that circuit "keeping its distance," as it were, from the signal frequency circuits over the band in question.

The first thing to be done, then, when checking up on the oscillator is to be sure that at a point at the L.F. end of the band, the frequency as indicated on the tuning dial is correct, by adjusting the capacity of the padding condenser.

Tuning now to a position near the H.F. end of the band, the oscillator is again brought into line with the dial calibration on a known frequency, but this time by means of a trimming condenser across the oscillator coil. Alteration of this condenser may necessitate a further alteration in the setting of the padder, which is again reset at the chosen frequency at the L.F. end of the scale. Several checks should be made at these two frequencies, resetting trimmer and padder as may be found necessary, until the circuit is tracking correctly.

The snag that remains to be overcome now, is providing standards of frequency for these two calibration positions on each band. In so far as the broadcast band is concerned, this should present no great difficulty, as it should be possible to identify a couple of stations, one near the high, and the other near the low frequency ends of the scale, and then use these for trimming and padding respectively. On the higher frequency bands however it may not be so easy to find transmissions of known frequency in just the positions required. A list of broadcast stations working on these frequencies, such as appears from time to time in *The Wireless World*, is helpful in this respect, but in cases where this is not possible, it is unwise to attempt any adjustments of the oscillator frequency.

It is hoped that the foregoing may prove of some interest to those members who may wish to try their hand at improving the performance of their receivers in these days when it is so difficult, if not actually impossible, to obtain professional servicing from manufacturers or agents, most of whom are far too busy fulfilling the requirements of Government departments to be able to undertake work from private sources.

In conclusion the writer would like to say that he will be only too pleased to assist by letter to the best of his ability, any member who may find himself not clear on any of the points raised in this article. Queries should be sent via R. S. G. B.

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On

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following the Annual General Meeting
convened for 2 p.m.

MATHEMATICS FOR THE RADIO AMATEUR

By T. R. THEAKSTON, B.Sc. (2DBK).

SECOND SERIES—PART VI. GRAPHS—continued.

THE idea of "functionality" has been explained, as has also the fact that a graph is a very convenient and convincing method of showing the functional relation between two quantities.

The simplest resulting graph is a straight line; yet a careful study of graphs of this type will lead to a good grasp of the general subject. For this reason the major part of this article will be given to the examination of a linear graph, and the resulting general deductions.

Definitions

Intercept.—The intercept on an axis is the length, measured from the origin, cut off on the axis by the plotted curve.

If the intercept on the axis of x is required, it is the length along OX or OX_1 , between the origin, O , and the point at which the graph cuts the axis of x . e.g. in Fig. 9, OL is the intercept on the axis of x .

If the intercept on the axis of y is required, it is the length, along OY or OY_1 , between the origin, O , and the point at which the graph cuts the axis of y ; e.g. in Fig. 9, OM is the intercept on the axis of y .

Similar Triangles.—If there are two triangles and each angle in one triangle is equal to one of the angles in the other triangle, the triangles are said to be similar; e.g. in Fig. 9,

$\triangle QLW$ and MLO are similar.

Clearly $\widehat{QWL} = \widehat{MOL}$ ($= 1$ right angle)

$$\widehat{LQW} = \widehat{LMO}$$

and \widehat{QLW} is in both triangles.

Hence the angles of one triangle are equal, each to each, to the angles of the other; i.e. the triangles are similar.

$\triangle QLW$ and SMP are also similar, for

$$\hat{S} = \hat{W}$$

$$\hat{P} = \hat{L}$$

$$\hat{Q} = \hat{M}.$$

There are, in fact, several triangles in Fig. 9 which are similar. On inspection of the angles concerned it will be found that triangles QLW , MLO , MVQ , SMP and PLR are all similar.

This similarity is of importance chiefly because it tells us something about the sides of the triangles. This important property is that in similar triangles, the ratio of the two sides about an angle in one triangle is equal to the ratio of the two sides about the corresponding equal angle in the other triangle; e.g. in Fig. 9,

$\triangle QLW$ and MLO are similar, with

$$\hat{Q} = \hat{M}.$$

The sides about the angle Q , in the one triangle, are LQ and QW ; their ratio $= LQ/QW$, or QW/LQ .

The sides about the equal angle, M , in the other triangle, are LM and MO ; their ratio $= LM/MO$, or MO/LM ;

$$\therefore LM/MO = LQ/QW$$

$$\text{or } MO/LM = QW/LQ.$$

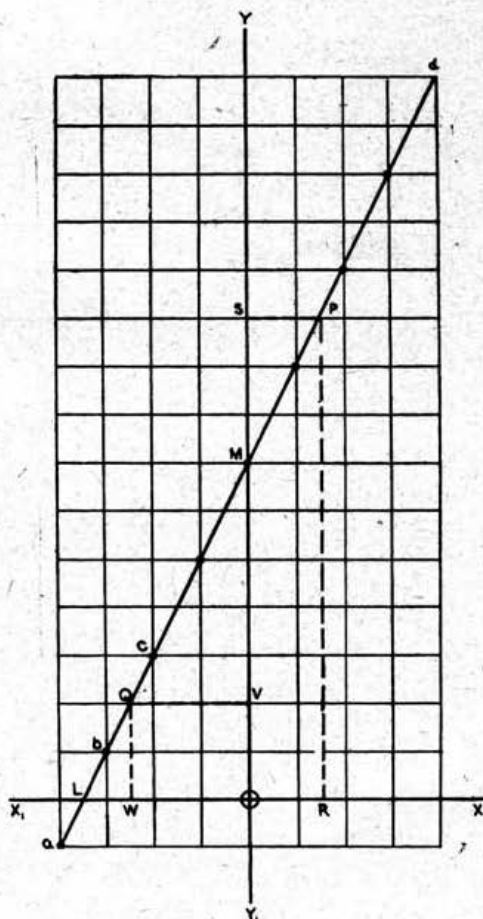
Similarly, $ML/LO = QL/LW$; $QW/LW = MO/OL$.

It should be realised that if

$$\frac{QL}{LW} = \frac{ML}{LO}$$

then, by transposing factors,

$$\frac{QL}{ML} = \frac{LW}{LO}.$$



THE SIDE OF A SQUARE = 1 UNIT

Fig. 9.

The graph of the function $y = 2x + 7$ is a straight line.

This form, giving the ratio between a side of one triangle and its corresponding side in the other triangle, is useful.

In the case of triangles such as QLW and SMP in Fig. 9, which although similar are not in similar positions, the word "corresponding" must be borne in mind.

Thus $\hat{M} = \hat{Q}$

side SM corresponds to QW,

$\therefore SM/MP = QW/QL$; or if more convenient, this can be written $SM/QW = MP/QL$.

Graphs of Linear Quantities

Let us graph the function of x given by

$$y = 2x + 7.$$

Giving x the values from -4 to $+4$, the following values are obtained when:

$$x = -4, y = 2 \times -4 + 7 = -8 + 7 = -1$$

$$x = -3, y = 2 \times -3 + 7 = -6 + 7 = 1$$

etc., and tabulating,

$$x = -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4$$

$$y = -1 \quad 1 \quad 3 \quad 5 \quad 7 \quad 9 \quad 11 \quad 13 \quad 15$$

Hence to represent these pairs of associated values graphically, the range

for x = from -4 to $+4$, i.e. 8 units are required

for y = from -1 to 15 , i.e. 16 units are required.

The scales are selected and the points plotted.

Note, that because an algebraic function is being graphed, the scale is the same on each axis; the values being plotted are numbers only, and not some units of measurement.

Point (a) is $(-4, -1)$. [x value, y value.] In the 3rd quadrant both x and y are negative.]

Point (b) is $(-3, 1)$.

Point (c) is $(-2, 3)$, and so on, until

Point (d) is $(4, 15)$.

The graph is then drawn, i.e. the points are connected by a smooth "curve." It is a straight line—Fig. 9.

This graph has several points of interest and significance.

(1) The Linear Equation.

The graph is of the equation $y = 2x + 7$.

This equation contains no powers of x higher than the first, i.e. it is an equation of the first degree in x .

This is also called a *linear equation* because all equations of this type give a straight line graph.

Using general terms,

The equation $y = ax + b$ [a and b are any constants] is an equation of the first degree in x , that is a linear equation giving a straight line graph.

Note that the example which has been represented graphically was of the form $y = ax + b$, where a and b , the constants, had the particular values $a = 2$, $b = 7$.

(2) The Equation Solved Graphically.

The graph gives the solution to the equation $2x + 7 = 0$. Clearly at the point L, which is on the curve, the ordinate [y value] = 0.

i.e. at L, $y = 0$

But at L, the abscissa [x value] = OL = -3.5

\therefore when $y = 0$, $x = -3.5$

i.e. when $2x + 7 = 0$, $x = -3.5$; in other words, the graph indicates the value of x which solves the equation.

Referring to the definition of intercept, it is seen that $x = -3.5$ is the value of the intercept cut off on the axis of x by the curve $y = 2x + 7$.

This result is easily obtained algebraically. The principle, however, is established in this simple example and it is true for all equations represented graphically. It is:

The intercept of the curve on the axis of x , is the value of x which solves the equation $y = f(x)$. This is because at any point on the axis of x , the value of $y = 0$, and hence at the point of intersection, $f(x) = 0$.

True also is the fact that the intercept on the axis of y is the solution of the equation $x = f(y) = 0$, because at any point on the axis of y , the value of $x = 0$.

(3) The Intercepts Give the Equation.

Developing this idea further, and considering the general linear equation

$$\begin{aligned} y &= ax + b \\ \text{when } y &= 0, ax + b = 0 \\ &\text{i.e. } ax = -b \\ \text{or } x &= -\frac{b}{a} \end{aligned}$$

But $y = 0$ when the curve cuts the x axis,

$$\therefore \text{intercept on axis of } x = -\frac{b}{a}$$

[With the equation $y = 2x + 7$, $a = 2$ and $b = 7$. Hence the intercept = $-b/a = -7/2 = -3.5$. This was found to be so in Fig. 9.]

Also when $x = 0$, $y = b$,

\therefore intercept on the axis of $y = b$.

[With the equation $y = 2x + 7$, $b = 7$. Hence the intercept on the axis of $y = 7$. This was found to be so.]

These two facts, that the intercepts for the general linear equation $y = ax + b$, are $x = -b/a$ and $y = b$, will enable the exact form of an unknown linear equation to be found. Drawing the graph, and hence finding the actual intercepts, means that the values of b , and of b/a , are known. Hence substitution of the values of a and b in the general equation will give its precise form.

Examples.—

(a) What is the intercept on the axis of x by the curve $y = 4x - 3$?

The curve cuts the x axis when $y = 0$

$$y = 0, \text{ when } 4x - 3 = 0$$

$$\text{i.e. when } 4x = 3$$

$$\therefore x = \frac{3}{4}$$

or, intercept is $\frac{3}{4}$ unit.

(b) What is the intercept on the axis of y of the curve $y = 5x - 12$?

The curve cuts the y axis when $x = 0$

$$\text{When } x = 0, y = 5 \times 0 - 12$$

$$\text{i.e. } y = -12$$

or, the intercept is -12 units; i.e. 12 units, below the origin, on the axis of y .

(c) A linear graph of a function of x gives intercepts of 3 units and -9 units on the axes of x and y respectively. What is the equation represented by the line?

Let the equation be $y = ax + b$

When $x = 0$, $y = b$, i.e. the intercept on the axis of $y = b$.

But by data, this intercept = -9

$$\therefore b = -9$$

$\therefore y = ax - 9$, and one unknown is found.

If $y = ax - 9$, the intercept on the axis of x is given by putting $y = 0$,

$$\begin{aligned} \text{i.e. } ax - 9 &= 0 \\ \text{or } x &= \frac{9}{a} \end{aligned}$$

By data, this intercept = $\frac{3}{9}$

$$\therefore \frac{3}{a} = \frac{9}{a}$$

$\therefore a = 3$, and the second unknown is found, and the equation completely determined as

$$y = 3x - 9$$

(4) Interpolation for Intermediate Values.

The graph gives innumerable other values of x and y which will satisfy the equation of the line, $y = 2x + 7$.

Every point on the line gives, in its ordinate a value for y , and in its abscissa a value for x , these two values always being such that $y = 2x + 7$.

The above is true for all types of graph, linear or otherwise, but the great value of the linear graph is in the accuracy with which interpolation can be made. [Interpolation is the determining of values intermediate between some already known.]

Thus, in Fig. 9, suppose

(a) The value of x when $y = 2$ is required.

The line VQ is drawn parallel to the axis of x and distant 2 units from it;

i.e. VQ is such that for every point on it, the ordinate, $y = 2$.

This cuts the curve in Q.

QW is then drawn perpendicular to the axis of x .

As Q is on the line given by the equation $y = 2x + 7$, the values of x and y for the point Q satisfy the equation.

But $y = QW$, has been made = 2

Hence OW = the corresponding value of $x = -2\frac{1}{2}$

i.e. when $y = 2$, $x = -2\frac{1}{2}$.

(b) The value of y when $x = 1\frac{1}{2}$ is required.

PR is drawn perpendicular to the axis of x , at the point R, where OR = $x = 1\frac{1}{2}$.

This cuts the curve at P.

Here, then, $x = 1\frac{1}{2}$ and if PS is drawn perpendicular to the axis of y , OS will give the y value corresponding to the value of $1\frac{1}{2}$ for x .

OS = 10 units

i.e. when $x = 1\frac{1}{2}$, $y = 10$.

Useful Types of Linear Graphs

A study of Fig. 9 shows that two pairs of associated values are sufficient to enable the graph of a linear function to be drawn.

This fact can be utilised to make easily-read "conversion" graphs, i.e. those graphs which readily give the number of some units equivalent to a certain number of different units.

For example a linear graph can be drawn so as to give centimetre and inch equivalents, or circumference and radius of circle equivalents, etc., and the use of a graph will, in these cases, obviate much arithmetical work. The graph is in fact a ready reckoner.

To construct a graph of this kind, for a definite utilitarian purpose, it is important to remember that a large scale, and accurate drawing, are essential. In fact the limit of accuracy of readings taken from the graph is fixed by these two factors.

Further, as this type of graph is to show the equivalence of different systems of measures or units, the scales on the two axes will differ, and will be fixed so as to be appropriate to the different units being represented.

Example.—

To construct a linear graph which will give the length in inches equivalent to a length expressed in centimetres, and vice-versa.

$$1 \text{ inch} = 2.54 \text{ centimetres}$$

$$\therefore x \text{ inch} = 2.54 \times \text{cm.}$$

No powers of x higher than the first are involved, and therefore the graph of inches plotted against centimetres will be linear.

$0'' = 0 \text{ cm.}$, and therefore the curve passes through the origin.

$1'' = 2.54 \text{ cm.}$, and therefore the curve passes through the point (1, 2.54) when inches are measured along the x axis, and centimetres along the y axis.

These two points determine the straight line graph. Hence they are plotted, using any convenient scales (as large as possible), and then joined by a straight line.

This is shown in Fig. 10 (in which all the subdividing lines on the graph paper are not shown).

Fig. 10 is only a small portion of the graph that would be required normally. Although it appears that in Fig. 10 the range of inches is only from 0 to 1, and of centimetres from 0 to 2.5, yet other values can be found.

Thus, when C is the point at which the scale indicates 2.15 cm., the perpendiculars CB and BF give the result

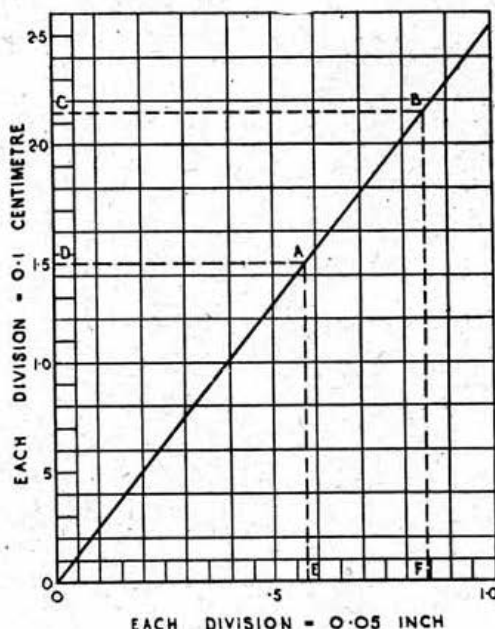


Fig. 10.

A graph giving the equivalence between inches and centimetres.

2.15 cm. = 0.84 inches.

From these figures, however, others are evident;

e.g. 21.5 cm. = 8.4 inches.

or, again, 84 inches = 215 cm.

Similarly, E being the point which, on the scale, indicates 0.575 inches, EA and AD give the result 0.575 inches = 1.46 cm.

From these figures, others follow;

e.g. 57.5 inches = 146 cm.

or, again 14.6 cm. = 5.75 inches.

This method of deriving wanted values by multiplying each equivalent by some convenient factor should be noted. There is a disadvantage—accuracy is decreased as the multiplying factor is increased. Thus, if the value

0.575 inches = 1.46 cm. is correct to the second decimal place, i.e. to the nearest hundredth, of the metric quantity, then, when by multiplying by 100, we obtain

57.5 inches = 146 cm., the accuracy is still only in the three figures; and the digit 6, is now 6 units. Hence the accuracy now is only to the nearest whole number.

Problems

(26) By using the properties of similar triangles, and referring to Fig. 9,

(a) What ratio in the $\triangle QWL = PR/RL$; = PM/PS ; = VQ/QM .

(b) If $SP = 3$, $PM = 5$, $MO = 16$, $OL = 12$, $LQ = 3$, what is the length of LM , SM , QW , LW ? [Note.—In Fig. 9, these lines are not of these lengths. It may be advisable to reproduce the triangles required, omitting all other lines which may cause confusion.]

(27) What are the lengths of the intercepts on the axes of x and y respectively, if the following equations are represented graphically:—

(a) $y = 5x - 10$

(b) $y = 6 - 4x$

(c) $x = 2y + 3$

(d) $x = 2y$

(e) $y = 4x + 3$

(28) What are the equations of the lines which give the following intercepts on the axes of x and y respectively;

(a) 3 units, 1 unit.

(b) 1 unit, -3 units.

(c) -2 units, -2 units.

(29) From Fig. 10, determine as accurately as possible,

(a) The number of centimetres in 0.4 inches; 7.5 inches; 950 inches.

(b) The number of inches in 1.15 cm.; 18cm.; 85 cm.

Solution to Problems

(18) $a = (2, 5)$; $b = (-3, 4)$; $c = (3, 1)$; $d = (-5, 0)$; $e = (-2, -1)$; $f = (4, -3)$; $g = (0, 4)$; $h = (-3, -5)$.

