THE T. & R.

BULLETIN

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AND THE BRITISH EMPIRE RADIO UNION

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THE WORLD ON 28 MC.

CONTEMPORARY history, be it of a political or scientific nature, is difficult to comment upon; therefore, in placing before our readers certain observations which concern events of very recent date, we are sensitive to the fact that errors and omissions may occur.

In amateur radio circles, especially, it is easy for us to forget or remain ignorant of what has been achieved in the past; therefore, before turning to the achievements of the past month, let us look back for a brief moment to the earlier long distance work conducted on 28 mc.

Do *you* remember G6LL making the first transatlantic contact with W2JN, or G2FN raising W6 with less than 10 watts, or G5YK working Lt. Rodman when he was in India? Do you remember that ether crushing signal that broke through from ZS4M as regularly as that from W2JN? If you have been in the "game" since 1928 it will not be a difficult task.

In the light of recent happenings, it is interesting to recall that Mr. G. W. Thomas, G5YK, and Mr. J. W. Mathews, G6LL, foretold way back in 1929 that the world would probably be worked on 28 mc. some time between 1935 and 1937.

The transmitting gear used by these two pioneer 28 mc. workers and possibly by many others, strange as it may seem, would have compared quite favourably with that in use at most of the present-day 28 mc. stations. It is true that certain self-excited "wobbles" have given way to well stabilised signals, but the fundamental circuits and aerials are almost identical. In only one case have we heard of a driven amplifier being used and even then resort has to be made to American R.F. pentodes. This is probably the real reason why so many British amateurs are compelled (if they wish to use any power about 20 watts) to take advantage of a valve's ability to oscillate more readily than it will amplify at R.F. The news which we publish in this issue regarding a new British R.F. pentode will interest many of our members. Considering all things, we can only suggest that even with transmitting equipment which is not being operated "in accordance with specification" the results have been highly satisfactory.

It is, however, when we come to the reception side that we find the biggest step forward. Superhets are well to the fore with electron coupled detectors a good second. Straight receivers are still used, but with few exceptions those who use them find it difficult to bring in the weak and elusive DX signals.

There is one technical feature of this work which deserves a comment. We refer to the practice of using crystals which double or quadruple into the low frequency end of the 28 mc. band. Almost every British and overseas amateur working on this band is operating his station on a frequency between 28,000 and 28,400 kc/s., in fact most are between 28,000 and 28,200 kc/s.

(*Continued on Page* 204.)

THE CATHODE RAY TUBE*

By G. Parr.

SINCE the production of the original Cathode Ray Tubes some years ago, the development of this important laboratory appliance has proceeded rapidly, with the result that improved types of tube are now available, having a wide application in both the engineering and radio fields.

With the advent of an improved Television service, the Cathode Ray Tube is being recognised as the only satisfactory solution to many of the problems of high-definition picture reception.

Used as an oscillograph, the Cathode Ray Tube is free from the inherent disadvantages of electro-mechanical systems in that it has negligible inertia of the moving parts. The records obtained from it are therefore free from exaggeration due to resonance effects and, since the deflection is generally produced by electrostatic fields, the oscillograph imposes a negligible load on the circuit to which it is connected. At very high radio frequencies, however, the capacitative load of the deflector plate system becomes apparent, and may affect the circuit under test.

For all practical purposes the limit of frequency response of the tube need not be considered. At very high radio frequencies, however, two effects become of importance :—

(*a*) The speed at which the beam traverses the screen is so high that the visual trace becomes difficult to follow.

(*b*) The deflecting potential may change during the time taken by the electrons to travel between the plates, and the response of the beam will no longer be proportional to the deflecting impulse.

The frequency at which these effects occur depends both on the screen material and on the dimensions of the plates, but may be taken to lie between 5-10 megacycles per second at low accelerator voltages.

High Vacuum Tubes.

Medium voltage hot cathode tubes are of two principal types : those in which the electron beam is focused on the fluorescent screen by the aid of a trace of gas present in the tube (" gas-focused " tubes), and those in which the focusing of the beam is accomplished by electrostatic fields. The latter type is the modern high vacuum tube, and possesses the following advantages over the older type :—

Owing to the absence of gas there is no loss of focus at high writing speeds.

" Origin distortion," or non-linear response of the beam to small deflecting potentials, is not present in the high vacuum tube.