(19) $DA = 13.0 + AB$; = $10.4 +$.

(20) $AB = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

(21) -3.5. The full solution is given in the text of this article.

It is regretted that space considerations have not allowed, as was hoped, the full treatment of the solutions to problems 22 - 24 this month. They will be given as soon as possible. Meanwhile part solutions are:—

(22) (a) 12.25; (b) ± 3.5 .

(23) The graphed points are on a circle.

(24) The curve is of the type used to illustrate waveform, and passes through one complete cycle when the plotting limits are 0° and 360° .

(25) 10 inches.

Correction

In Fig. 7 of Part V, the point F should have been marked (0, -2) as given in the text, and not (0, 2).

(To be continued next month.)

There's Plenty of Life in the South West

THE first representative meeting held in District 6 since the war started took place on Saturday, November 29, 1941, at the Courtenay Restaurant, Courtenay Street, Newton Abbot, South Devon.

With all the difficulties of war-time transport to be considered, together with the fact that so many members are away on Active Service, the attendance of nineteen was extremely satisfactory. Those present included G2AT, 2GK, 3AD, 3JD (who is hereby sincerely thanked for his great help in dealing with the details of the meeting), 3MU, 5KV and YF, 5QA, 5SY, 6DI, 2AJA, 2ARA, BRS1711, 2027, 3541, Messrs. Crouch, Watkinson, Wilson, and a transmitting amateur from Czechoslovakia.

The proceedings were opened by the D.R. (G5SY), who after extending a welcome to those present, asked the company to consider itself as representative of that large body of members who were absent on Active Service.

The position of the amateur both now and after the war was discussed at some length. With more and more members being drawn into the Forces, it was considered highly essential for those remain-

ing at home to keep the existence of the amateur movement before the public eye, at the same time stressing its value in the war effort, so that afterwards there should be no possibility of the transmitting amateur being forgotten or pushed into the background.

A strong appeal was then made on behalf of the R.S.G.B. Prisoners of War Fund, and it was agreed that a collection be taken and the sum sent to Headquarters in the name of the meeting.

The members present were then called upon to introduce themselves. Among those who spoke at some length were G2AT, 2ARA (who extended greetings from District 15), 2GK (acting T.R. for Torquay, who brought greetings from District 7), 3AD (with greetings from District 13), 5KV (greetings from District 16), 5QA (T.R. for Exeter), and the Czechoslovakian amateur, whose call we are not permitted to publish.

G5QA felt that the position of the amateur was assured, but agreed that it would not do to remain merely passive. He raised the question of the insurance of apparatus deposited with the G.P.O., and maintained that no company would quote a

(Continued on page 228).

THE REACTIVATION OF VALVE FILAMENTS —SOME FURTHER EXPERIMENTS

By A. G. HALLIGEY, BRS4003

READERS may be interested to read of certain experiments carried out by the writer as a result of suggestions made by G6NZ in his article in the October, 1940, issue of the T. & R. BULLETIN.

Various types of transmitting and receiving valves were available, all having been "written off" due to low emission. The emission was checked before and after treatment, in the normal circuits of their respective transmitters or receivers, using load, and fixed voltages.

In lieu of a bunsen flame, an electric soldering iron was used to vaporize the getter deposit, the envelope of the valve being rolled on the hottest part of the iron. The heat developed was found sufficient to vaporize a small patch at a time.

The first valve tested was a *Mazda* UU5, full-wave rectifier, which had been in use for over 10,000 hours, and the output of which was insufficient to strike the neon stabilizers used in conjunction—somewhere below 270 volts. Operations were carried out on the lines of G6NZ's article, and the filament (normally 4 volts), was flashed at 6 volts for 2 minutes, baked at 4 volts for 20 minutes, flashed at 6 volts for 10 seconds, and finally baked at 4 volts for 15 minutes. The getter deposit was then vaporized, and the valve put back into service, when the output was found to have risen to the normal 330 volts on load. This figure had not dropped when checked at the completion of 600 valve-life hours later.

Next, four *Mullard* PZ1/75 pentode amplifier valves were treated. The getter deposit in their case was of a chalky appearance, but it was vaporized in the same manner. All four had been in use for several hundred hours, and emission was down. Two of these valves are used in parallel, and the common feed, before treatment, was 150 mA. for both pairs.

As the writer suspected that the gettering treatment had a greater effect than baking the filament, the getter deposit of the first pair was vaporized first, when the common feed was found to have risen to 180 mA.—slightly above normal. The filaments were then flashed at 14 volts for 10 seconds, with no further improvement. The second pair were gettered in the same way, but the feed rose only from 150 to 160 mA. When the filaments were flashed as before, the feed fell slightly to 158 mA.

Several 2-volt receiver valves were available, having been put aside because of low emission, the feeds of all those tested being approximately half normal, before treatment.

An *Osram* VP 21 was flashed at 4 volts for 10 seconds, baked at 2 volts for 35 minutes, flashed at 4 volts for 15 seconds, and baked at 2 volts for 35 minutes. The metallised coating was partly scraped off, and the getter deposit vaporized (it re-deposited mostly on the pinch). In normal examples of this type, $I_a = 2$ mA. In this sample $I_a = 1.2$ mA. before treatment, and after treatment dropping to .6 mA.

It was decided to deal differently with the next two valves of this type, accordingly the first was given no filament treatment, but the getter deposit was vaporized. Before treatment, $I_a = 1.0$ mA, after treatment, .6 mA. The other was given no getter treatment, but the filament was flashed and baked as in the first sample. Result, $I_a = 2$ mA. before and after treatment.

Finally, an *Osram* LP2 was treated in the same manner as the first VP 21, with the result that the anode feed was reduced from 1.3 mA. to nil. (Other 2-volt types had given similar results).

Summary

The treatment given to the UU5 gave really good results, but unfortunately this was the only sample available for test. The PZ 1/75's were not in very bad condition to start with, but they were brought up to normal, although no facilities were available to give them a long run. The getter treatment alone gave good results, while the short overload results did not seem to affect matters very much.

In regard to the 2-volt receiving valves, the filament treatment made no difference, while vaporizing the getter deposit halved what emission there was available. Perhaps the proximity of the pinch to the envelope was a reason for this, because, as stated before, the deposit reformed on the pinch, possibly tending to short-circuit all the electrodes.

It was interesting to observe that double the rated voltages could be applied for several minutes to the filaments of the 2 and 4-volt valves tested, with no apparently harmful results.

For the benefit of members able to make further tests, it is suggested that the getter treatment alone should first be applied, and the results noted. This operation is a simple one and can be completed in a few minutes. The more complicated, and lengthier filament treatment can be tried if vaporizing the getter does not improve matters.

Technical Teasers No. 3

Compiled by J. N. ROE, G2VV.

- (1) What are the four essentials of a "radio wave"?
- (2) What effect has an iron core upon the inductance of a coil?
- (3) What effect has a copper core upon the inductance of a coil?
- (4) Which has the higher dielectric constant, maple or oak?

- (5) What does the symbol "Q" represent when applied to a coil?
- (6) After what two scientists is the "ionosphere" named?
- (7) Does the intensity of long wave static increase, or decrease, as the frequency is increased?
- (8) What is the approximate speed of sound in air?
- (9) How many grids has a diode?
- (10) What is the action of a swinging choke?

Solution on Page VII.

AN EFFICIENT ONE-VALVE SHORT-WAVE DETECTOR UNIT

By S. E. JAMES (2FWA).

THE receiver to be described, judged by modern standards, is insignificant, yet its performance leaves little to be desired. Believing in the truism that the detector stage is the heart of any receiver, an attempt has been made to develop a design, on the unit system, which gives efficient results up to frequencies of the order of 30 Mc/s. By adopting this method of construction it is possible to concentrate on minor improvements before adding further stages.

The efficiency of this detector can be judged from the fact that the 16 metre broadcast band occurs at the bottom end of the tuning scale when an Eddystone "Y" coil is used. This coil is advertised to go down only to 22 metres with a 150 μF condenser. Actually the writer uses a 100 μF value for tuning but this fact does not wholly account for the greater coverage.

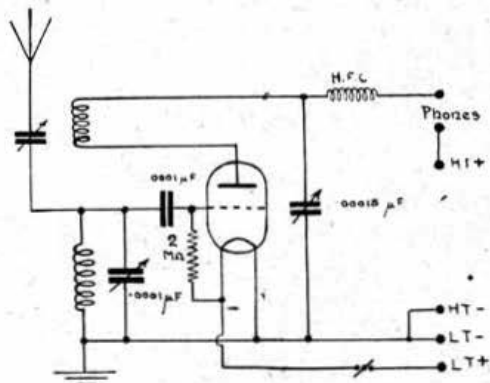


Fig. 1.

Circuit diagram of single valve battery-operated detector for short-wave operation.

Eddystone:—

- 1 Dual-speed Dial. No. 1070.
- 1 Microdenser 100 μF . No. 1130.
- 1 Slow-motion driving head. No. 1012.
- 1 Flexible coupler. No. 1096.
- 1 Adjustable insulated bracket. No. 1007.
- 1 Insulated bracket. No. 1116.
- 2 Baseboard-mounting valveholders, 4 pin. No. 949.
- 1 Short-wave H.F. choke. No. 1010.
- 6 Insulating pillars, 1 $\frac{1}{2}$ in. No. 1029.
- 1 Set 4-pin coils. No. 932.

Other Components:—

- 1 Polar reaction condenser, 150 μF .
- 1 Bulgin toggle switch, S.80.
- 1 J.B. Neutralising condenser.
- 1 Dubilier 100 μF condenser (fixed), 670.
- 1 Dubilier grid-leak, 2 megohms. $\frac{1}{2}$ watt.
- 1 Mullard PM2DX valve, plain.

Construction

Figs. 1 and 2, which illustrate the circuit and layout, should enable readers to produce a similar unit without difficulty, providing the parts specified are used.

The front panel which is cut from $\frac{1}{4}$ in. plywood, measures 10 in. \times 8 in., the three small holes for fixing the dial face being marked out by using the actual dial as a template. The baseboard which measures 10 in. \times 7 $\frac{1}{2}$ in. is made from $\frac{1}{2}$ in. plywood and this, together with the panel should, after drilling, be given two thin coats of grey paint.

The Eddystone slow-motion drive, which is strongly recommended, also serves as a bracket for securing the panel firmly to the baseboard. A piece of $\frac{1}{8}$ in. ebonite cut to 10 in. \times 1 $\frac{1}{2}$ in. is used as a terminal strip.

Assembly

The valve and coil holder positions should be marked out in accordance with Fig. 2 and the components themselves mounted on pillars so arranged that the assembly is symmetrically placed behind the tuning condenser. The holders can be used as templates for the holes which are needed to secure the pillars to the base. With their metal feet removed the two sets of pillars are screwed on to the protruding ends of $\frac{1}{2}$ in. round-headed 6 B.A. bolts passed through the holes which should be drilled $\frac{1}{8}$ in. The threaded rod and nuts are then removed from the top of each pillar; after which a 1 in. 6 B.A. countersunk bolt is passed through each screw hole in the holders. They should then screw firmly on to the pillars.

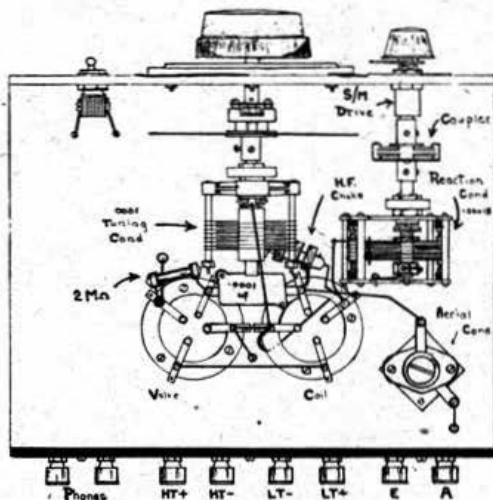


Fig. 2.

Scale diagram, showing baseboard layout.

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WHEATSTONE Bridge panels less plugs and coils, ex W.D.
Works Vac. Cleaners. Pulvo. box cabinet type, on wheels with
1/2 h.p. motor, £5/15/-; Electric Pumps, New Twin piston 1/2 h.p.
pumps, new, suit motor or belt drive, £3/11/-; Stuart Turner
Shelter Pumps, 12 volt, Shelter Centrifugal, 100 gals. No. 10 in
stock, £5/1/6.

DYNAMOS. A.C. and D.C. All voltages from 10 to 2,000 volts.
From 8/-; Micro Motors to Alternators up to 2 kW periods, 50
to 500 cycles, send your enquiries or call.

VALVES. New General Purpose "Weco" 1-valve Triodes, 4-pin
base, 3/6. Osram 6 volt Power Triodes, AT40, 4/6.

NEON letter lamps, 230 volt, 2/6. Miniature neons, 230 volt, 2/6.

PHOTO CELLS. RCA867 are 25/-; Osram CMG, £3/10/-;
W.E., 35/-; Small 3-lens optical systems, 10/-; 500-ohm Counters
to 9999, 5/-.

SPEAKERS for use with buzzers for loud signals, short horn, 7/6.
PERFECT MORSE. Home Training with a Practice Morse
Recorder. Spring drive, no battery wated, marks direction on tape
with dead key. Shows spacing faults. For novice or expert. Govt.
model, £3/10/-.

Please add postage for all mail orders. Stamped envelope for all
replies, please.

Please note new address:

ELECTRADIX RADIOS

19, Broughton Street, London, S.W.8

Phone: MACaulay 2159.

The grid condenser forms the wiring link between the "grid" terminals of the two holders whilst a short length of wire joins the two "anode" terminals. All wiring is carried out with 18 s.w.g. tinned copper and systoflex covered. No components are mounted beneath the base.

The method of construction described and illustrated has the advantage of keeping the more important R.F. wires short and away from the battery leads which run beneath the baseboard.

Operation

If the wiring has been carried out correctly and the specified components used, this one-valver should be a replica of the original. As a guide, the wavelength ranges which should be covered at various settings of the tuning condenser have been summarised in tabulated form:

Eddystone Coil. "B" Blue Spot	Band.	Dial.*
	10 metres	90°
	13 "	65°
	16 "	45°
"Y" Yellow Spot	19 "	25°
	16 metres	95°
	19 "	85°
	20 "	75°
	25 "	60°
	31 "	40°

* It must be remembered that these dial readings increase with frequency.

If a considerable amount of listening is to be done on the 28-30 Mc. band it is advisable to use a Double Blue Spot coil, as the full band may not be covered with a Blue Spot coil.

Readers will appreciate that many factors can affect the approximate readings indicated above but if care is taken in adjusting the aerial condenser and H.T. voltage they should agree to within a few degrees.

The aerial condenser, which is of the J.B. neutralising type, should not be screwed down too tightly, otherwise "blind spots" will appear over the tuning range; on the other hand if the coupling is made too loose there will be a tendency to freedom of oscillation, producing a "dead" effect when the receiver is being operated.

The H.T. voltage should be adjusted so that smooth regeneration, combined with a reasonable degree of aerial coupling, is obtained on all bands.

Conclusions

A simple receiver of the type described can be recommended to all who are desirous of possessing an efficient and easily made unit which may be used alone or in conjunction with additional stages of radio and audio amplification.

Techniquery

Can any reader explain why a condenser, connected between the positive side of a metal rectifier in a power pack and one side of the A.C. mains, should remove the last traces of hum from a receiver? The value of capacity was varied from .0005 μ F to .1 μ F, but .06 μ F appeared to be sufficient.

Explanations, if any, to G2CD, 7 Beddington Road, Seven Kings, Essex.

"Vade Mecum" Correction

To the Editor, THE T. & R. BULLETIN.

DEAR SIR,—May I draw attention to a slight error in "Field Operator's Vade Mecum," question No. 2 page 128, October issue?

The absence of voltage between chassis and cathode of valve, would indicate a short circuit between cathode and chassis, or a faulty valve, and not an open circuited resistor as stated.

Should the cathode resistor be o/c the voltage will be high, due to the fact that the meter has taken the place of the o/c cathode resistor, and as the resistance of the meter is usually much greater the voltage drop across it will be increased.

The usual symptoms of an o/c cathode resistor are high, cathode, anode, and screen voltages. Symptoms of cathode shorted to chassis (probably a short on cathode by-pass condenser) are absence of cathode voltage and low anode and screen voltages (due to high current through the valve caused by lack of bias). Absence of cathode voltage, together with high anode and screen voltages, indicates that there is no current passing through the valve.

The intelligent use of a good voltmeter and a practical knowledge of Ohm's Law can locate a large number of receiver faults in a very short time.

In conclusion may I congratulate G5MP on a very practical series.

Yours sincerely,

G. PERCY (GM3OL).

Author's note.—I am grateful to GM3OL for pointing out the above slip. Anyone who has used cathode keying, and has accidentally placed his fingers across the contacts of the key will be convinced that there is voltage across an open cathode circuit!—G5MP.

More about Waves

DEAR SIR,—As a postscript to the recent article and correspondence on the subject of "Waves," I feel sure that readers will be interested in a reference to a novel use of supersonics, which I have just found in a book by Dr. E. G. Richardson called *Physical Science in Art and Industry*.

"Supersonic sources can be employed to send a beam of (mechanical) high-frequency sound waves, either through the air (for short distances) or along a solid transmission channel, since the receptor would have to be a mechanical oscillator—piezo-electric or magneto-strictive—cut to the precise length to have a frequency exactly the same as the source. In other words, a variable tuning system would be impossible, since there is at present no means known of tuning piezo-electric quartz crystals or magneto-striction rods, short of removing them from the receiver and paring them down to raise their natural frequency. Listening to the message would be virtually impossible for an eavesdropper who did not know the carrier frequency and had not provided himself with an oscillator of exactly this frequency. The audio-frequency message would be imposed on the supersonic carrier as in the corresponding electrical system."

It appears that patents have already been taken out in the U.S.A. for such supersonic communication, and the method, if developed, might find application in military and naval services as a secrecy device.

Yours sincerely,

DONALD W. ALDQUS (BRS1006)

"TEST DX"

A Card Game for Radio Amateurs

By P. J. HARRISON (BRS3468) and J. D. BAKER (BRS3766)

WHILST an apology is due we think to our more technical members, who may shudder at the thought of the pages of our beloved BULLETIN being despoiled by such an article as this, we trust that we may be forgiven in view of the reason which prompted us to put pen to paper.

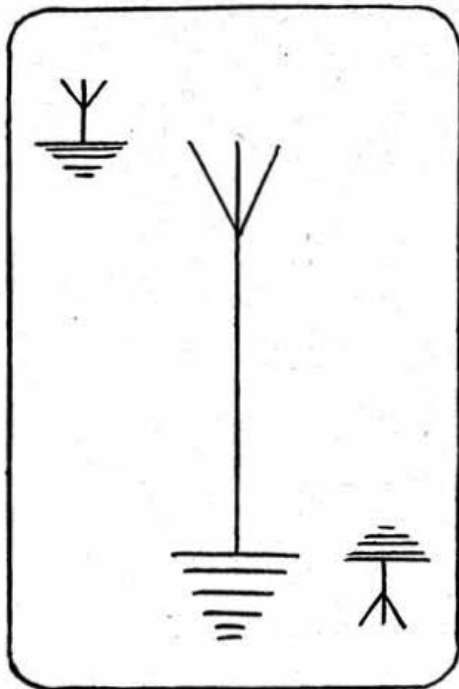
The card game which we have evolved is intended to provide a little amusement for the growing army of hams on active service who will, as the winter comes, find the long evenings tedious. It can be played by two, three or four persons and as will be seen later the rules are simple and the cost negligible.

Construction

Fifty-two cards are required and these can very well be white or coloured cards as used for whist drive or dance tickets. Their cost is only a matter of coppers. The cards are divided into 13 groups of 4, each group being drawn up in accordance with the Table.

The sketch included herein illustrates one of the four cards in the "Aerial and Earth" group.

It is suggested that each group be drawn separately but some ingenuity can be exercised in this direction. For example, small maps can be used to illustrate the five Continental Groups (Nos. 4, 5, 6, 7 and 8) and "cut outs" from advertisements used



A typical card used in "Test DX," a game for radio amateurs.

to portray the "Receiver," "Loud Speaker" and "Valve OK" groups.

In the original pack, constructed by the authors, the "QRM" cards depicted an electric motor with a galaxy of sparks! Humorous sketches can illustrate the "Fade Out," "FB DX" and "Valve Blown" groups.

The 13 Groups

- | | |
|---------------------|------------------|
| 1. Aerial and Earth | 7. Australia. |
| 2. Receiver. | 8. Europe. |
| 3. Loud Speaker. | 9. Fade Out. |
| 4. Africa. | 10. FB DX. |
| 5. America. | 11. Valve Blown. |
| 6. Asia. | 12. Valve OK. |
| | 13. QRM. |

The Game

Nine cards are dealt to each of the players and the remaining cards are placed face downwards on the table. The player to the left of the dealer, starts the game by discarding any unwanted card face upwards on the table, picking up the top card from the pack. The next player does the same and so on until a player holds one each of the following eight cards:—

- Group 1. Aerial and Earth.
 " 2. Receiver.
 " 3. Loud Speaker.
 " 4-8. The five Continents.

The remaining card must be from one of the "Valve OK" or "FB DX" groups.

If a player picks up a "QRM" card he must miss the next turn, disposing of it as soon as possible. Upon picking up a "Valve Blown" card he must hold it until he turns up a "Valve OK" card. Upon picking up a "Fade out" card he must hold it until he turns up an "FB DX" card.

If, as frequently happens, the two "cure" cards ("Valve OK" and "FB DX") are already held in the hand, the corresponding "bad" cards ("Valve Blown" and "Fade out") can be thrown back at once to the table.

It is possible that readers may evolve improved methods of play in which case it is hoped that they will communicate with the authors.

Nancy of G8FI

The many friends of Mr. H. Hargreaves, G8FI, of Blackburn, will be pleased to learn that his 12 years old daughter Nancy, whose voice was frequently heard on the air before the war, is making a remarkable recovery from infantile paralysis. We trust the little lady will soon be back to full health.

Mr. Hargreaves who served as a sergeant during the last war made an unsuccessful attempt to re-enlist so has taken up war work at an Ordnance Factory, where he is employed as a special constable.

EXPERIMENTAL SECTION

Re-Designing Transformers

CONTINUING the notes published last month the present article has been prepared to give advice in regard to the redesign and alteration of existing transformers. The most usual alteration required is that of a filament winding, either because the voltage is not suitable for the valves it is proposed to use or because the existing transformer will not deliver sufficient current for additional valves which are to be added to the set. This type of alteration is a particularly easy one, as the low tension windings are nearly always on the outside of the other windings consequently the latter need not be touched.

The first step is to remove the core (in the manner referred to last month) and any string or tape which may be wound round the outside of the coil or coils. The existing low tension winding should then be removed carefully and a note made of the wire size and number of turns. This latter figure will probably be between 15 and 20 for a 4 volt filament although the number varies with different types and makes of transformer. When the number of turns is known the "volts per turn" can be calculated by dividing the voltage rating of the winding by the turns. It is then a simple matter to calculate the number of turns required for the new winding. For example, suppose it is required to alter a 4 volt winding to a 6 volt winding and the 4 volt winding was made up of 20 turns.

$$\text{Volts per turn} = \frac{4}{20} = 0.2 \text{ v/turn.}$$

Therefore for 6 volts the number of turns = 30.

Calculation of wire size which is equally simple can be based on the "amps per square inch" of the original winding, if this is known. If the original rating is not known the wire size should be based on a current density of 1200 amps per square inch. Thus a winding which has to carry 6 amps would

require a wire of section equal to $\frac{6}{1200}$ sq. in. = .005

sq. in. Thus a wire of 14 gauge is indicated. It is possible to use a smaller wire than this but the winding will run hotter and this should not be resorted to unless space is very restricted or good cooling facilities can be arranged. An alternative method is to use glass insulated wire where tempera-

tures of 300° C. can be reached safely, but in this case all windings would have to be so insulated.

When the power supply is situated in a different chassis to the set it is a good plan to arrange for the filament windings to give a little extra voltage to allow for a drop in the leads. This is specially necessary with 2.5 volt filament valves which run at high current. In such cases the filament windings should be wound for 3 volts, or even more, if several valves are to be supplied from the same windings.

In rewinding the primary or H.T. secondary the same general principles are followed but the process

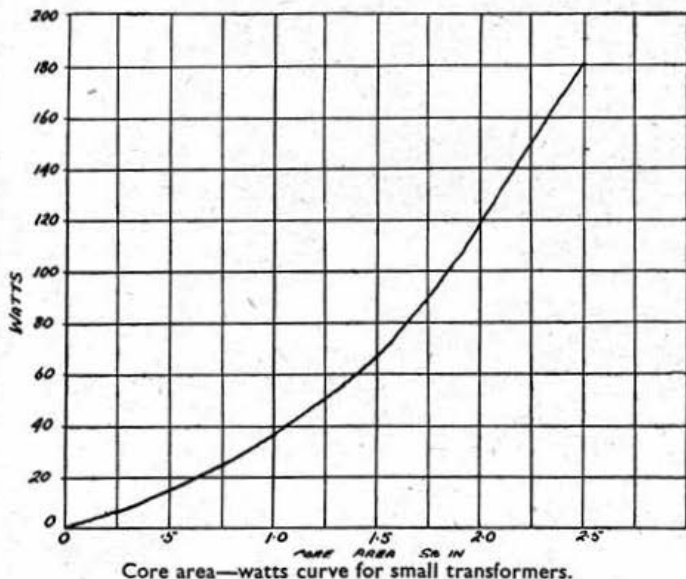
is more difficult. Care should be taken to see that the output in watts required from the transformer is within the rating of the core. The accompanying curve provides a rough guide to the wattage which can be expected. In many well known makes the core is worked well below its maximum rating, therefore if it is known that the transformer runs quite cool before the rewind, it is possible to increase the output sometimes as much as 50 per cent. without it getting too hot. This is a matter for individual

test but in any case the transformer should not be run at a higher temperature than one can bear with the hand on the core.

Space factor is usually one of the most important points to be considered, because most commercial transformers do not allow very much, if any, room for additional windings, i.e. the coil completely fills the core. This is a point to be watched in redesigning transformers, for very often it will be found impossible to accommodate all the turns required on the former and get the finished coil into the core. In this case two possible alternatives exist; either the wire size must be reduced and the winding run hotter, or the insulation all round must be cut down to the barest minimum and the winding run on very tightly. In any case, it is desirable to use good quality, but thin insulation, in two layers, to minimise the risk of pin holes, causing voltage breakdown between adjacent turns. Mica tapes are ideal for this purpose as they possess good insulating properties and at the same time are thin and strong.

Regulation (i.e. voltage variation under varying output loads) is a matter which embraces the transformer as a whole and cannot be corrected simply by rewinding the secondary. Where a heavy filament

(Continued on page 227).



RANDOM REFLECTIONS

"Commentator" reviews Amateur Radio through two years of war and offers some useful advice for the coming year.

WELL here we are at the end of another year and believe it or not, the war has been on for over two years. I must confess that when it all started I was one of those who felt I would never be able to go through two years of it without going completely crazy. All the while things seemed to have vanished overnight. When the old Tx went out of the back door, down the garden path into that green van, to be whisked away I don't know where; I felt that with it had gone the friends and acquaintances and the good company I had got to know through its ethereal voice over the air. It seemed that before long ham radio would be completely gone and forgotten.

There is no doubt that as a nation we have had some pretty near squeaks during these first two years of war. And there seems no doubt either that things are now on the mend. Not that we are out of the wood yet by a long shot. But the tide does seem to be on the turn. And the same can be said of ham radio here. The first few months of the war saw THE BULLETIN getting thinner and thinner. District notes—which more or less indicate the level of interest and activity among the gang as a whole—dropped in length until once they occupied four columns only. All one's local pals were called up or moved off elsewhere, and ham gatherings—even those of the most informal nature—were no more than memories of the past.

But there has been an awakening. The feature article "Khaki and Blue" has greatly stimulated interest amongst those members serving in the Forces. For the last few months District Notes have been on the increase and are now back to their old length of ten or eleven columns, and there are only one or two Districts now who are not represented. Most encouraging too, have been the number of really enthusiastic ham gatherings which have been held during the summer in various parts of the country. Considering the difficulties of holding such meetings, the big attendances and the keenness seen at most of them shows that there is still plenty of life in "our game". From official quarters one learns of still more concrete evidence of the Society's well-being. The determination of those in charge to carry on, despite the war, has been well rewarded; as now they can show a good fat bank balance and a rapidly increasing membership to prove that their policy was right. So surely we can enter 1942 with confidence.

But unfortunately confidence seems to breed complacency. Perhaps war-time is not the best time for very clear thinking and planning for the future. Though, as I have said before, where ham radio is concerned, we now have a little breathing space in which to think back over the past, learn its lessons and use them in planning for the future. During the past year there has been some very interesting and spirited correspondence on the future of amateur radio. It has brought to light many different views and it is to be hoped that the coming year will see more letters in this strain. Those who say ham gatherings are not worthwhile now, as there is nothing to talk about, might well bear in mind the possibility of arranging local discussion groups. There are certainly plenty of suitable topics for

discussion at the moment. Should we, as some have suggested, have a test of some sort or another before we get our tickets in the future? Should skill in sending morse be taken into account? Are we going to clamour for permission to send traffic or should those who wish to engage in this sort of work be grouped into Service Reserves such as the C.W.R., and the amateur bands be reserved—as (theoretically) of old—for those interested in the experimental aspect of radio? Is experimental work possible now-a-days or are those who participate in it just wasting their time retreading ground which has already been covered by more competent observers? How about amateur television and the possibilities of transmitting in this sphere? All these and many more similar topics should supply ample material for good discussions and at the same time help everyone to form some idea in their own minds what they want amateur radio to be when the "great blackout" is lifted. It would be very interesting if the conclusions reached after some of these discussions were forwarded to the Editor "for his consideration," as was done recently by the Chelmsford gang. (See May 1941 issue, p. 383.)

So OMs here's to even greater enthusiasm in 1942. Plenty of good discussions, plenty of bright ideas for the New Ham Radio. If we can't find anything better to do, let's start some discussion groups. If you are on an aerodrome of any size there's sure to be another ham or two somewhere about. If you have difficulty in locating them why not put your call sign or the R.S.G.B. sign on your respirator strap or your tin hat? If you are in a strange town there is sure to be an amateur resident there. Keep "Ham Hospitality" by you and make contact with some of those whose names appear in it. It may not be possible to start anything big but that does not matter. By keeping in touch with other amateurs, interest can be kept going and friendships made and the spirit or comradeship, or whatever you like to call it, of Amateur Radio can be handed on to others, and this world made a little bit happier because of it.

Just one last word. Don't forget to send your D.R. or his war-time deputy a card before the 25th of each month. Have pity on the poor devil! He's willing to do his part, but you must supply the dope. So don't forget—no matter where you are. The best of luck for 1942 and may it see old Adolf hanging from a sky wire!

Ancient Beats Modern

From the November issue of *Radio* we learn that during the severe magnetic storms which occurred along the eastern seaboard of the U.S.A., on September 18-19 last, R.C.A. engineers resorted to the old long-wave alternators at Rocky Point, L.I., in order to maintain international east-west communications.

Another temporary means utilised in keeping open the radio channels to Europe, was to route communications to Buenos Aires where they were automatically relayed to London. By this ruse the transmissions were made to follow a more north-south route, thus getting out of the path of the storm.

FROM a "Country Farmyard" somewhere in England, our Hon. Editor, G6LL, sends the news that no less than 21 amateurs are now in "occupation." New calls include G3VA, 4DR, 4GS, 4NY, 6XA, 8TP, 8VG, G13ZX, GM6RI, GW3AX, 5ZL, 2FWZ, BRS3740. Looks as though this spot bids fair to beat a certain R.A.F. station near London for ham population. We believe beer is still good when on tap.

v v v

In another long and interesting letter written from Trinidad, Wesley Taber, G3GU, reports having received a very cordial welcome from Mr. and Mrs. Douglas Gordon Bagg, VP4TO. G3GU expects to be back in England shortly having almost completed his period of training as an F.A.A. pilot. Incidentally we understand he finished 1st out of 85, in the exams. at the Signals School, 2nd in his gunnery exams. and 2nd in a photography exam. We also learn that he won two pints of ale from the Signals Officer for doing two particularly snappy wave changes in the air!

v v v

After nearly two years' service in Scotland, Ft./Lt. W. N. Craig, GM6JJ, has now moved to a station in Worcestershire, where ZL1JD, is in charge of his transmitting station. Recent visitors were G3ZF and 8VC. Bill reports hearing by airgraph from Phil Hardie, GM6JH, who is now at an M.E. A.M.E.S. JH and JJ ask to be remembered to old friends.

v v v

Writing from No. 3 S.S. Cpl. G. Edwards, BRS 3855, reports that Cpl. Boyce, 2CMR, has now been posted to a station nearer to his home in Manchester. A number of other ex-C.W.R. members who were until recently at the school, have also been posted to home or overseas stations. Referring to the Tumuli A.R.S. which has been inactive recently due to a number of factors, Edwards says "plenty of members use the club room for construction, but we simply can't get them along to meetings and lectures."

May we suggest the hams at No. 3 follow the lead set by No. 1 S.S. and fix one evening a month for a rag-chew? Think of the pleasure such meetings will bring to newcomers to the School.

v v v

"Second Early" Ft./Lt. H. W. Simpson, G8DI, is now Signals Officer at an operational unit in Lincolnshire. Two of the squadrons located there made history in France, especially at the Maastricht bridges, where two posthumous V.C.'s were won. Just before leaving Yorkshire he met G5UD of King's Lynn who had travelled all the way from Northern Ireland to be billeted a few houses away. He spotted Bert's sticker. Moral—keep your eyes open for the Black Diamond.

Wal Ryan, VK2TI, hon. secretary, W.I.A., informs us that Lt. Don Knock, VK2NO, is an instructor with the A.I.F. and not, as Mr. Trebilcock recently stated, an instructor with the R.A.A.F. Don has been very ill, but he expects to be out and about fairly soon.

Wal invites any British amateur who finds himself near Sydney, to communicate with him at 21 Tunstall Avenue, Kingsford, N.S.W. His telephone number is FX 3305. The State President (Ray Priddle, VK2RA) can also be reached by telephone (BW. 6006).

v v v

Friends of L.A.C. W. G. Hall, G8JM, will be glad to learn that he has arrived safely in ZB1 after a fine voyage, except for the last day which ended in an exciting manner. The nature of the excitement is not defined, but we can guess! He has met a friend of G3BM and also VE1FW, but no contacts have yet been made with local amateurs. He wishes to be remembered to his friends in Districts 11 and 14 and especially to G3XS and 3YF.

v v v

Before leaving for abroad Ft./Lt. Harry Groves, 2BGN, asked that his 73 be conveyed to all old friends.

v v v

One of our American lady members, Miss Elizabeth Zandonini, W3CDQ, in a letter to G2YL, mentions that Jack Paddon G2IS, recently attended a local club meeting and told the company a little about Nazi aircraft radio gear. G2YL has also heard from L.A.C. Desmond Huppler, 2HCT, who is now in the M.E. He, in company with R. K. Willmott, G3IO, had the pleasure of meeting ZS6C (a Q.M.S. in the S.A. Army) whilst passing through the Union.

v v v

Cpl. J. F. Heybyrne, BRS3538, sends seasonal greetings to all "Second Earlies," and to his friends who were with him at No. 1 and No. 2 S.S. especially those of U8. At present he is serving in Bedfordshire with 2DSU, where they have met several amateurs including G2XB.

v v v

L.A.C. Ted Sutton, G3BN, writing from an R.A.F. Station in Norfolk, asks for news of G2IK and 5LW. He wishes to be remembered to G16TK and all other members of the Belfast YMCA Radio Society.

v v v

A.C. 2 Berkeley Rowell, G5RL who recently passed out from No. 1 S.S. is now at 10 O.T.U. where he hopes to make a few ham contacts. He reports receiving a letter from G8ST (India) who, at the time of writing, was fit and well. G5RL sends 73 to all old friends.

Friends of Tel. G. Harris, G8PC, will be interested to hear that he is now the father of a bonny junior op. born in Malta last month, his wife having been in the colony for some while. We understand that G8PC is anxious to hear from old friends who should write c/o H.M.S. "St. Angelo," Malta.

▼ ▼ ▼

G8TL who sends the above item of news suggests that the air mail service be used in preference to sea mail. Our correspondent also states that G8PC will not be able to reply as he is allowed only one outgoing letter per month. This news surprises us as we have received no previous intimation of such restrictions.

▼ ▼ ▼

Apropos the paragraph published in our October issue, Jack Newman, BRS4098 informs us that G2HV, 3FT, 3PI, 3WT and himself were successful in their exams. at H.M. Signal School. They are now Leading Wireless Mechanics instead of Telegraphists. BRS4098 and G2HV will shortly be leaving for overseas, whilst the others expect to be sent to home stations. 4098 sends 73 to 4388 (with whom he had a QSO recently over 200 miles of land-line), and to G5GS.