There is no tendency to ionic bombardment of the cathode, with a corresponding increase in the life of the emitting surface of the cathode.

On the other hand, the high vacuum tube requires a slightly higher potential for focusing the beam, with a reduction in the sensitivity obtainable, but these points are far outweighed by the advantages cited above. Further, in the use of the tube in television, there is no loss of focus on alteration of beam current or intensity. The high vacuum tube can therefore be said to have successfully displaced the gas-focused type, except for special cases where unusually high deflector plate sensitivity is required.

An illustration of the tube is shown in Fig. 1. The tube is in the form of a conical bulb with an elongated neck, in which the electrodes and deflector plates are situated. The electron producing system consists of a cathode surrounded by a cylindrical shield, at the top of which is mounted the 1st accelerator. This accelerator has a small hole in its centre, and the electron beam, controlled by the shield, passes down the cylinder attached to this electrode.

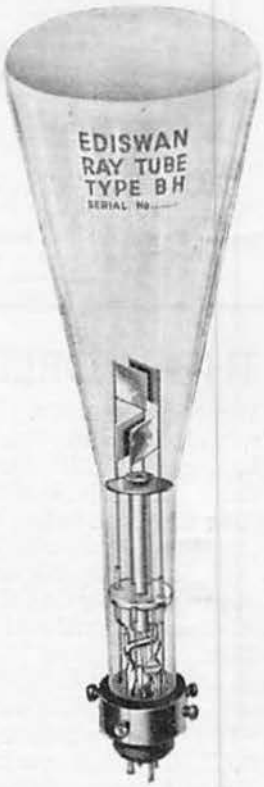


Fig. 1.
Photograph of Ediswan high vacuum tube.

At the open end of this cylinder is the 2nd accelerator, which also has a hole at its centre and which is maintained at a higher positive potential than the first accelerator.

Excitation of the Tube.

The tube requires a source of steady potential of about 2,000-3,000 volts max. The lower potential for the 1st accelerator is obtained from a potential divider connected across the H.T. supply. The cathode of the tube can also be connected to this divider and the negative potential for the shield derived from a potentiometer in the negative side of the potential divider. The diagram of Fig. 2 shows a suitable arrangement, with an earthing plug adapted to suit both gas-focused and high vacuum tubes.

The H.T. can be obtained from batteries or from a half-wave rectifier circuit, similar to that shown in Fig. 2. Owing to the low current taken by the tube and potential divider, the smoothing can consist of a 1-2 mfd. reservoir condenser across the H.T. rectifier. The tappings on the potential divider also require to be connected to cathode through 1 mfd. condensers as shown. These condensers must be capable of withstanding the full voltage of the H.T. continuously without risk of breakdown.

For the injection of a signal on to the shield of

* Convention Lecture, 1935.

the tube, a pair of terminals can be provided, as shown in the diagram marked "MODULATION," and these terminals MUST BE KEPT SHORT-CIRCUITED when not actually connected to a source of potential. They must always be connected to a closed circuit, but can be isolated from an applied signal voltage by condensers.

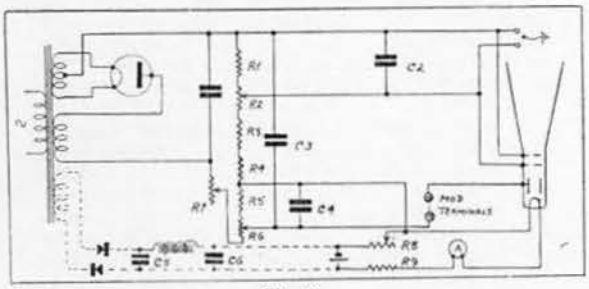


Fig. 2.

Typical H.T. supply circuit for high vacuum tubes. By alteration of the earthing tap it can be adapted for gas-focused tubes.

R1, 1 megohm.
R2, .5 megohm.
R3, 4, .25 megohm.
R5, 1000-5000 ohms.
R6, .1 megohm.
R7, 2 megohms.
R8, .5 ohm.
R9, 1 ohm.
C1, 2, 3, 1 μF 2000v. working.
C4, 1 μF 500v. working.
C5, 6, 2,000 μF 10v. working.

Focusing.

When the tube is connected to the H.T. supply, the electron stream from the cathode is caused to converge on the fluorescent screen by the electrostatic field existing between the two accelerators.

The action of this field is analogous to that of a converging lens in an optical system, and the similarity is shown in Fig. 3.

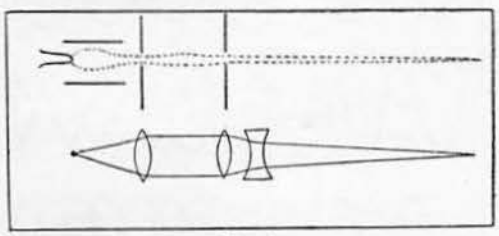


Fig. 3.

Diagram to illustrate the analogy between the electron lens system and the optical lens system.

On its emergence from the cathode the stream is compressed by the negative field of the control cylinder (" shield "), and passes through the hole in the first accelerator in a compact jet. Owing to the mutual repulsion between electrons, the beam immediately begins to diverge, and if no further influence was applied it would cover a considerable area on the screen. The second accelerator, however, is at a much higher potential than the first, and the field between them causes the beam to reconverge to a point on the screen, the length of the focal point being determined by the ratio of the two accelerator potentials. For a given electrode structure there is a definite ratio of accelerator potentials which will cause the beam to focus sharply on the screen, and alteration of this ratio will give a focal point in front of or behind the screen, resulting in a blurring of the spot.

When focus is reached, the control cylinder (" shield ") does not appreciably affect the focus of the beam, but merely alters the beam current, and hence the intensity of the spot. In this the shield has an action analogous to the grid of the thermionic valve. If, however, the shield potential is made insufficiently negative, resulting in excessive beam current, the divergence of the electrons will be such that focus cannot be obtained. For optimum focus, therefore, the shield potential should be as near the " cut-off " point as is consistent with good intensity.

The adjustment of overall H.T. voltage to the tube by the resistance R7 (Fig. 2) will not appreciably alter the focus, since the ratio of the accelerating potentials remains the same. The focus of the tube is, however, improved at high accelerator potentials, and sensitivity may be sacrificed to sharpness of line in most cases.

For a fuller explanation of the theory of electrostatic focusing of electron beams, reference should be made to an article in the Journal of the Franklin Institute, May, 1933, p. 535, by V. Zworykin.

Electrostatic Deflection.

When high deflecting potentials are applied to the plates, there is a tendency to blurring of the trace at large amplitudes, due to the effect of the deflector plate field on the beam. This can be minimised by feeding the plates through a symmetrical circuit as shown in Fig. 4. The resistance RR should have a value high enough to ensure that the input circuit is not unduly damped, and 5 megohms minimum is recommended.

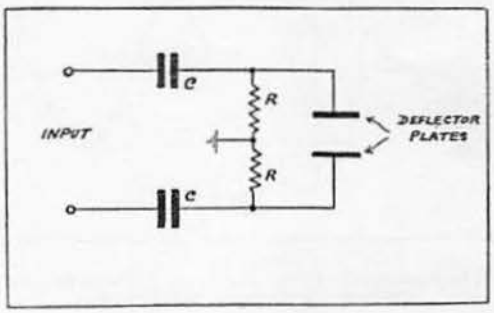


Fig. 4.

Balanced deflector circuit to eliminate distortion due to interaction between deflector plates and defocusing of the beam due to excessive deflector voltages.

Use of the Tube as a Phase Indicator.

If two alternating potentials of the same phase are applied to the plates, the beam will be deflected in a line at an angle φ to the horizontal axis. The theory is similar in all respects to that of the resultant of two mechanical forces, and the angle will depend on the relative magnitude of the two potentials. If the screen has been calibrated the peak value of the applied potentials can be read off directly, or the value may be determined by measuring the perpendiculars from the extremity of the sloping line to the horizontal axis. Used in this way the tube acts as an electrostatic peak voltmeter.