Cadet Geoff Cousins, BRS4371, a keen member of the Romford and District Amateur Radio Society, is training to become a pilot.

▼ ▼ ▼

Bdr. G. C. Geddes, G3RI, serving with the Ack Ack in England, draws attention to an error in our last issue, where it was stated that VU2AN had met G3RI in Mhow.

G3RI wishes to be remembered to the Bury members who extended hospitality to him whilst stationed in that town earlier in the year.

▼ ▼ ▼

Pre-war 1·7 Mc enthusiasts will be interested to hear that Alan Cook, G3WC is now serving with the R.A.F. in Ontario. He and Tom Wimbush, G6HP, have been given a very warm reception by Fred Saxon, VE3SG, 3AKT and 3ZE, and other Canadian amateurs. Alan sends special greetings to Fred Lane, G3GW.

▼ ▼ ▼

Dual congrats. to 2nd/Lt. "Monty" Campbell, G8MK, first upon being granted a commission in the Royal Corps of Signals, and second upon qualifying for the title "proud father."

▼ ▼ ▼

Pte. D. McFadyen, 2HCD, until recently a gunner, is now in the R.A.O.C., although for the last few weeks, he has been in hospital recovering from a cartilage operation. A similar operation kept him inactive last winter.

Cpl. Dick Marris, 2BZQ, one of the "Early Birds" now with a bomber squadron somewhere in East Yorkshire, enquires for news of Les Coupland, 2BQC and other old B.E.F. friends who have time to write. His home address is 28 Archibald Road, Exeter. (2BZQ will be interested to hear that according to 2BQC he is on a pilot's course in W!—Ed.).

▼ ▼ ▼

Before leaving for abroad L.A.C. Frank Lane, G3GW, asked that his greetings be conveyed to all old friends in South East England. While in Caithness he had the pleasure of meeting G5IV and 2DDR to whom he sends 73.

▼ ▼ ▼

Writing aboard ship just before leaving for overseas, L.A.C. D. Alimundo, G4HK, reported that VE4AQQ, G8FW, BRS2486, 4184 and 4225 were on the same draft.

▼ ▼ ▼

Sgt. S. Pearson, 2FJS, now serving with the R.A.F. in GI would like to hear from G3PP and other old friends. Two of the R.M.s at his station are ZL.s.

▼ ▼ ▼

W/Tel. W. J. Page, G3PA, now a Port Wireless Officer in Northern Ireland, sends 73 to Ldg./Tel. Clark, G6BJ, who is serving abroad. G3PA writes enthusiastically of the good work being done by the Belfast Y.M.C.A. Radio Club, whose meetings he frequently attends.

▼ ▼ ▼

Congrats. to Ted Laker, G6LK, who has been commissioned with the rank of Pilot Officer after more than two years service in the R.A.F. Ted and his henchman, Bill Gilhespy, G6GS, are now in Malta.

▼ ▼ ▼

Ft./Lt. Ballingall, requests that his congratulations be conveyed to John Hunter, G2ZQ on his promotion to Sq./Ldr. and to Sgt. R. Stevens, 2BVN, whose work as an observer was referred to in this column last month. He also asks how many "Early Birds" recognised one of their pals in a recent news reel episode, illustrating a demonstration of dropping supplies in the desert by parachute? The "Early Bird" in question, Ft./Lt. Starkey, GW6KY, was reading directions for the use of anti-snake bite serum!

Ft./Lt. Ballingall seeks news of Cpl. Baker and others of the W.I.S. that was!

▼ ▼ ▼

P. H. Smith, 2FWV, who is in the Technical Section of the R.A.F., would be glad to hear from H. N. Holbrook, G6HK and D. L. Wood, 2FKC. Letters should be sent c/o his home address, "Harefield," Westerham Hill, Kent.

▼ ▼ ▼

Those London members who had the opportunity in September and October of meeting Sgt. Jon Brynildsen, LA9N, will be sorry to learn that he is suffering from pleurisy. He is located at a Norwegian Military Hospital, near Dumfries, Scotland, where visitors will be welcomed. He would appreciate receiving some light or technical literature.

Jon asks that his best wishes for Christmas and the New Year be extended to all old and new

friends. For our part we wish him a quick recovery to health and an early return to his Mother country.

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A cordial welcome is extended to Lt. Lars Heyerdahl, LA6A and 2nd/Lt. Bjorn Rorholt, LA1GA, both of whom were visitors to the last North London meeting. LA6A has been a member of the Society for many years and was one of the best-known Norwegian amateurs before the war. LA1GA, although comparatively a newcomer, worked many G's during 1939.

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Congrats. to W. Stratton, BRS1640 who, after a long spell of duty as Ldg. Telegraphist R.N.V. (W) R, has been commissioned with the rank of Sub-Lieutenant. It seems amazing, yet true, that since being called up in August, 1939, Mr. Stratton has not yet met a single amateur. He asks that his 73 be conveyed to G6CJ and 6WN.



News is to hand from A.C.I D. Barlow, 2HBG, and Ft./Lt. J. V. Newson, G3GY, who are in the Middle East. Barlow, at the time of writing, was located in the Sudan, but earlier in the year he took part in the Abyssinian campaign, when he enjoyed himself looking after two transmitters and doing other useful work against the Italians. He came through that spot of bother with only a few scratches.

G3GY writes enthusiastically about THE BULLETIN and the letters he continues to receive from pals at home. He has contacted so many hams in the course of his travels that a printed list would resemble a pre-war "Calls Heard" column. He sends 73 to all in District 15.

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West London friends of one-time Boy Telegraphist K. Cook, BRS3754, will be interested to learn that he has been promoted to Ordinary Telegraphist. He is now serving in the Tropics after having called at Gibraltar earlier in the year. He tells us that the Handbook is a great help to the servicing experts aboard his ship, who frequently have to deal with faults on certain civilian receivers which have been installed.

Recognition

For many moons it has been well known that a certain group of radio amateurs, known as the "ZQ party," have been putting in a superb job of work for the R.A.F. Unfortunately, many more moons must wax and wane before we shall be able to write freely of the work they have been doing, but every member who has knowledge of their activities, will join with us in offering warm congratulations to those of the party who have just been honoured by H.M. the King.

The premier award, that of the M.B.E., has been made to that real old timer, W/O. C. J. Rockall, G2ZV, of Angmering, Sussex. Joe's amateur career dates back so far that we hesitate to say much about it for fear of making him feel a *real* old man, but it will be remembered that he was operator of TJCRJ (Transjordanian), in the days when the Middle East was almost a rest home for the R.A.F.

For some years, prior to the war, he was in the top flight of British V.H.F. enthusiasts.

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Three G Men

L./Cpl. L. Frank, G4NU, Gnr. Doug. Manson, G8PW, Gnr. F. S. Jones, G5CH, recently met at an R.A.O.C. School in Lincolnshire, where they are under training as radio mechanics. They celebrated the occasion by posing for this photograph.

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Recognition of Sq./Ldr. John Hunter's work is made by a Mention in Despatches. John, whose call G2ZQ, was known throughout the world before the war, was an original C.W.R. member, and received his commission in the R.A.F.V.R. on February, 26th, 1939. Under his leadership, the "ZQ party" has earned fame which will live long after the war has finished.

Ft./Sgt. (now Pilot Officer), E. J. Laker, G6LK, is also Mentioned in Despatches. Ted's work has taken him to many parts of Great Britain, and wherever he has been the ham spirit has been much in evidence. At present he is serving in Malta.

In singling out these three members of the "ZQ party," the "Powers that Be" have given recognition to a job of work which the hams of Great Britain were eminently fitted to undertake—readers must guess the rest!

May success continue to crown their sterling efforts.

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American Commentary

From November QST it is learnt that George Bailey, W1KH, President of the A.R.R.L., having recently been appointed Chairman of the Radio Section of the Office of Scientific Personnel, National Research Council, is now also special assistant to the Chairman of the National Defence Research Committee, and a member of a new committee set up to act as a liaison with the Office of Civil Defence.

George Bailey, whose call is well known to many British amateurs, must surely be one of the busiest men in America to-day.

Gibraltar Amateur Radio Society

It has been known for some time that the number of amateurs stationed in Gibraltar has been steadily growing, but since the departure of Tel. Beardow, some months ago no Society existed for them. In an attempt to improve their lot Sqd.-Ldr. MacDowell, G15MZ, advertised a conventionette on November 4, and as a result the Gibraltar Amateur Radio Society has been reformed. It is intended in future to hold fortnightly meetings.

After a preliminary rag-chew followed by refreshments, G15MZ addressed the meeting. In the course of his speech he stressed the fact that amateurs, if they were to retain their frequencies and facilities after the war, must keep together and present a concerted case to the authorities. The best way for British amateurs to do this was to join the R.S.G.B. and he suggested that the Gibraltar Society should ask for affiliation to the R.S.G.B. He added, with typical GI humour, that he was not an agent of the R.S.G.B., and in fact he had not been a member for the past two years—this he intended to rectify! (Already rectified!—Ed.)

ARE YOU AT No. 1 S.S. ?

If so, you are cordially invited to attend a Meeting in Hut 2 at 18.30 hours.

MONDAY, DECEMBER 29.

A committee was then chosen, consisting of: President, Sqd.-Ldr. MacDowell, G15MZ; Secretary-Treasurer, Flt./Sgt. Adams, G5NM; Members, Sgt. D'Hooghe, R. Signals, ZB2B; Mr. Cave, G2KQ.

Lt. Isaacs, R. Signals, G6ZY, was elected Society Scribe and made responsible for keeping BULLETIN readers informed of amateur happenings in ZB2.

Any amateur finding himself in Gib. is invited to 'phone one of the committee members, or G6ZY, and he can be assured of a warm welcome. It is felt particularly that many Naval ops. passing through would like to meet fellow hams.

The following were present at the meeting: G2KQ, 2VD, 4OO, 5NM, 6ZY, G15MZ, GM3TD, ZB2B (1st and 2nd Ops.), ex-VQ5KAB (ex-G2SC), 2BUJ, 2DDB, BRS3355, 4099, 4199, Messrs. Dunlop, Elliott, Sheath, and Tidy. G6ZY.

News from No. 1 S. S.

Another highly successful meeting was held at No. 1 Signals School, R.A.F., on Monday, November 24, when an attendance of over 30 listened to a talk on Radio Propagation delivered by P./O. E. J. Williams, B.Sc., G2XC. A shortage of chalk nearly wrecked the lecture but at the last moment members turned out their pockets with some success!

After a cordial vote of thanks had been recorded to the speaker, two overseas amateurs, VE5AAG and VK2ADV, were induced to say a few words about their pre-war activities.

A committee consisting of G3TG, 8ON, 2AIQ and VE5AAG was appointed to make plans for a Hamfest which it is hoped to hold early in the new year.

A Radio Quiz, suggested by VE5AAG, will be the chief feature of the next meeting to be held in Hut 2 at 18.30 hours on Monday, December 29.

A Woman Plays her Part

Denise and Asbjørn were very happy in the days before the war, Denise, an English girl keenly interested in ham radio and holding an A.A. call, Asbjørn a well known Norwegian amateur whose signals had indirectly been the means of bringing them together. Their engagement had just been announced when war came to Europe.

At first they exchanged letters with regularity, until one day in April, 1940, the Nazi invader entered Norway. The English girl, determined to be near her fiancé, was among the first to volunteer for service in Norway, but the fighting became so intense that she and her comrades-in-arms were compelled to return to England.

Months passed with only an occasional scrap of news, usually through friends in Sweden. Then early last spring came the message "your fiancé is held prisoner by the Gestapo." For six months the suspense lasted but with the arrival of the September BULLETIN hopes ran high, for printed therein was a brief paragraph—"LA9—has reached England from Norway." A hurried note of enquiry brought a prompt reply. Yes, he had seen LA—quite recently. Yes, he was fit and well and had been released from prison. He had reopened his shop but as his father was still held captive, it was unsafe for him to communicate with England.

One needs little imagination to appreciate with what relief and joy this news was received. For two of its devotees, the power of Ham radio had again risen to new heights.

And now we know why Miss Bullough, 2DTB, is serving in the A.T.S. To quote her own words "I joined to try and carry on the fight for my fiancé and his countrymen."

Good luck Denise, and may the day soon come when you are both together "for keeps."

Washington Welcome Awaiting

Miss E. Zandonini, W3CDQ, 3633 Everett Street, N.W. Washington, D.C., will be pleased to welcome any British amateur who finds himself in that city. She mentions that the local club meets at CREI., 3224 16th Street, N.U. on the second and fourth Saturday of each month.

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Mr. C. B. Boorman, BERS492, whose address is General Delivery, Hamilton, Bermuda, reports meeting G3VM, W1BIG, W6TWX, and W6UFF. He will be glad to hear from home members and extends hospitality to all who call at Bermuda.

Our Maths. Master Joins the R.A.F.

Mr. T. R. (Dick) Theakston, 2DBK, whose monthly articles have attracted wide-spread interest since they first appeared over a year ago, has accepted a commission in the Education Branch of the R.A.F.

In offering him best wishes, on behalf of all who have derived benefit from a study of his articles, we dare express the hope that his new duties will not interfere with the preparation of further articles in the series "Mathematics for the Radio Amateur."

73 For Christmas and The New Year

G2DP (6 Dunheved Close, Thorton Heath, Surrey), to G2BB, 2KU, 2 LW, 2RD, 2VB, 3ST, 4AA, 5AW, 5GQ, 8TN, 2FWA, BRS3003.

G2SO (R.A.F.), to G2GU, 2UK, 3OA, 3WP, 4LM, 5XI, 5UK, 6LH, 6CT, 6IF, 6I5TK, BRS4023.

G2VV (27 Riverdale Gardens, St. Margarets), to G2KI, 2YL, 5CM, 5LT, 5OQ, 5RS, 6GS, 6LK, 6UT, 8IV, 8MK, ZL2OQ, and all old T.V.A.R.T.S. members.

G2ZJ (R.A.F.), to G2MC, 2MV, 2UJ, 2XC, 3YY, 5RD, 5TZ, 2DDD and all old 56 Mc friends.

G3BN (R.A.F.), to G2GA, 2IK, 3KB, 3NL, 3PM, 3QS, 3YJ, 3ZN, 4BO, 6BP, 8NZ, 8QJ, and all members of the Ashton and Bury Groups.

G3BQ (Twickenham), to G2KU, 3UQ, 4CI, 4JF, 5JL, 5ND, 6DZ, 6KQ, 6RS, 6ZY, 8FV, 8IH, and all F.O.C. members.

G3FD (R. Sigs.), to G2AK, 2NA, 3QO, 5LJ, 5QP, 5WH, 6KB, 6PC, 8LP, 8MC, 8UR, 2FXF.

G3RI (R.A.), to G2IU, 6DT, 8KX, VS2AK, VK2AGU, VU2JG, W1DQ and all Southampton amateurs.

G3WC (R.A.F., Ontario, Canada), to G2DQ, 2WT, 3GW, 3JV, 3OO, 5MM, 6FM, 6LL, 6SG, 8JM, BRS1295 and all other 1.7 Mc. enthusiasts.

G3YK (Middlesbrough), to G3UY, 3ZI, 4BO, 4DD, 5CP, 5TZ, 8QX, 8RN, 8I8PA, 2ATB, 2CHQ, SU1AF.

G4HK (R.A.F.), to G3HZ, 3MR, 4NO, 6KS, 6LN, 8HG, 8KS, 2BKO, 2CDK, 2DRR and all old friends in Manchester.

G4NU, to G3PT, 4CH, 4LP, 4QC, 4RM, 2FZM.

G4NX (R.A.F.), to G2NV, 3UJ, 4DH, 4PX, 8CP, 8PR, 8WI, and all Midland amateurs who frequented the "Top Band."

G5CH, to G2CR, 2HW, 4LP, 5IG, 6BW, 8BI, 8NF, 2ABS, 2FGQ, and all Bury members.

G8DY (R.A.F.) to G2DF, 2XK, 3BR, 4DP, 6GH, 6AC, 6TV, 6LH, 8PF, 8PI, 8PQ and ST2LR.

G8HX (R.A.F.) to G3BR, 3FR, 3XA, 4DS, 5IG, 6VD, 8MR, 8NS, 8OM, 8SA, 8UZ, BRS3593 and all "the Robin Hood Gang."

G8KP (R.A.F.), to G2FX, 3RB, 4HW, 5BQ, 5LH, 5YV, 6XT, 6ZN, 8PO, GW8NP, 2DPQ, BRS3585.

G8PW, to G2CR, 3AH, 4LP, 8NF, 8OJ, 8QS, G13IA, 3KN, 5HU, 6TK, GW3CR, VE4ATE.

G8TY (N. London), to G2AI, 2AK, 6LL, 6WU, 8KW, G15ZY, 8KW.

G8WR (R.A.F.) to G2UV, 3OW, 5AO, 6CJ, 6RW, 6WN, 6ZY, 8MA, 2CWR, 2DFJ.

2AGH (R.A.O.C.), to G3VG, G3DA, 3VG, 3VS, 3WQ, 4LA, 4OY, 5GJ, 6SH, 8BA, 8IJ, W2KTF.

2BSR (R.A.F.), to G4AH, 4LR, 5TT, 8UI, 2CIB, 2DRT, and all other Notting "hams."

2FJS (R.A.F.), to G2LK, 3AO, 3PP, 3QV, 3YB, 4DX, 4JN, 6GX, 8HG, 2DWN, 2FPK.

2FWV (c/o. "Harefield," Westerham Hill, Kent, to G2NK, 2WS, 3MD, 4IG, 5ZT, 6HK, 8KV, 2FKC.

2HBG (R.A.F. Khartoum), to G2IX, 2RI, 3BU, 4FO, 5MY, 5ZP, 6IM, 6VD, 8CZ, 8LD, 2BLR, 2CFC.

BRS1060 ("Woodside," Meliden Road, Prestatyn), to G2GB, 2KI, 3TS, 6FK, 8JM, 8TC, 8DI, GW3CF, 4CK, VE3IX, 3AKY, 3AKX, BRS1066, and all friends old and new.

BRS3766 (R. Signals) to G2MN, 3BW, 3UC, 5QO, 6RB, BRS2999, 3468, 3821, VE5ZM.

Christmas Hospitality

Two members, one in North London and the other in Sudbury, Suffolk (between Bury St. Edmunds and Colchester), offer hospitality to any Service member who would like to spend Christmas Day with them.

Letters marked "Christmas Hospitality," should reach the Secretary-Editor, not later than December 20.

The following members, in addition to those whose names were published in our last list, have offered ham hospitality.

Chadwell Heath.—Mr. G. I. Sanderson (2DBT), 52 Ashton Gardens. Phone: Seven Kings 4655, any evening after 7 p.m., but not Sunday mornings.

Ipswich.—Mr. A. G. Wood (G6TI), 33 Lattice Avenue. Phone: 78222.

Nottingham.—Mr. F. J. Daines (G8UI), 2 Green Gates, Breck Hill Road, Mapperley.

Sutton Bridge (Lincs.).—Mr. G. W. Fortnam (2FJR), 76 Bridge Road. Phone: 263, before calling.

POSTAGE DUE

For EVERY BULLETIN RETURNED TO HEADQUARTERS THE G.P.O. DEMANDS A SURCHARGE OF 1½D.

Please co-operate by notifying change of address immediately

ON ACTIVE SERVICE

TWENTY-SEVENTH LIST

WE publish below our twenty-seventh list of radio amateurs on active service. Additional details and corrections should be advised to Headquarters as early as possible. The present list contains information received up to December 1, 1941.

Rank and Name	Regiment or Branch	Pre-war Call or B.R.S.
W./Tel. W. L. Baillie...	R.N.V.R. ...	G3JS
Capt. H. Bellringer ...	R.C. of S. ...	4535
Cpl. D. B. R. Black ...	R.A.F. ...	3300
Lt. W. A. Busby ...	R.N.R. ...	2556
Capt. C. W. Catt ...	R.C. of S. ...	VQ3
PAB		
A.C.2 R. H. Chapman...	R.A.F. ...	4586
A.C.2 A. C. H. Cuff ...	" ...	4599
A.C.2 J. B. Dodd ...	" ...	4558
S/Sgt. Maj. H. D. H. Drewery	R.A.C. ...	4579
L./Cpl. S. F. M. Edwards.	R.C. of S. ...	2FQX
A.C.2 M. Geddes ...	R.A.F. ...	G2SO
Tel. J. H. Gorman ...	R.N.V.(W.)R.	4562
L.A.C. C. P. Grant ...	R.A.F. ...	4576
L.A.C. C. A. Harley ...	" ...	2ACC
L.A.C. J. Harris ...	" ...	2FPY
S./Sgt. J. A. Hay ...	R.A. ...	4501
Gnr. J. Heath ...	" ...	2FRJ
F./Sgt. K. Hellowell ...	R.A.F. ...	4565
2nd Lt. E. C. Ilott ...	R.A.O.C. ...	G2JK
A.C.2 P. C. W. Ives ...	R.A.F. ...	4589
A.C.2 R. T. Jackson ...	" ...	4517
L./Tel. W. L. Johnson	R.N. ...	G6LQ
Cpl. W. G. Johnson ...	R.A.F. ...	2BJY
Sgt. I. L. Kedge ...	" ...	2BKS

Rank and Name	Regiment or Branch	Pre-war Call or B.R.S.
Sgt. P. W. Lambert ...	R.A.F. ...	4591
L.A.C. A. R. Marshall...	" ...	4592
A.C.2 J. R. Mitchell ...	" ...	4553
Pte. A. Mordey ...	R.A.O.C. ...	2CAF
F./Lt. A. J. Mott ...	R.A.F. ...	4581
Cpl. J. McDougall ...	" ...	4540
Sgt. W. Newsham ...	R.A. ...	4555
A.C.1 L. J. Orange ...	R.A.F. ...	2FOZ
Sgt. C. J. Picklesley ...	" ...	4537
A.C.2 T. Preece ...	" ...	4545
Capt. H. E. Prickett ...	R.C. of S. ...	4601
L./Sgt. J. T. Riley ...	R.A. ...	4564
A./L./Air. K. E. Roberts	R.N.V.R. ...	3755
2nd Lt. A. J. W. Roze-laar.	R.A. ...	4590
L./Air. J. R. Seager ...	R.N. ...	G4AK
P./O. D. R. Spearing ...	R.A.F. ...	G3JG
Cpl. G. N. Statham ...	" ...	4600
A.C.1 A. F. J. Swift ...	" ...	4593
A.C.2 T. S. Tatton ...	" ...	2BSR
P./O. T. R. Theakston	" ...	2DBK
Tel. E. J. Tubman ...	R.N.V.(W.)R.	4548
L.A.C. A. J. Wall ...	R.A.F. ...	4568
Sig. A. N. Webster ...	R.C. of S. ...	2DWB
Lt. G. R. Wigg ...	" ...	G6JF
L./Cpl. W. H. Wilcock	" ...	4563
F./Lt. K. B. S. Willder	R.A.F. ...	4578
Sgt. P. Williamson ...	" ...	4554
L./Cpl. W. J. Wilson ...	R.C. of S. ...	4598
Sig. W. H. Windle ...	" ...	G8VG
Major A. Thallon Wood	" ...	GM3ND
Sub Lt. F. E. Wood ...	R.N.V.R. ...	G4JN
A.C.2 D. J. Woolley ...	R.A.F. ...	4561
Gnr. J. Wright ...	R.A. ...	4552

Silent Keys

It is with very deep regret we have to record the death on Monday, November 24, of James Bolton, G4KT, Town Representative for Blackburn.

Jim will long be remembered as the moving spirit behind the enthusiastic Blackburn group whose members are now scattered throughout the world. Jim was an inspiration to all who knew him and his keenness was demonstrated at the many meetings he organised and attended. His loyalty to the Society was evidenced by the number of applications for membership which carried his signature as sponsor.

He will be sadly missed not only in his home town, but in places far remote, where the news of his death will be received with sorrow and profound shock.

To his wife, children and other relatives, we offer our deep sympathies.

We also regret to report the death of George Mercer Hindle, BRS3692, of St. Wenn, Bodmin, Cornwall, who lost his life whilst serving as 2nd Radio Operator. Mr. Hindle was originally an operator on the S.S. "King —," which was sunk by the surface raider "Narvik," as reported in the October, 1940, issue of THE BULLETIN. After three days at sea in a small boat, during which time a full gale was blowing, landfall was made at St. Kitts. He made his way home and later joined the S.S. "B—" bound for Africa. All went well till near the end of the voyage when the ship was posted overdue and presumed lost with all hands.

Through his death the Merchant Service has lost a capable officer and the Society a keen member.

Our sympathies are extended to his relatives and friends.

J. C.

PRISONERS OF WAR FUND

Parcels Despatched

Mr. C. Lambourne Edwards, G8TL, administrator of the above Fund, announces that parcels of cigarettes, tobacco and books have been sent to the following members who are prisoners of war:—

Sig. J. B. Kay
Cpl. D. W. Carr
Radio Officer A. C. Webb
Lt. A. W. Lister
Ft./Sgt. G. D. Barry
Lt. D. L. Flower
2nd Lt. D. G. Blair
2nd Lt. M. L. Quartermaine
P.O. Naval Airman H. G. Cunningham
Ft./Lt. F. H. Babcock
Sig. R. M. Garrett
2nd Lt. E. M. Frost
Capt. E. S. Shackleton

Further parcels are being ordered and these will be despatched early in the New Year.

Expenditure to date £6 5s. 7d.

Donations

The Secretary-Editor acknowledges, with grateful thanks, the following additional donations to the Fund:

	£	s.	d.
R. C. Horsnell, G2YI	10 0
H. Freeman	1 1 0
Anon	5 0
Anon	5 5 0
H. J. Long, G5LO	10 0
W. E. Corsham, G2UV	5 0
District 7 (per G2DP)	12 0
E. J. Simmonds, G2OD	10 6
R.A.F. Unit in Kent (per 2BIB)	10 0
Dr. G. Bloomfield	2 6
R. T. Reed, G2RX	1 0 0
G. A. Kingsbury, G6SS	10 0
G. Palmer, G8IZ	5 0
J. Hayworth, BRS4164	5 0
Anon	10 0

Services Rendered

To the Editor of THE T. & R. BULLETIN

DEAR SIR,—I am enclosing a donation of three guineas to "the" Prisoners of War Fund, from the XYL and myself.

As a matter of passing interest, may I say that one guinea was "collected" from a neighbour who makes a habit of calling upon my services when anything electrical goes "crackers" in her domain. Things like the repair of electric irons, fuses, vacuum cleaners, standard lamps, etc., to say nothing of repairing her gas poker, and even a vanity powder mesh! Anyway, I thought all these "free" services were worth a donation to the Fund, and like a good neighbour she readily "coughed" up!

The second guinea was "earned" by the XYL for nursing another neighbour. The XYL is a fully trained nurse (now in the C.N.R.) and just lives for nursing. Her guinea was a gift from her grateful patient, which she gladly passes on to "our" fund with her best 88's to our P.O.W. Hams.

The third guinea is from the OM himself and is calculated as representing the approximate saving of units of electricity which might have been con-

	£	s.	d.
Ft./Lt. H. W. Simpson, G8DI	10 0
District 5 (per G6RB)	2 11 0
G. I. Rawling, G8GM	10 0
Anon	3 0 0
Provost T. W. Readshaw, GM6UU	1 1 0
Nancy Hargreaves & Family, G8FI	10 0
J. D. Siddell, G4BM	5 0
G. Shackle, 2DVQ	5 0
A. C. Wilberforce, G2IY	1 1 0
Dr. S. O'Hagen, G2CR	7 6
G. A. Parris, G4GW	2 6
H. W. Stacey, G6CX	1 1 0
Gerald & Mrs. Kenyon, G3YK	3 3 0
Anon	12 0
District 6 Conventionette	4 10 6
"Boys of a Radio Location Station" (per 2FRJ)	1 0 0
W. P. Mitchell, G2TM	2 6
District 11 (Prestatyn meeting) (per BRS1060)	1 12 0
"The ZQ Party" (per G2ZQ)	3 2 6
A. G. Davies, G2PC	2 6
F. W. Fletcher, 2FUX	1 0 0
P. G. Tandy, G2DU	5 0
Previously acknowledged	31 6 6
Total to December 5th	£70 1 6

Thanks to the splendid response given during the past month, our colleagues who are held prisoner are assured of a monthly parcel for the next three months. It is hoped to increase the average value of each January parcel to £1.

The Secretary-Editor has received from Mr. R. C. Horsnell, G2YI, a Hugo French Self Tuition Course comprising 50 volumes, which the donor asks be sold to the member making the highest bid prior to December 31 next. The proceeds will be added to the Prisoners of War Fund.

sumed by the "pile of junk" that went by the name of a TX in peace-time. Incidentally, this idea is not copyright, and I commend it to all those "poor 10 watters" who sounded more like a kilowatt on 40—or any other band for that matter. It would bankrupt a few of them I guess!

Well, that's the story, and if I sell my R.M.E. (I can hardly bear the thought of the parting!) and I "earn" any more cash for services to neighbours in distress, then there'll be another donation on the way in the near future.

Yours sincerely,
A NORTHERN HAM.

Prisoners of War

Lt. A. J. Deane-Drummond, BRS1593, who was captured last May while serving with the Royal Corps of Signals, is now in an Italian prison camp at Sulmona.

Mr. A. G. Dunn, G3PL, informs us that F. E. Marshall, G2XQ, was taken prisoner in May, 1940, while serving with the 51st Division. His address is Sgm. F. E. Marshall, B.P. of W.19304, Stalag XXB, Germany.

THE MONTH "OFF" THE AIR—November

By A. O. MILNE, G2MI.

THE flow of reports has been kept up pretty well this month, but we can do with more letters yet, especially those of the newsy, general chatter type, not necessarily giving a list of stations heard. There must be much of interest to your pals in the Forces and their pals, not in the Forces, which could be published most appropriately in this monthly article; items of general interest, which could not be included with K. and B. or District Notes; so what about it, chaps?

In particular, extracts from letters coming from overseas are often just what is wanted, as witness some of the items from G2MI's and 6CL's correspondence already published.

Don Rabbage, BRS3607, a keen supporter of this column in days gone by, is now awaiting a course for Wireless Mechanic, R.A.F. He has just received cards from KA7FS and NY4AD so feels quite pleased with himself.

G5IV, now at an R.A.F. station in the north of Scotland, has met VE3AWC, ZL1JZ, ZL2IO, G5MY and G8HQ in the course of his duties and would like to hear from some of his old pals in the Barnsley district. Write c/o his home address, please.

G2ZQ and BRS3811 (ex-VU2EK) are at the same R.A.F. station and both are members of the R.S.G.B. Philatelic section. In the course of recent duties they had business with a certain Flight-Lieut. Jefferies, and quite by chance discovered that he is 8HJ, also a member of the stamp club!

G2QY, on special civilian duties in Cornwall, is hoping to transfer to London in the near future. He is in digs, with 2NJ and about 30 yards from 5IL—quite a little Ham Corner. Recently, while travelling on week-end leave, he found himself sitting opposite to a Sgt. Radio Op. of the R.A.F., who turned out to be 2FQH.—A good time was had by all!

A short note from an old stalwart of M.O.T.A., BRS1151, says that he expects shortly to be going "somewhere" on war work and that we shall not hear further from him for some time. Best of luck, O.M.!

Some B.C.L. News

G5BM has been doing a little excavation in the short wave broadcast bands and offers the following remarkably interesting bag.

VONG	5,975	kc/s	22.30	G.M.T.	St. Johns, Newfoundland
Accra	5,995	"	18.00	"	Gold Coast
PRA8	6,010	"	23.30	"	Pernambuco, Brazil
CHNX	6,130	"	22.45	"	Halifax, N.S.
HI5P	6,565	"	23.15	"	Pento Plata, Dominican Republic
HI2G	9,295	"	22.30	"	Trujillo, Dominican Republic
COCQ	8,830	"	22.30	"	Havana, Cuba
CB1174	11,740	"	21.15	"	Santiago, Chile
IRA3	11,730	"	22.00	"	Buenos Aires
PSH	10,220	"	23.00	"	Rio de Janeiro
ZNR	12,115	"	16.25	"	Aden
HCJB	12,460	"	16.25	"	Quito, Ecuador

This last is an outstanding signal considering his 1kW input.

Singapore can be heard on 19,350 kc/s at 09.15 G.M.T. and W8XAU on 26,200 relays the Mutual Broadcasting systems programmes from Cincinnati. So there you are, folks. If the home programmes and Lord Haw Haw, bore you, you can take your choice.

BRS3593 also mentions a number of the above stations and draws particular attention to the excellent signal from PMA Batavia, on 15.48 metres, every day except Sundays at 12.45 G.M.T. with news in English and some very good lines in recorded dance music. XGOY Chungking is another good one on 9,630 at 22.15 G.M.T. He also lists YV5RN on 5,040 kc/s and YV5RH on 4,920 kc/s in the early hours of the morning. A few of the more powerful American amateurs have been heard, but conditions generally have not been good. OPL on 14.97 metres is a good one at 11.00 G.M.T. every Sunday; he starts his programme with the roll of war-drums and the announcement "Radio Congo-Belge Leopoldville."

Back to the Ham Bands

BRS4271 sends quite a presentable list of W's heard between October 21 and November 2:—WIAXA, KIG, KIU, LYH, MQX, NLB, 2AYS, KDF, LOG, 3CAB, JJG, 4EIA, ERT, 8BDT, 9YZK, KA1KA, 1KM and K4DDH. His best DX is OA7A, the Fejos Expedition in the Peruvian jungles, digging up Indian relics, Aztec gold or something. He has the latest issue of the call-book and would be pleased to supply up to date information to anyone interested.

G8JR has logged several West Coast stations on 7 Mc/s around 10 a.m., the best being W6SWJ. Other good ones are W5HMT, W5IQQ and 5JEI. K6TOP peaked at S7 at 10.15. "Just fancy," says Peter, "what we used to miss underneath the morning 'phone QRM!'" W6OUZ is the only good one on 14 Mc/s, which seems to have been very bleak recently. 8JR finds that he requires only one card for B.E.R.T.A. and would be very grateful to VP5PZ if he will oblige. He is not sure of his present whereabouts and hopes this may catch his eye.

2HAD who found time to turn the knobs whilst on seven days' leave heard a few W's for his pains, all on phone:—W2EDP, ADC, CQV, 3BZQ, 8COL, NKZ, UTR, 9OZE. He also mentions FZN at Saigon in Franco-Japanese-Indo-China at 07.50 G.M.T. but does not give the frequency.

G2MI had a visit a few days ago from two R.A.F. lads, stationed in Yorkshire, BRS4349 and 2ARP, rather a topical call-sign! MI is always glad to see anyone able to spare the time to drop in. Telephone: Harrogate 2161.

Gibraltar

Lieut. Isaacs, G6ZY, writing again from the Rock, gives news of a local conventionette as well as the formation of a local society. Together with G15MZ and G5NM he hopes to organise fortnightly meetings. ZY has been appointed scribe. Recently he heard that G8HI's destroyer was in port and hurried down to meet him, only to find that he had sailed some twenty minutes previously!

(We hope G8HI won't read anything too significant into G2MI's "Destroyer" reference!!—Ed.)

He mentions that Major Solly, of ZB2B fame, is now back in England with the rank of Colonel. One of the original operators of ZB2B Sgt. D'Hooghe is still in Gibraltar with ZY's unit.

Down Under

From Don Knocke, VK2NO, who, at the time

of writing was in hospital recovering from an operation, comes a most interesting letter.

Before quoting in large lumps, may we offer our best wishes for a complete recovery.

He, first of all, comments on BRS1151's remarks on 500 kc/s DX in the July BULL. "As you know," he says, "I have been technical radio editor of several VK publications before the war and I can confirm the reception of European broadcasting stations over here. Some time ago I met (after correspondence) a medium-wave DX listener at Wollongong on the coast, about 60 miles south of Sydney. This chap had a massive T.R.F. receiver with three R.F. stages with a high cage aerial, and he had verifications from 350-odd overseas broadcast stations, mostly European, including some of the early B.B.C. relay stations such as Leeds, Liverpool, Bournemouth and Cardiff. These were all duly verified and everything was quite genuine." 2NO goes on to tell of a remarkable experience he had about the middle of 1937 when listening to marine traffic on 500 kc/s about 6 p.m. one evening, local time. "I distinctly heard and logged GLV, the Post Office station, at Seaforth, near Liverpool, England, at S5. It gave me quite a thrill as my early days of radio were spent at Wigan and the first station I heard way back before the last war was good old GLV!"

This must be an all-time record we think, because GLV at that time used less than 1kW. and is located in by no means an ideal spot.

Don gives news of Flt./Lieut. Ralph Bloxham, GM6LS, who was then in the Middle East on a very interesting job, and also asks us to correct the statement that he, VK2NO, is an instructor in the R.A.A.F. This should be A.I.F. In closing, he sends 73 to all the boys and looks forward to working G again.