If the alternating voltages differ, not only in amplitude but also in phase, the beam will trace an elliptical plane figure, any point on which is determined by the relative instantaneous values of the deflecting potentials (Fig. 5). The peak value of the respective voltages and their phase difference may be found by tracing the ellipse on squared paper; or by the use of the calibration scale. If the ellipse has been correctly centred on the squared paper, the peak values are given by the perpendiculars "a" and "b." The phase angle is found by measuring the intercept "c" where the ellipse cuts the horizontal axis. At this point the instantaneous value of one of the deflecting potentials is zero, and the value of the other potential is therefore E sin $(\omega t + \theta)$. The value of θ is therefore $\sin -1 \frac{c}{b}$

A special case occurs where the deflecting potentials are equal in magnitude but differ in phase by 90°. The beam will then trace a perfect circle which under certain circumstances can be used to form a base line on which to superimpose a wave form of a higher frequency.

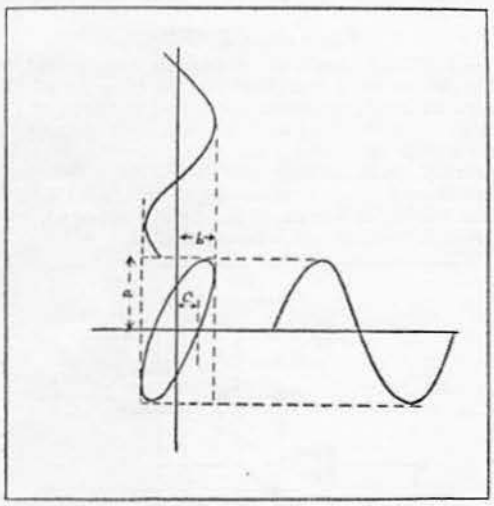


Fig. 5.
The application of two sine waves to the deflectors produces the elliptical figure shown.

Frequency Determination.

When two potentials of differing frequency are applied to the deflectors, the path traced by the beam is a form of Lissajous figure if the frequencies are exact multiples of one another. Some simple cases are shown in Fig. 6, which also shows the effect of phase difference between the two potentials. If one frequency is an exact low multiple of the other, the pattern is usually simple enough for the frequency to be deduced by inspection.

The formation of Lissajous figures and the recognition of the frequencies which have produced them is of the greatest importance in the use of the tube as a frequency meter. To use it in this way a sine wave of known and constant frequency is applied to one pair of plates and the unknown to the other. If the unknown is a simple multiple of the known, figures like those shown on the left of Fig. 6 will be seen and the ratio of the frequencies can be found by counting the peaks in the figure. If the figure assumes a stationary position, giving a line instead of a loop, the unknown frequency should be altered by a small amount sufficient to start the figure turning.

If the unknown frequency is varied continuously, as in the case of an audio-frequency oscillator, the figure will pass through a succession of complex shapes, the simple patterns recurring each time a simple multiple occurs. In this way frequency multiples of as high as 10 : 1 can be checked by counting the peaks. The intermediate multiples, such as 3 : 2, 4 : 3, are more difficult to determine, and in some cases the observer is guided only by experience and a knowledge of the preceding point on the calibration range. The most favourable conditions for observing complex figures are when the right-to-left movement of the beam is in a slightly different plane from the left-to-right movement. The waves then appear as though they formed part of a ring which is slowly rotating, and the introduction of perspective makes the counting of the wave-tops easier.

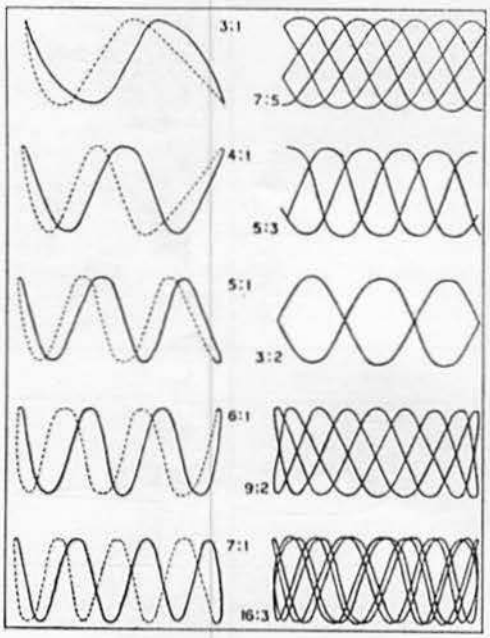


Fig. 6.
Typical Lissajous' figures produced by varying frequencies applied to the deflectors.