Nigeria

ZD2H says: "September brought nothing of special interest in the way of ham news. QRN was not quite so heavy on 3.5 Mc/s. There was a noticeable 'let up' on the 6th around 05.00-06.00 G.M.T. and the month finished in a blaze of glory when, on the 30th, I logged ten W's in half an hour, mostly 9's. Consistent 3.5 Mc/s. signals are W1AW, BOE, MJK, 3BES and 5JAL, whilst W1AW on telephony on 4 Mc/s. is an excellent signal."

South Africa

Ham Chatter, the live wire magazine of the ZS6 boys, still comes through regularly, carrying in its August number a very impressive Active Service list. The "Scientifik Diskourses," by Professor

Ejucated Willyum, A.S.S., N.U.T.S. (Eng.), G.P.O., are a high light each month. Perhaps we could prevail on the Secretary-Editor to reproduce one of these very "Ejucashunal Diskourses" one month.

From Ethiopia comes the story of a signals officer who, during the battle of Amba Alagi, met an Italian with whom he had often had a QSO before the war. Before the Italian Government banned amateur radio in 1928, this chap, Renato Spinotti, was IIBK. He may have been biased, (hi), but seemed none too enthusiastic for the present way things are run in Italy. Incidentally, one of the Italian Engineers from the Addis Station fixed up the mike and leads used by the Negus on his return to town!

An Appeal to Poland

A very fine set of postage stamps is shortly to be

issued by the Polish Government in this country, bearing heartrending illustrations of the devastation in Warsaw on the lower values, and on the higher values, the means of retribution are portrayed — tanks, bombers, fighters and warships. Would one of our Polish friends at present in this country be willing to help our philatelically minded members to obtain these stamps, postally used? As the

stamps are for the use of the Polish forces sending mail abroad, they will be most difficult to obtain *used*, except at some exorbitant premium.

Anyone willing to help is asked kindly to write to G2MI, 1 Kent Drive, Harrogate. All expenses will be paid by our collector members, of course.

The 28 Mc. Band

CONDITIONS during November were poor compared with those of the previous month and amateur signals were only identified on eight days. W's were logged on November 3, 5, 8, 9, 11, 23 and 26, and a few weak 'phone signals were also reported on November 4 and 12. Stations in Districts 1-5, 8 and 9, were heard around 17-00-19-00 G.M.T. on November 3, but on five of the other days only a few East Coast signals were audible. On November 26 BRS3893 logged W7AUU and W7IDO, but no W6's were reported.

The most unusual signal of the month was a K6 on c.w. vi_4 , K6HJZ, heard by BRS3003 at 17-20 G.M.T. on November 3. G4MR also had the distinction of logging a c.w. station, vi_4 , K4ESH at 15-35 G.M.T. on November 23. He also heard KB4HBX and an unidentified K5 on November 9; BRS3893 reported K4HVQ and K4DDH on November 8 and 11.

The only South American signal reported was LQB4/LSA2, 27.4 Mc/s., heard on 20 days.



DIVERSION

Having worked hard at the Maths. articles (as you have of course) you deserve some lighter relief. So 2DBK joins you round the fire with some not-quite-so-serious problems; although, but this is a secret, they do bring in some revision!

EACH clue is answered by one letter, except that a little licence has been taken with numbers 2 and 4.

When completed a simple re-arrangement of the answers brings you a message. Solution on page 228.

1. $\frac{3x-4}{2} = \frac{6U-8}{4}$. $x = ?$
2. $9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 \times 0$.
3. No charge here. This only is admittance.
4. Anything to this power is one.
5. The last letter in the hypotenuse, expressed in words, of a right-angled triangle with the other two sides 30 and 72.
6. If R-STUV, each letter being a digit = log 42.24, which letter is the digit 6?
7. Watt divided by volt.
8. It's capital. If small is 10^{-3} .
9. $\frac{(T+M)^2}{T} - (3\sqrt{8T^3M^3} + M^2)$
10. With "ine" is opposite/hypotenuse.
11. Why not divide E by R?
12. This opposes the poor mA.
13. Oh Henry!
14. With "m." = 0.39 in.
15. The ages of X, Y and Z total 67 years. The

combined ages of Y and Z are 20 years greater than the combined ages of X and Y. Z is three times the age of X. Which one is 27?

16. Although not W, this is EI.
17. $P = (\sqrt[4]{10})^4 \times 1.5 \times 10^{-1}$; $Q = \log 31.61$; $R = \cos 19^\circ 30'$; $S = (2.1)^2 - (1.9)^2$; $T = \operatorname{cosec} 41^\circ 50'$. Which is the largest?
18. If antilog $2.6734 = .ABCDE$, which letter is the digit 0?
19. Metric "100 times."
20.

OHM
+ AMP
+ VOLT
= WATT

 What letter = the digit 1.

No. 20 is not some new electrical theory, but as it says, an addition sum, in which each of the digits from 1 to 9 is represented by a certain letter. The problem is to find "what is what" and hence which letter represents the digit 1. As a help in obtaining the correct solution (as there is more than one

possible) here are three clues:— $P = \sqrt[9]{262144}$; H is the number of mA. passing when a resistance of 5,000 ohms is dissipating 0.32 watts; W is greater than A.

The Ultra-High Frequencies

THERE is very little news of U.H.F. interest to record this quarter, but the following extract from the September issue of QST certainly shows that our self-imposed motto "try, try again" is well worth it!

During the last days of peace in Europe, FA8IH (Algeria), ran a 56 Mc./s. schedule with F8GQ (Paris), seconded by F8RJ. On August 16, 1939, at 13.05 G.M.T., a two-way contact was established for two minutes, each with QSA 3 R5, bad fading. In June 1940, when the Armistice came, F8RJ had an opportunity to cross into Africa, rush to FA8IH and got 100 per cent. evidence of this DX contact.

Neither operator used special U.H.F. aërials, and power in both cases was only 50 watts input.

U.H.F. Records Up-to-date

56 Mc./s.—July 22, 1938, 2,500 miles between W1-W6.

112 Mc./s.—August 21, 1941, 335 miles between W2-W1.

224 Mc./s.—August 18, 1940, 135 miles between W6-W6.

400 Mc./s.—January 28, 1941, 20 miles between W6-W6.

On the last occasion that these notes ended with Christmas Greetings it was doubtful if they would appear again, even quarterly, but we have managed, thanks to those who have continued to send reports.

Good luck to all VHF enthusiasts where-ever they may be, and sweet dreams of "snaffling" that 56 Mc./s. W.A.C. certificate!

C. H.

Book Reviews

RADIO UPKEEP AND REPAIRS FOR AMATEURS. Fifth Edition. By A. T. Witt. 217 pp. Published by Pitman. Price 6s. 6d.

A fully revised edition of this well known textbook becomes available at a time when the majority of servicing engineers are "otherwise engaged." As a consequence it will prove a boon to those who through present conditions have to tackle their own fault clearing and set maintenance. It will also be found useful to men who are training to become Radio or Wireless Mechanics, as it explains in an easy to follow style, how to locate and clear common and uncommon types of faults.

Two chapters which warrant careful reading are those entitled "How to Test Components" and "Mains Receivers: Design Notes." The first mentioned chapter describes many simple tests which can be applied to check components suspected of being defective, while the receiver design chapter contains much useful information for those who desire to modify an existing receiver or to construct a new one. The section dealing with the choice of component values is especially helpful.

An interesting chapter, devoted to a description of gramophone pick-ups, gives advice on screening, switching and mechanical construction.

Although some notes are given regarding short wave receivers, this side of the subject has been rather neglected by the author, possibly for the reason that he considers it unwise to recommend the average amateur to attempt fault clearing on communication type receivers. However, with short wave superhets now in common use, perhaps future editions will devote more space to them.

J.C.

BRITISH ISLES NOTES AND NEWS

District Representatives and Deputies.

DISTRICT 1 (North-Western). (Cheshire, Cumberland, Lancashire, Westmorland.) MR. H. W. STACEY (G6CX), "Sandleas," Edisbury Road, West Kirby, Wirral, Cheshire.

DISTRICT 2 (North-Eastern). Yorkshire (West Riding, and part of North Riding.) Acting: MR. A. O. MILNE (G2MI), 1 Kent Drive, Harrogate, Yorks. Telephone: Harrogate 2161.

DISTRICT 3 (West Midlands). (Shropshire, Staffordshire, Warwick, Worcester.) MR. V. M. DESMOND (G5VM), The Chestnuts, Hanley Castle, Worcs. Telephone: Hanley Swan 41.

DISTRICT 4 (East Midlands). (Derby, Leicester, Northants, Notts.) Deputy: MR. W. M. VENDY, (G6VD), 9 Cecilia Road, Leicester.

DISTRICT 5 (Western). (Gloucester, Hereford, Wiltshire.) MR. R. A. BARTLETT (G6RB), 31 King's Drive, Bishopston, Bristol. Telephone: Bristol 46960.

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

DISTRICT 7 (Southern). (Berkshire, Hampshire, Oxfordshire, Surrey.) MR. W. E. RUSSELL (G5WP), "Milestones," Westfield Road, Mayford, Woking, Surrey. Telephone: Woking 1589.

DISTRICT 8 (Home Counties). (Beds., Cambs., Hunts., and the towns of Peterborough and Newmarket.) MR. S. J. GRANFIELD (G5BQ), 47 Warren Road, Milton Road, Cambridge. Telephone: Cambridge 56444.

DISTRICT 9 (East Anglia). (Norfolk and Suffolk.) MR. H. W. SADLER (G2XS), "The Warren Farm," South Wootton, King's Lynn, Norfolk. Telephone: Castle Rising 233.

DISTRICT 10 (South Wales and Monmouth). Scribe: MR. S. HOWELL (G5FN), 90 Coleridge Avenue, Penarth, Glam.

DISTRICT 11 (North Wales). (Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire, and parts of Shropshire not in District 3.) Deputy: MR. N. E. READ (G6US), 24 Church Street, Oswestry, Salop.

DISTRICT 12 (London North and Herts.). (North London Postal Districts and Herts., together with the area known as North Middlesex.) Deputy: MR. P. SOLDER (G5FA), 35 Torrington Gardens, New Southgate, N.11. Telephone: Enterprise 4347.

DISTRICT 13 (London South). To be appointed.

DISTRICT 14 (Eastern). (East London and Essex.) MR. R. L. VARNEY (G5RV), "Arvika," 184 Galleywood Road, Chelmsford, Essex. Telephone: Chelmsford 3394.

DISTRICT 15 (London West). (West London Postal Districts, Bucks., and that part of Middlesex not included in District 12.) MR. H. V. WILKINS (G6VN), 539 Oldfield Lane, Sudbury Hill, Greenford, Middlesex. Telephone: Byron 3369.

DISTRICT 16 (South Eastern). (Kent and Sussex.) Deputy: MR. W. A. SCARR, M.A. (G2WS), 8 Beckenham Grove, Shortlands, Kent. Telephone: Beckenham 1131.

DISTRICT 17 (Mid-East). (Lincolnshire and Rutland.) MR. W. GRIEVE (G5GS), "Summerford," New Waltham, Lincs.

DISTRICT 18 (North and East Yorkshire). (East Riding and part of North Riding.) MR. E. MITCHELL (G5MV), 40 North Marine Road, Scarborough.

DISTRICT 19 (Northern). (Northumberland, Durham, and North Yorks.) MR. R. J. BRADLEY (G2FO), 36 Raby Road, Stockton-on-Tees.

SCOTLAND. MR. JAMES HUNTER (GM6ZV), Scottish Records Officer: 51 Camphill Avenue, Langside, Glasgow.

NORTHERN IRELAND. MR. J. N. SMITH (G15QX), 19 Hawthornden Drive, Belfast. Telephone: Belfast 633323.

New Members are cordially invited to write to their local Representative, enclosing a stamp if a reply is required.

NOTICE TO D.R.'s AND SCRIBES To Assist Service Members

Please furnish Headquarters with your Telephone Number if not included in above list.

DISTRICT 1 (North Western)

THE D.R. having received a most welcome spate of reports tenders his thanks to all who have written. BRS2731 and G3IR of Poynton will be glad to support meetings held in the vicinity of Stockport, as will 2JF of Holmes Chapel and 3YX of Knutsford, so perhaps they and 2HDV can get together.

G8NS, who is convalescing at West Kirby, has recently visited the D.R. As he is staying only a stone's throw from the latter's house further rag-chews are a certainty. 8NS sends his best wishes to old friends in his home District—No. 4.

Blackburn.—For many years Jim Bolton, G4KT, was the moving spirit behind all R.S.G.B. activities in this town. The news of his death at the early age of 38 (recorded on page 212), has brought sorrow to his many friends who have watched with admiration his efforts to make Blackburn a Society stronghold.

At his funeral, which took place at Blackburn cemetery on November 29, a wreath was laid on behalf of Headquarters. G2HW, 2TM, 4FD, 6BH, 8FI and 2BZB acted as bearers.

At this time of sadness the hearts of all local members go out to Mrs. Violet Bolton and to her two young children. Those who have had the pleasure of visiting Jim's home need no reminding of the warmth

of the reception they received from his wife. Always cheerful, always ready to extend ham hospitality, Mrs. Bolton will be especially remembered for her assistance at Field Day events.

The work started by Jim Bolton will be continued by those who remain at home. The first task will be to appoint a new T.R. and this will be carried into effect early in the New Year, when a meeting will be held at the home of G2TM.

Bolton.—2DVQ reports that four local members attended the last meeting in addition to 6LZ and BRS4136 who made the trip from Bury. The latter have now completed their course of training, so the visit was in the nature of a farewell appearance. Local members wish them good luck and hope to meet them again on the air after the war. John Evans (R.A.F.) a pre-war member of the Bolton Radio Society, has now achieved the rare feat of being posted to a course of training in his home town. He sends his best wishes to 2FPI, ABT, CKC and CQL. Amongst recent postings to the town is BRS2834 (Cpl. L. J. Cleggett, ex-T.R. of Maidstone). Greetings are extended to BRS4476 who although a District 10 man, was recruited to the Society whilst stationed in Bolton. For the benefit of those interested, the next meeting will be held at 32 Bromwich Street, Bolton, on January 11, at 2.30 p.m.

The T.R. extends best wishes to all members for a Merry Christmas and a happy and victorious New Year.

Bury.—By sending a very full report G2DH applies a little positive bias to offset the great preponderance of negative bias mentioned in the last issue! As a result of the good offices of Capt. S. Chapple (G6SC) an enjoyable meeting took place at the Boar's Head, on the evening of November 20. Those present included G4NU, 5CH, 5CS, 6SC, 6PZ, 6XG, 8PW, 8SC, BRS1386 and G2DH, as well as several amateurs from overseas. Topics of conversation included descriptive details of an 18-gallon barrel of beer which had been secreted in the tool shed of a certain garden and which persisted in leaking at the tap in spite of all efforts to stop it! A good time was had by all and a further gathering—this time at the tool shed—is in the air.

G2DH had the pleasure of a visit from Dr. Cargill, G5LR, who is back in Manchester after his stay in Gloucestershire. He also reports that 6OM is fit again after a recent operation, and that 2WQ is still in Yorkshire.

Whitehaven.—G6ZT reports that things are still very peaceful in his part of the world, so nothing disturbs the fortnightly meetings. 4PZ made a bid for pilot in the R.A.F., but one of his eyes was not properly neutralized which gave rise to parasites and a non-linear wave-form so they said "Not today, thank you." Harry Tinnion has been inveigled into the fold again, and his "Black Diamond" will probably be presented to him at the next fortnightly meeting with all due ceremony. "Due ceremony" means that he has to stand two rounds that evening. Hi-c!

A welcome letter from G3BW to 6WR was read and appreciated by all present at the last meeting. 3BW, who is in the Navy was recently transferred from whatever it was he was doing to a Wireless Mechanic's course, and is at present at a Signals School in the South. In his peregrinations he has met G2VB, 6OQ, 8TN, and ZS6DQ. G2AV and 3TF are "in school" with him but he hopes this little

note will produce a few more contacts. 2AYH (Carlisle) has heard from 2AUM who is overseas. 4QV sits next to him at meals. 3HJ has now been drafted overseas. Those at home wish them good luck. G6CX.

DISTRICT 2 (North Eastern)

Tara tara ta ta toot toot!! Here are District 2 notes! Some of the high-flying white eagles come home to roost.

G5IV, at present stationed in the North of Scotland, has a big moan. What has happened to Barnsley? What about a line from G2BH, 6PY, 8TZ and 2DQL, still known to be in town? Those others in the Forces would like to hear something of you.

2DRO asks the same question of Leeds. What of G3HI, 3HV, 3WH, 4AD, 5MW, 6GA, 8IR and 8SX? G8UO says BRS4272 is building himself a shack

Forthcoming Events

- Dec. 21 District 12, 3 p.m. at G8TY, 92 Arlington Road, Southgate, N.14.
- " 21 District 15, 2 p.m., at G6WN, 539 Oldfield Lane, Sudbury Hill, Greenford, Middlesex.
- " 27 Annual General Meeting at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, S.W.1, at 2 p.m.
- " 28 Scotland "A" District, at 2.45 p.m. in the Coffee-room, Y.M.C.A. Residential Club, 100 Bothwell Street, Glasgow.
- " 28 District 13, 11 a.m. at G2VB, 35 Grangecliffe Gardens, South Norwood, S.E.25.

in the foundations of his house. Letters are to hand from BRS4412 and G3HA, both in the R.A.F. 3HA was recently married; best of luck to you both. 4MC has gone to W, and says he hopes to make it a nice holiday! It is rumoured that 6QS is shortly to take a partner, following 3HA's example. 8UO sends Christmas 73 to all District 2 members, wherever they are.

Charlie Kirk, G4CL, wants a pole for his new aerial. Has anyone in the Bradford district one to spare?

The next issue of this magazine comes to you in the New Year, bring us your dope and we'll present it. Time—Marches on! G2MI.

DISTRICT 3 (West Midlands)

Birmingham.—Twenty members attended the November meeting of the Midland Amateur Radio Society, held at The Hope and Anchor Hotel, to hear Mr. Bernard George give an interesting lecture on inductance and coil design.

Notes from other parts of the District would be welcomed by the Scribe, 2FDR, 48 Westbourne Road, Alton, Birmingham. 2FDR.

DISTRICT 4 (East Midlands)

Leicester.—2BHG, writing from ST, with apologies to G2RI, says that the modern method of swatting flies is to make a bayonet charge at them night and morning. We hope that by the time you read this, Denis, you will be fit and well again. Good luck, O.M. BRS4431, who is serving in the R.A.F. as a Wireless Mechanic, is welcomed to membership. G2RI has been posted from No. 1 S.S., but up to the time of writing his present QRA is unknown. What about it, Laurie?