There are two aids to the determination of frequency from complex patterns which are as follows: The majority of the figures terminate in well-defined loops, such as those shown in the ratios 9 : 2, 6 : 1 in Fig. 6. The frequency ratio of the pattern is then given by counting the peaks and dividing this number by the number of loops at one end of the figure. In the example 9 : 2, there are 9 peaks and 2 loops at one end. In the one below there are 16 peaks and 3 loops. Note that for the calculation, the "loop" is itself reckoned as a peak.

Since the loops may not always be clearly defined, a better alternative is the second method of counting

intersections. The 3 : 2 pattern shown intersects along a single horizontal line; the one above it along two lines near the top and bottom of the figure. The rule for finding the frequency ratio then becomes: Count the peaks and divide by 1+ the number of horizontal sections. The 7 : 5 pattern has 7 peaks and 4 horizontal intersections, giving a ration of 7 : 4+1. It should be noted that the figures shown in the left-hand column do not rank as intersecting figures, since the waves can be completely separated by an extra deflection in the vertical plane. The figures on the right, however, will, if separated in the vertical plane, appear as interwoven bracelets with the points of intersection still visible.

For higher multiples of the frequencies, the trace is difficult to observe, and a better method is to make use of the circular base mentioned before. For this purpose a low voltage A.C. is applied to a resistance-condenser combination shown in Fig. 7a, the plates being connected across the resistance and condenser respectively. "R" is preferably adjustable and of 50,000 ohms maximum resistance. "C" may be 0.1 mfd. for a 50-cycle supply.

If R is adjusted so that $R=\frac{1}{C\omega}$ the phase difference between the potentials is 90°, and the beam will trade a circle if the applied voltage is sinusoidal. The resistance R_2 can be used for controlling the diameter of the circle produced. The voltage whose frequency it is desired to find can be injected into one or other of the deflector plate circuits, and will appear superimposed on the circular trade (Fig. 7b).

If the frequency is not an exact multiple of the fundamental frequency, the pattern will rotate slowly at a rate proportional to the difference between the actual frequency and the multiple. The direction of rotation of the pattern will depend on whether the frequency is higher or lower than the nearest exact multiple, and the initial direction of rotation of the circle should be determined from the circuit conditions.

Time Bases.

For the observation of voltage phenomena, it is essential to refer the movement of the beam in one plane to a time base. For most purposes it is generally preferable to use a horizontal linear time base, *i.e.*, one in which the beam moves uniformly in a horizontal plane covering equal distances in equal increments of time. Such a time base is suitable for cases in which the wave form to be examined is of a higher frequency than that of the time base itself.

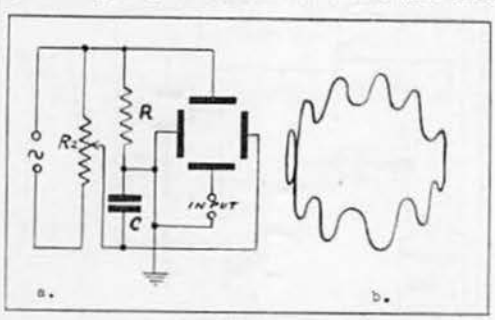


Fig. 7.
Split-phase circuit for producing a circular trace of the beam. A wave superimposed on the trace appears as shown.

There are, however, one or two other forms of time base which have special applications, and which can be considered first.

Circular Base.

The circular base described previously may be used as a time base, particularly where the wave form under investigation is of a higher frequency than the fundamental trace frequency, and where it is desired to examine a large number of waves. As an example, the effective length of the trace can be made $\pi \times 5 = 15$ cms. for a small tube without distortion occurring due to screen curvature. There is, however, a marked distortion of the wave at the points where the vertical deflection becomes tangential to the circle, and for this reason it is sometimes desirable to make the path elliptical by alteration of the resistance. If the ellipse is elongated sufficiently, the wave form is observed with accuracy at the centre of the screen. A better plan, however, is to arrange the potential under observation to produce a radial deflection on the circle instead of one in a vertical plane only. This can be done by injecting the wave under observation in the grid circuit of a push-pull valve combination. This circuit will be found in the *Journal I.E.E.*, Vol. 63.

Linear Time Bases.

The fundamental requirement for the linear deflection of the beam is a deflecting voltage applied to the horizontal plates which increases uniformly with time, returning to zero rapidly on attaining a definite value. This has the effect of causing the beam to traverse the screen slowly, and to flick back to its original position too rapidly to be followed by the eye. The potential under investigation is thus spread out continually on the screen, and if the speed of traverse of the beam is an exact multiple of the frequency of the given potential, the wave form will appear stationary on the screen.