Members who would like to see local meetings held again, are asked to write to G6VD. It is suggested that they should be held fortnightly, making a round of the various QRA's. Please give this matter some thought.

Derby.—G2OU has kindly offered to act as scribe for Derby, although judging by his remarks there will not be a lot to write about, as most members have left the town or joined the Forces. It is understood that G8SI is now working on Radio Location, and that 2CVV is on the ground staff of an Army Co-operation Unit. 5YY is said to be in Derby, but there is no news of his radio activities.

Mansfield.—Local amateurs are still carrying on their good work of A.T.C. training, which is going ahead in fine style. BRS3593, who bemoans the fact that there is very little news to report, will be glad to welcome any amateur who happens to be in the town. He may usually be found at home on Sunday mornings or Friday evenings. 8HX (now a corporal) again writes a cheery letter, in which he says that 8MR finished up no further overseas than Anglesey!

Nottingham.—G5VU and 6CW, who are serving as R.A.F. officers in the Middle East, are apparently quite fit and well, but thoroughly fed up with the sight of sand and a high thermometer!

Where did the Nottingham notes get, to 8DZ?

Northampton.—BRS4330 (R.A.F.), stationed in the North West, is just at the stage of sore feet and sorrow, he is hoping however to get down to radio shortly. He sends 73 to all at Bletchley. G6VD

DISTRICT 5 (Western)

Cheltenham.—Meetings are now held at 22 Leckhampton Road, on the first Friday in the month. All amateurs who happen to be in the locality at the time are welcome.



G8PX, 2CL, 2ALG, 2CVD, 2FQR, with GM8CN and 2BHS at a recent Oxford meeting.

Stroud.—BRS4271, Brownhill Court, Nr. Stroud, will be glad to meet others in the area. BRS3383 reports active. G4AB has returned to Oxford, 5ZK still has his receiver and a host of QSL cards which bring back memories of pleasant contacts, 5HS is very busy.

Bristol.—The last meeting at G6RB produced an attendance of 15, a very pleasing increase over past attempts to get together. A good rag-chew was enjoyed, and a substantial collection made for the Prisoners of War Fund. The next meeting will be held at G6VF, 13 Luccombe Hill, Redland, on December 21 at 3 p.m.

The D.R. sends Christmas greetings to all members, especially to those serving with the Forces. G6RB.

DISTRICT 6 (South Western)

There are no individual reports to hand but a full account of our highly successful Conventionette, held at Newton Abbot, appears on page 198.

The D.R. extends Season's Greetings to old friends, everywhere. G5SY.

DISTRICT 7 (Southern)

To all those absent members of the District at present overseas or in parts of the British Isles less favoured than our own fair area we send best wishes for Christmas and the New Year.

Bournemouth.—Best of luck to 8BR who has left to join the R. C. of S.; he has been posted to a spot in the country miles from anywhere. 3789 has been spending some of his spare time hotting up his Tobe. 2NS, still building, has produced a magnificent 100 kc/s multivibrator; this is another of 2XP's "guaranteed" circuits. The T.R. would like a line from 3VY should this catch his eye. All in Bournemouth join in sending seasonal greetings to members on Active Service. (via 2HNO.)

Coulsdon.—In a recent letter to G5GQ, 3IG mentions that he has joined the R.A.F., and is now in Northern Ireland. 8TB has had 3825 (of "Cadogan Arms") billeted in the same hut as himself at the "Ham's Drome" just west of London. The T.R. wishes all members in his area a very Happy Xmas and New Year and hopes that those who have omitted to send their quota of "notes" in 1941 will do their bit in '42. (via BRS3003.)

Croydon.—The November meeting held at G2DP was attended by G2DP, 2KU, 2LW, 2OW, 2VB, 3FK, 3FP, 3ST, 4NI, 5AW, 5GQ, 6KM, 6OD, 6QN, 8TN, 2BLA, 2FWA, 1545, 3003, 4150, 4314, 4324 and 4584—a total of 24.

G2RD and 4AA have been home on leave. 4NI went to a party the night before the meeting and seemed a little bit tired! Two amateurs we have not seen for a long time (5GQ and 6OD) came to the meeting, the former starting a discussion about post-war licences. 3724 and 4584 find little time for radio these days. 3FP has built a quality amplifier which is remote controlled from an automatic record changer. 2FWA has met a number of hams in his travels since he joined the R. C. of S., and hopes to get a few new members. 2DP had a slight accident whilst returning from A.T.C. duties in the black-out. The iron railings were undamaged but his face suffered minor injuries. (He was quite sober!)

The next meeting will take place at G2DP, 6 Dunheved Close, Thornton Heath, on January 11 at

3 p.m. Will 2RD please write to 2DP, and also drop in on his next leave? All notes by the 25th please. Merry Xmas, everyone. (via G2DP.)

Kingston.—G3MF, writing whilst on embarkation leave, mentions that after a short stay in the R.A. he has volunteered for an overseas O.C.T.U., after which he hopes to go to the R. C. of S.

Oxford.—G5HS is building a new receiver, while 2CVD is experimenting with a crystal receiver for emergency use. 2ALG is trying capacity coupling in his pre-selector. 8PX is testing a new circuit for his 100 kc/s bar. Welcome to new member, BRS 4525. The December meeting will be held at G8PX, 1 Lovelace Road, Oxford, at 3 p.m., Sunday, December 21st. (via G8PX.)

Guildford.—A Christmas card from Malta gives a clue to the whereabouts of E. J. Laker, G6LK, and also to the fact that he has been commissioned Pilot Officer. Heartiest congratulations, Ted. 6NA has now completed his receiver "which not only competes well with the HRO but looks as if it might, too." Spenny, with his fine disdain for commercial-looking gear, proposes to put a sack over its glittering finery when it takes its place in the shack. 8IX has been posted just about as far north as one can get and still be in these islands. Keep warm, Reg. Those who turned up for the December meeting at the Royal seemed to enjoy the opportunity of having a rag-chew once again. The topic was that successor to "40 Meter Phone"—namely, "Post-war Licences"—but as we didn't get further than item 1 on the agenda we shall be just about set to tell the P.M.G. what we want by the end of this fracas!

The next meeting will be held at G2ZC, "Three-ways," Churt, Surrey, on January 4th, at 2.45 p.m. G5WP.

DISTRICT 8 (Home Counties)

By the time these notes appear the season of goodwill will be at hand. Our first duty, then, is to wish our members and friends, with the Services and at home, just as good a Christmas as war-time conditions will allow. Here's hoping that 1942 will bring about that grand re-union we all so earnestly desire, and Peace with Victory.

Cambridge.—G5DQ (R. C. of S.) has moved from Yorkshire to the South of England. 2XV reports good broadcast reception from the States, and is thinking of trying out his vertical Windom for reception. He suggests that a District "get-together" is overdue. Will those interested in a Sunday morning meeting please drop a line? It will be arranged early in the New Year, if there is any demand.

Bedford.—BRS3585 reports, as usual. 2FFG was home recently on seven days' leave. 2DPQ has joined the Forces, but his whereabouts are unknown at present. 8KP is now stationed in District 5. The S.O.S. for news of 2CRD brought an immediate reply. Mr. Beckwith has left this area to settle in District 4. We were glad to hear from 3JU, after a long silence, due, no doubt, to the fact that he has married since he last wrote. (Congrats. O.M.) He is working for the Meteorological Office. In connection with his work he has met G3PZ and 6NC (ex ZBIJ.).

Peterborough.—Writing from the south-west, 2NJ sends seasonal greetings to all friends in District 8, and trusts that by another Yule, a second cheese and onion supper at Stilton will have been a reality.

S. Ives.—G5RL reports that 4AZ, 5OV, and 6WA are all well. RL himself, has been on sick-leave, after a bad spell of gastritis. 6DX has been summoned to Buckingham Palace to receive the D.F.M. (What about a line, Pat?)

P.S.—Suggestion for that New Year resolution—write to your D.R. on the 20th of every month. G5BQ.

DISTRICT 9 (East Anglia)

Norwich.—G2MN reports that he is still busy on the receiver. 2YI, having left Norwich for Reading, carries with him our best wishes. 4GF has arrived in Norwich and is anxious to meet the locals.

King's Lynn.—L. Bradshaw, G4LM, is home on extended leave owing to the death of his father. We are glad to report that 2JS is improving after his long illness. 3IP and 2XS are both active with their receivers. What has happened to 5UD? No letters and no address for months. G2XS.

DISTRICT 11 (North Wales)

Prestatyn.—The November meeting was held at Vale View, on the 23rd when an attendance of 21 was recorded. Those present included VE4YG, VE5EK, G6HQ, G3IR, GW4CX, 2ARB, 2HIY, BRS1060, 2731, 3044, 4020, 4027 and 4536, with Messrs. Dixon, Gill, Sgt. Sutcliffe (R.A.F.) and five prospective members, who came over from a N. Wales Radio College, where they are taking a course.

BRS2731 auctioned a heap of very good gear, and many of the party returned home with unheard-of bargains. GW4CX arranged a "Theoretical Diagram" contest in which G3IR and G6HQ tied for first place with 100 per cent.

A collection was taken in aid of the R.S.G.B. Prisoners of War Fund, and as a result the sum of £1 12s. has been forwarded to the Secretary-Editor.

Sunday, December 28, has been arranged as the date for our next meeting at "Vale View," Meliden Road, commencing at 2.30 p.m., when it is hoped that a talk on Time Bases will be given by Sgt. Sutcliffe, R.A.F., an authority on the subject.

GW4CK has been home on short leave from the R.A.F., but he was confined to his home with a septic hand. 2HIY has built a new receiver, and with the assistance of BRS3044 and 1060, has calibrated it by a very unorthodox method. ZB2B has been posted to the Pembroke area. If any District 10 members would like to contact him, BRS1060 ("Woodside," Meliden Road, Prestatyn), will be pleased to forward his full QRA. G4AH, until recently in Chester, has moved to Preston, G4NB previously with G4AH is now at Leamington Spa.

GW6AA is encouraging the support of Colwyn Bay members for local meetings.

G6HQ (R.N.), who has been absent from the District for some time, is now back again.

Prestatyn members take this opportunity of thanking District 11 members, and all others who have supported their meetings during the past year, and they hope for similar support during the coming year.

Happy Xmas, and a better 1942 to all.

BRS1060.

DISTRICT 12 (London North and Hertford)

The North London meeting, held at G2YD on November 23, was attended by 16 members. Our visitors included LA6A and LA1AG who only arrived in this country a few days before. G6LL

who was on leave, looking very fit, brought along another old friend, "Dud" 6CJ. Various topics were discussed during the afternoon. Those present were interested to hear from G6CL how the publication of an LA call in these notes brought good news to one of the YL members of the Society.

The following new members are welcomed to the fold this month: G4FP, 2DSV, 2DVU, BRS4477, 4486, 4488, 4502, 4517 and 4522. Letters were received during November from G3SH, ex-5MG, 2DTD and BRS4533.

"Our Ernie," G3SH, whom we have missed at two meetings, writes from the South Coast to say that he hopes to startle the ham world regarding U.H.F. after the war! In sending his 73 to the gang, he says that he could do with a hamfest or two! (That's what comes of being brought up in North London, my lad!) Ex-G5MG, who also sends 73, is prevented from attending meetings owing to pressure of work. BRS4533 has been adding an R.F. stage to his receiver. 2DTD (Hitchin), who has been home on leave from the "Country Farm," mentioned in last month's issue, seems to be enjoying himself. He reports that there are nearly 20 hams on his station. 6WU and 8KW are both in Palestine and are hoping to contact one another before long. We hear that 8VM is once more back in this country after a hectic voyage. 5FA recently met VE3ARY, who informed him that he started ham radio with a spark transmitter, which is going back some. They are proposing to get together for a ragchew with some of the other Canadian amateurs who are with him on the same radio course.

The next meeting will be held on Sunday, December 28, at G8TY, 92 Arlington Road, Southgate (phone ENT.3219) at 3 p.m. Nearest tube station—Southgate, and then 5 minutes walk.

G5QF and 5FA send greetings and best wishes for Christmas and the New Year to their friends everywhere.

Hitchin.—Capt. John Swinnerton, G2YS, writing from Hitchin, advises us that he and his colleagues have inaugurated an R.S.G.B. group in their unit. Regular meetings will take place on Sunday mornings and Wednesday evenings. They have a communications receiver to play with, ideas about U.H.F. and plenty of enthusiasm. They hope to descend on a District 12 meeting before long, and threaten to visit Luton for beer and darts with the locals! G5FA.

DISTRICT 13 (London South)

South Central and South East Areas.—The November meeting, held at G2VB, was attended by G2DP, 2GZ, 2LW, 2VB, 3ST, 5AW, 8TN, 2FDB, 2FWA, 2HMY, BRS1541, 4150, 4324 and Mr. Pilson, R.N. The next meeting will again be held at G2VB, 35 Grangecliff Gardens, South Norwood, S.E.25, at 11 a.m., Sunday, December 28.

G8TN.

South Western Area.—Only two members showed signs of life as a result of the notice about a meeting—(thanks, 2JK and 3DF)—so no meeting took place. Up to the time of writing neither vol. 1 nor vol. 2 of the War-time Log had been returned. As we said before—no straw, no bricks. No logs, no notes.

We were glad to hear from the mother of Cpl. B. Hutton, 2BFH, that her son is well again after a spell of dysentery. 2BFH is serving with an A.M.E.S. in the Middle East. G8QH.

DISTRICT 14 (Eastern)

Chelmsford.—Monthly meetings continue to be well attended. At the November meeting we had the pleasure of seeing 2QT again. Our old pal 2KG who is serving out East has been promoted to the rank of Captain (R.E.) FB, Gordon. He doesn't seem to think very much of the alleged glamour of those parts which, as far as he can see, are entirely enveloped in flies and dust! A very interesting letter is to hand from J. R. Seager, 4AK, who tells how he "stopped one" while aboard the Ark Royal some time ago. He has since made a good recovery and has now joined another ship. He would much appreciate a line from 8RC and 4LV and sends 73 to all. He says that, through using "ham slang" in a letter to a pal he was hauled up before the Commander on suspicion of being a fifth columnist! It took the good offices of a sympathetic lieutenant with ham leanings to keep him out of irons!

G2SA put his Hallicrafter receiver in the hands of the local "Brains Trust" and awaits results! 6LB was recently seen in the local hostelry discussing boat building with a crony. Maybe we shall see a portable afloat after the war! BRS3383 sends a very nice letter recalling the days of old when he listened to the gang on 7 and 3.5 Mc/s. 5CA, 5HF, BRS4122 and 3650 are still too busy for much amateur radio after hours but attend meetings. 8PB and 5RV got together for a noggin or two during Peter's recent leave.

G3YY (Sheffield) writing from Braintree, where he is now stationed, asks for contacts with local members. He is Pte. Kenneth Meady, and he can be found at Taft's Garage. 5RV had the pleasure of meeting Warrant Officer Stride, R.A.F. (ex-Y15GL) during a recent call at an R.A.F. station. As his amateur station in Iraq had been worked on 'phone from 5RV some years ago, pleasant reminiscences were exchanged. No news is to hand from Brentwood, Ilford, Romford or Southend. How about it, fellows? G5RV.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

Apologies to everyone for the non-appearance of the notes last month. They were completely overlooked.

So far no one has come forward with any suggestions for future meetings. G5GQ, who is located within the District, recently telephoned the D.R. and suggested that a few of us should go up to town one evening and join him and others who are working with him. Let us hear if you are interested and we will see what arrangements can be made.

During the past two months quite a number of letters have reached the D.R. from members both in and out of the Services.

Congratulations to Sgt. George Spencer, of the R.C.S., first on his promotion and second on his engagement (announced last month under K. & B.) to Miss Margaret (Meg) Debenham of East Sheen. It seems that KI has decided to put Meg into the Ohm (sorry Home). We wondered how long he could hold out as a bachelor. Good luck to you both. Another member, G3XC, is to be congratulated, as it is whispered that he is due to be married early in the New Year. Congratulations to XC and his future XYL.

G8WR wrote from Devon and later from London wishing to be remembered to all. He hopes to see

some of us now he is stationed near home. 2FUX, now an A.C.1, has been home on leave, but he found it impossible to get around for visits. Two Airgraph letters have come from G3GY (in the Middle East), who sends 73 to all. 8SB, billeted in Stockbridge with 4OQ, looks forward to meeting us again soon. A.C.2 G. A. Ginn, BRS4487, writes, as a new member of the District, from the Orkneys where is he serving with the R.A.F. He has not met any hams yet but hopes to do so soon. He sends 73 to G2VJ. From G6VP comes the news that he is now the Chief Fire Watcher for his district. He has seen G3XD and 6RW recently, but would like to meet more old friends. His son Laurie who is now married (congratulations to him) recently spent a day or two with father fishing. VP said that his catch helped to keep him in rations for a day or two. He still rewinds transformers and phones and does service work. G6CO is, we understand, in the R.C.S.

A letter from G3UQ brings a little more news from 3XI, who is in the Middle East. He had hoped to contact 4AR who by the way has been wounded. As he is again on the job we hope he has made a good recovery. 3XI met 3QV and a G8 on the boat going out. A photograph was taken, which, when it arrives will be published if suitable. The D.R. has the addresses of the following members should anyone care to drop them a line:—G3GY, 4AR, 8SB, 2KI, 8WR, 2FUX and BRS4487. 3UQ can usually supply a few more. Why not give the boys a break by letting them receive a letter from you. The D.R. answers most letters he receives but time limits their length.

Most of the letters received from those still at home ask where and when the next District meeting is to be held so they can get a chance to meet together once again. The D.R. will start the ball with a meeting on Sunday, December 21, at 2 p.m. Nearest stations: Sudbury Hill (Piccadilly or L.N.E.R.), Greenford (G.W.R.), or number 18c bus. The Oldfield Hotel is the point to make for. Now what other offers? G6WN.

DISTRICT 16 (South Eastern)

Notes are still arriving with absolute regularity from the Brighton area, but the acting D.R. would be glad also to hear from other T.R.s. Will all of you please make a special effort so that we may have some really comprehensive notes for the January issue? In addition to sending his usual letter G6CY encloses a letter from 2KU, reporting that W8WA (ex-KA1JJ) has visited Brighton and spent an enjoyable time with 2KU, 4BW and 8JF. Other visitors have included GM3QH, 3UM, 2MF and 2FQQ. G4BW, 4HS, 8JF, 2KU, BRS4346, 4193 and 4283 are active.

Brighton and Hove.—Good luck to G3YY and 4NY who have joined the R. C. of S. G6CY reports meeting G2AO, 2JL, 5JZ, 6XF, 8CP and 2HOF, all of whom are active. He has had several visits from G8QS of Manchester, who is in the R.A., and stationed nearby. G2WS.

DISTRICT 17 (Mid East)

G3CZ of Lincoln reports having heard from 2FBY who is in the Middle East, where his job is to watch certain dials. If they read what they should, all O.K. If not he has to fetch someone to "see about it!"

2BQC has been home on sick leave but is now quite fit. His wedding was due to take place on December 12th, so by the time this appears in print, the knot will have been tied. (All the best to you and the YF om). 6LH who did the tying, has completed his first model aeroplane and is now learning that getting the thing to fly is every bit as interesting as getting one's first Tx to work! 2BUV has been transferred to Hereford and 2HBN is now thoroughly enjoying life in Iraq. He should like to hear from 2DLC of Holbeach who was last reported at Thirsk, Yorks. 2BQC sends 73 to 4DV of Sleaford. 4GI of Lincoln is now in the R.A.F. 4JI of Boston was last reported "north of the border" and everyone will be glad to know that 6GH has reported "all's well," from somewhere at sea.

Another newsy letter comes from Tom Mullens, 3XM. If everyone wrote as regularly as him, these notes could be three times as long and much more interesting. G3BR, 3RH and 6YG, have recently been in this district. They endeavoured to arrange a meeting with 2UK but were moved before this could be fixed up. 2UK having brushed the cobwebs off his old speech amplifier, he has put it to work driving extension speakers in his hospital. It is going great guns at the moment and he can now do ward rounds to the strains of "Music While you Work," etc.

G2CR reports everything pretty quiet in the Branstons area, though he was visited by two hams from Liverpool a week or two back. They had been stationed at Gainsborough for a short while, but have now moved off again.

G2UK.

DISTRICT 18 (North and East Yorkshire)

Hull.—Two locals, recently discussing "old times" over a pint, happened to mention that neither had seen G5GC for over two years. A couple of minutes later in walked "Five Grid Cathode" himself, now a Pilot Officer in the R.A.F. He has been on night fighters, but has been transferred to other duties. New members in the persons of 2FQG and 4530 (R.A.F.) are welcomed. The later, whilst at a technical college near London, found that one of the text-books issued to him had 2HNL's call written inside it! 2HAD (R.A.M.C.) has been on seven days' leave.

The past month has been outstanding for the number of personal contacts the writer has had with local members. These have included G2KM, 2QO, 3CC, 3IU, 3FL, 4JX, 5FV, 5MN, 6OS, 8IM, 2CNX, 2HAD, and BRS4043, all of whom are up to the eyes in widely varied spheres of National Service.

B.R.S. Hay reports having let his subscription lapse for a time, this neglect cost him his original number, with the result that he has now been assigned BRS4501. Moral—pay your subscription promptly when due. (This was a mistake. Headquarters, when requested, always re-issues an original number if it is free.—Ed).

To all members wherever they may be we extend best wishes for Christmas and the New Year. Thumbs up, boys, it won't be long soon!

G8UL (via 3PL).

Scarborough.—G8KU speaks highly of the "Ham Hospitality" extended to him by 3OJ. The D.R.

in his turn has been delighted to welcome Bert Allen, G2UJ, who has spent many evenings with him. They also devoted one Sunday afternoon to a tour of the town examining QRA's of members who are away from home on various jobs of work.

The best wishes of the district go out to G600, now in the Royal Corps of Signals. (What about that letter, Tom?)

If members in the Services would be good enough to send us a few lines, the position would be much better in maintaining contact *via* the Bull. Those on the home front are doing their best to keep the flag flying in No. 18, so, lads, it's up to you.

The D.R. sends season's greetings to members everywhere and especially to his friends on active service.

G5MV.

Scotland

The response to last month's appeal for more news is encouraging, but still more will be welcome.

G8RY, who is at present stationed somewhere in the district, tells of an encounter with W5GXI at a local skating rink. He wishes to send 73 to G8BQ and 4DC. We have also heard from BRS4333 who has had a letter from GW3UO who asks to be remembered to 3UA and 8RU. GM4JO, who has returned to "A" District, expects to have more members following him soon—we extend a hearty welcome to all, and look forward to seeing them at district meetings. He has had the company of several members during the past few months, amongst them G8DR, G6AZ (who has since joined the "peerage") and Ron Rogers, G6RY, who has gained his "crown."

The monthly meeting was attended by 15 members—the best for many months past. Amongst those present were G3ID and 3SL and two A.A. men. We hope this improvement in attendance



Three well-known G's enjoy the sunshine somewhere in Cornwall. Left to right: G. P. Anderson, G2QY, Ernie Ingleton, G5IL, and W. Carter, G2NJ.

will be maintained at future meetings and if so it is hoped to have the added attraction of short lectures or talks. The next meeting will be held on December 28, at 2.45 p.m., in the Coffee Room, Y.M.C.A. Residential Club, 100 Bothwell Street, Glasgow. We would remind members that the direct entrance to the Coffee room is shut and that members should enter either by the side door or through the Club entrance hall and down the back stair. G6ZV.

Northern Ireland

A hearty welcome is extended to GI3CM, 3IA, 8GK, 8HS, BRS4418, and 4493, all of whom are new members. In a letter to GI6TK, 4OB mentions that there are a number of G and GM amateurs with him in Malaya: incidentally, his letter was censored by GM3BA! 4OB's address can be obtained from 6TK.

Spiros Moumoris ex-SVISM, a new comer to Belfast during November, has paid many visits to the Y.M.C.A. Radio Club (GI6YM) which he has made his H.Q. whilst in Europe. Other ham visitors have included VE5AEX and 5DT from Vancouver, ZL1LI and his 2nd Op. GI6TK has had several good rag-chews with Sgt. S. Pearson, 2FJS, and his amateur pals who are at an R.A.F. station in GI. G6FK and ZL2TL, until recently in GI, are now in Iceland. The DR would like any member of the forces in Northern Ireland to write, or, better still, pay a visit.

GI5QX *via* GI6TK.

Cosmic Notes

Magnetic Conditions.—July 5, 6, 7, 8, 9, 10 and 11; severe storm, becoming mild on last four days. August 2 mild; 4 moderate to severe; 5, 6 and 7 mild; 19 mild; 26, 27, 28, 29, 30, 31 and September 1 moderate to mild; 7 mild; 13, 14, 15 and 16 moderate; 18, 19, 20 and 21 severe; 23, 24 and 25 mild; other days to October 10, quiet.

Ionosphere Storms.—July 10, 11 and 12; 17 and 18; 21 and 22; August 24, 25, 26, 27 and 28, mild; September 18, 19, 20 and 21, severe to moderate. Other days from July 9 to October 7, undisturbed.

Critical Frequencies and Layer Heights, at Washington; average for weeks ending: midnight F, midday E and F₂ layers respectively:—July 15, 3.64 Mc. 301 km.; 3.6 Mc. 122 km.; 5.7 Mc. 403 km.; July 22, 3.6 Mc. 298 km.; 3.6 Mc. 121 km.; 5.38 Mc. 454 km.; August 12, 4.14 Mc. 300 km.; 3.75 Mc. 127 km.; 6.01 Mc. 440 km.; August 19, 4.35 Mc. 298 km.; 3.65 Mc. 127 km.; 5.75 Mc. 365 km.; August 26, 4.02 Mc. 294 km.; 3.65 Mc. 120 km.; 6.18 Mc. 357 km.; September 2, 3.68 Mc. 306 km.; 3.62 Mc. 120 km.; 6.26 Mc. 347 km.; September 9, 3.54 Mc. 293 km.; 3.64 Mc. 120 km.; 6.2 Mc. 352 km.; September 16, 4.23 Mc. 304 km.; 3.61 Mc. 120 km.; 6.74 Mc. 310 km.; September 23, 3.54 Mc. 306 km.; (no data E. layer) 6.92 Mc. 365 km.; September 30, 4.04 Mc. 290 km.; 3.5 Mc. 120 km.; 7.44 Mc. 291 km.; October 7, 3.7 Mc. 309 km.; 3.5 Mc. 120 km.; 7.77 Mc. 295 km.

G6DH.

HEADQUARTERS CALLING

October Council Meeting

Resume of the Minutes of a Council Meeting held at the Institution of Electrical Engineers, Savoy Place, London, W.C.2 on Saturday, October 11, 1941.

Present.—Messrs. A. D. Gay, E. L. Gardiner, A. E. Watts, J. W. Mathews, D. N. Corfield, S. K. Lewer, W. H. Matthews, W. A. Scarr, A. J. H. Watson, H. V. Wilkins and J. Clarricoats (Secretary-Editor).
Apology.—Mr. H. A. M. Clark.

1. Ninety-six applications for membership were approved; of this number 88 had been proposed by Corporate members, and 8 submitted references.

2. The monthly statement of account was approved.

3. It was announced that 2,000 copies of the fourth printing of the Society's Handbook had been booked in advance of publication. Advertising revenue had been satisfactory.

4. It was reported that an informal meeting had taken place between Messrs. Gay, Watts and Clarricoats (representing the Society) and Col. Sir Stanley Angwin (Engineer-in-Chief), Messrs. Gill and Roberts (representing the G.P.O.).

The following points, concerning post war amateur operation, were discussed:

(a) The restoration of transmitting facilities to pre-war licence holders on application.

(b) The acceptance by the G.P.O. of proficiency certificates (submitted with applications) from other persons who, during the war, served in Radio trades in any of the Services.

(c) The possession of an elementary technical certificate (or other similar evidence) as proof of the applicants' technical competence to conduct experiments, in lieu of the method in existence before the war. Proficiency in morse would be required as heretofore.

(d) Power and frequencies.

(e) A broader interpretation of the Wireless Telegraphy Act, insofar as it refers to "experiments."

5. It was reported that the G.P.O. representatives were prepared to give sympathetic consideration to the views put forward by the Society's representatives. It was also reported that much depended upon Service requirements before further progress could be made.

6. It was stated that the G.P.O. will explore the question of proficiency certificates (mentioned in Para. 4b) with the Services.

War Damage Insurance

With further reference to the Editorial comments which appeared in the August issue of this Journal, some members possess apparatus which is held by the G.P.O., or in their own homes, and which has a value greater than £50. In such cases, the Board of Trade has accepted the suggestion that in the special circumstances, apparatus belonging to members (whether impounded or not) shall not be subject to the limitation of £50 attaching to a single article.

In their own interests all members should, if they have not already done so, take steps to insure their apparatus as soon as possible. Those serving overseas should make arrangements with their

relatives for the necessary insurance policy to be obtained, but in their case we are assured by the Board of Trade that failure or delay to do so, would not prejudice any claim so long as the Board of Trade is satisfied that it is due to causes outside the claimant's control.

Honorariums

The Council has been pleased to award honorariums to the following members in recognition of their outstanding contributions to Society publications during the past year:—

Mr. T. R. THEAKSTON, B.Sc. Author of "Mathematics for the Radio Amateur," etc.

Mr. B. W. MAINPRISE, B.Sc. Author of "Vade Mecum for Field Operators," etc.

Mr. R. L. VARNEY, GRAD.I.E.E. Author of "Fundamental Radio and Electrical Principles." (*Radio Handbook Supplement.*)

Mr. S. K. LEWER, B.Sc. Author of "Cathode Ray Oscillographs." (*Radio Handbook Supplement.*)

Mr. H. R. HEAP, B.Sc. Receiver Group Manager, Experimental Section.

Mr. R. TUNNEY. *Radio Handbook Supplement* draughting.

Correspondence with Headquarters

Considerable inconvenience and delay is often caused through the use by members of an incorrect London Postal District Number when communicating with Headquarters.

The correct District Number is N.13.

Communications must *not* be addressed to 115 High Holborn, W.C.2, the registered address of the Society.

District Notes

On several occasions recently, members who are acting as war-time T.R.'s or Scribes, have sent notes direct to Headquarters instead of through their D.R. This practice causes serious difficulties and must cease. Where T.R.'s arrange meetings too late in the month to send a report of the meeting to their D.R., it should be held over.

Reports from T.R.'s must reach their D.R. by not later than the 25th of each month.

Reports from D.R.'s, and other regular correspondents, must reach Headquarters not later than the 28th of each month.

A Matter of Principle

We note from the September issue of *Break-In* (official publication of the New Zealand Association of Radio Transmitters Inc.) that a list of Light Efficiencies prepared by Mr. H. R. Heap, B.Sc., G5HF, Receiver Group Manager, and published in the April, 1941, issue of THE T. & R. BULLETIN, has been reproduced without acknowledgement to this Journal.

We feel sure this was an accidental omission, but to protect members we wish to make it clear that whilst the Society is always glad to allow other National amateur radio organisations to publish extracts from THE T. & R. BULLETIN, acknowledgement is required, as a matter of courtesy.

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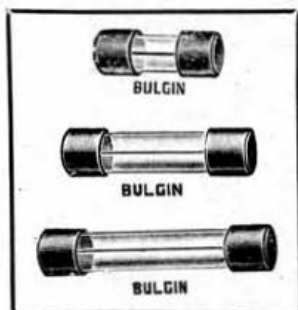
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U.S. Amateurs and National Defence

Impatient of waiting for officialdom to make clear how best the 50,000 odd trained radio amateurs of the United States can assist in National Defence, the *American Radio Relay League* announces in the November issue of *QST* its own plans.

Recognising that delays would occur if brand new schemes were devised, the League is tackling the job by a skilful rearrangement of its own well-tested communications organisation.

The League makes it clear that direct collaboration between amateurs and the Military forces is not possible, for the reason that the U.S. Army is manned and equipped to operate its own communication systems on its own frequencies.

The League originally anticipated that amateurs would be able to co-operate in an aircraft-warning system, but due to recent technical developments, this will not now be possible.

Civilian protection, which is being organised by the United States Office of Civilian Defence (O.C.D.), offers the chief field for amateur participation. Under the O.C.D. organisation plan, a defence group operates in each State through a co-ordinator responsible to the Governor. In each city the vital activities (fire-fighting, police, medical facilities, public works, utility services, etc.) are controlled by a local defence officer.

The successful functioning of these State and local organisations is dependent upon communication, which normally will be the telephone and telegraph systems but, as the League points out, "the very

circumstances that bring the organisations into play are likely to take the wires out completely or give them a vast overload."

The League plans to provide:—(1) auxiliary communication for Governor's Defence Councils, and state-wide O.C.D. plans, on amateur traffic network frequencies, (2) communication for the O.C.D. local organisations on ultra-high frequencies.

In connection with the latter service the League urges U.S. amateurs to possess themselves of self-powered movable 112 Mc./s gear. The importance of using u.h.f.'s for local defence is stressed, by a reference to the experience of Great Britain, where it has been demonstrated that "wires and telephone exchanges within a city go out under bombardment about in proportion to the desperateness of the need for them."

After summarising the way in which these civil defence amateur networks can be made to fit into the general scheme of communication, the League concludes its survey with the comment that "We hear from England that that Government has kicked itself time after time for not having encouraged more amateur u.h.f. work. The building now of 2½ metre apparatus in quantity seems the imperative ingredient in our fuller preparation. We urge it."

British amateurs having, prior to the war, offered their services and their stations to the Government for Civil Defence purposes, will watch with particular interest the development of the plans which the A.R.R.L. is making to meet possible dangers ahead.

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EXPERIMENTAL SECTION—

Continued from page 205.

current is required, it is advisable to run the filament winding extra cool by using a large wire. In such cases the primary and core losses will be large, therefore the secondary losses should be cut down to a minimum.

Next month it is proposed to deal with the design of new transformers and with the redesign of transformers whose original rating is unknown.

G5HF.

SOUTH WESTERN CONVENTIONETTE—

(Continued from page 198)

rate unless the G.P.O. would state where the apparatus was stored. (This information will be furnished by the G.P.O. although it seems unnecessary because a war damage policy covers property wherever it may be located.—Ed.)

The speech of our friend from the continent was followed with deep interest. The story of his tribulations prior to, and during his escape to this country, gave one a vivid picture of the difficult position in which he found himself through following an innocent hobby.

After tea the collection for the Prisoners of War fund was taken, and this was followed by a junk sale for the same object. The gear was very kindly given by 3JD, and 6DI acted as auctioneer.

The meeting concluded with an informal rag-chew, during which the D.R. demonstrated his Capacity and Resistance Bridge recently described in THE BULLETIN. Messages of greetings and good wishes were received from G2CF, 2FP, 2JD, 3MY, 3TX, 5GD, 5YR, 6JV and VU2EB.

The collection for the Prisoners of War fund, with only 19 present, amounted to the wonderful sum of £3 8s. 0d. This was augmented by £1 2s. 6d. as a result of the junk sale, so that District 6 has been happy and proud to be able to forward a first most excellent contribution of £4 10s. 6d. May it be followed by many others. (A truly magnificent effort, Gentlemen—thanks a lot. G6CL).

Technical Teasers

No. 3

Answers.

- (1) Frequency, intensity, direction of travel and plane of polarization.
- (2) Increases the inductance.
- (3) Decreases the inductance.
- (4) Maple 4-4, Oak 3-3.
- (5) Reactance of coil.
- (6) Resistance of coil.
- (7) Kennelly and Heaviside.
- (8) Decreases.
- (9) 1,130 feet per second.
- (10) None.
- (10) Its inductance decreases with an increasing load.

Diversion

The solution, beginning with number 20, and writing down the answers in order, to number 1, is

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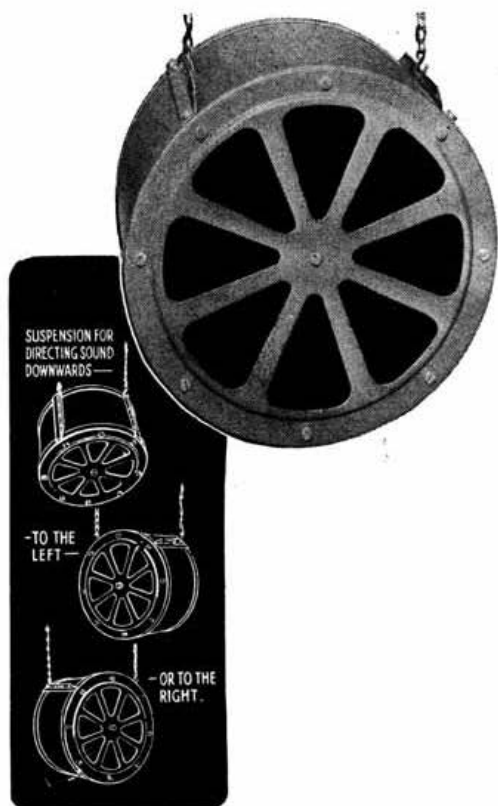
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