The usual basic circuit for the production of a linear time base is that of a condenser charging at a controllable rate. Across the condenser is connected a gas-discharge device such as a neon tube, while a resistance is connected in series with the H.T. supply to vary the rate of charge. The deflector plates are connected across the discharge tube. On switching on, the potential of the condenser discharges and the potential rapidly falls till the extinction value is reached, when the discharge tube goes out and the cycle is repeated. This circuit has several disadvantages in practice, the principal one being the small difference between the striking and extinction voltages of the ordinary neon tube (about 30 v.). This results in a very cramped time base if the cathode ray tube is being operated at high anode potentials.

A further disadvantage is that the use of a resistance in the charging circuit produces an exponential curve of charging potential of which only a small portion can be considered to be approximately linear. This latter point can be overcome by the substitution of a constant-current valve (such as a pentode) for the resistance, or by rasisng the H.T. voltage to such a high value that the curve is approximately linear for a considerable proportion of the voltage scale. When a valve is used, the internal resistance is controlled by the screen voltage obtained from a potentiometer across the H.T. supply, and this alters the frequency of traverse of the beam. Another important improvement

in the circuit is made by the substitution of a gas-filled relay (" thyratron " *) for the neon tube (Fig. 2). The advantage of this relay lies in the fact that the striking potential is dependent on the bias which is applied to its grid and, once " struck," the discharge persists until the anode potential falls below the ionisation value of the mercury vapour or gas (15-20 v.). The use of the gas relay therefore gives a wide and controllable difference between the striking and extinction potential, with a corresponding control over the traverse of the beam. Neliumfilled relays are to be preferred for high working speeds.

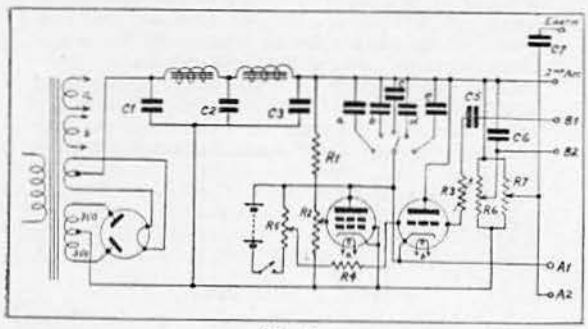


Fig. 8.
Typical simple linear time-base circuit, using pentode-charging valve and gas relay.

R1, .1 megohm.
R2, 5, 30,000 ohms.
R3, 1 megohm.
R4, 5,000 ohms.
R6, 7, 2 megohms.
C1, 2, 3, 8 μF.
C4, (a) .1 μF.
(b) .05 μF.
(c) .01 μF.
(d) .005 μF.
(e) .001 μF.
C5, .01 μF.
C6, 7, .1 μF.

When observing recurring phenomena it is of great advantage to " lock " the wave in a stationary position on the screen. This is readily done by feeding a small proportion of the voltage under observation to the grid of the thyratron in the time base, which has the effect of tripping the discharge at the correct moment, should it tend to occur earlier or later than the frequency of the wave.

The time base potential will deflect the beam permanently to one side of the screen and the beam can be restored to its central position by means of a bias applied to one of the deflector plates. It is generally more practical to obtain centralising bias from a potential divider across the time base H.T. The complete time base circuit then appears as Fig. 8, which gives an alternative circuit for mains operation. The different values of fixed condensers will cover the various speeds of traverse needed in practice and the beam can be made to travel across at frequencies varying from 1 to 10,000 per second by adjustment of these capacities and the charging impedance.

" Locking " Control.

If excessive voltage is applied to the grid of the relay for the purpose of locking the trace to the time base speed, it will have the effect of shortening the travel of the beam. With a high impedance test circuit, it may happen that the grid current of the relay will be fed back into the circuit, causing distortion of the wave in the vertical plane. The amount of coupling between the time base circuit and the wave trace should be kept as small as possible for these reasons.

Some Applications of the Tube.

The tube can be used in a simple manner to indicate the depth and quality of modulation in a receiver, provided that sufficient radio frequency potential is available to produce a deflection on the tube.

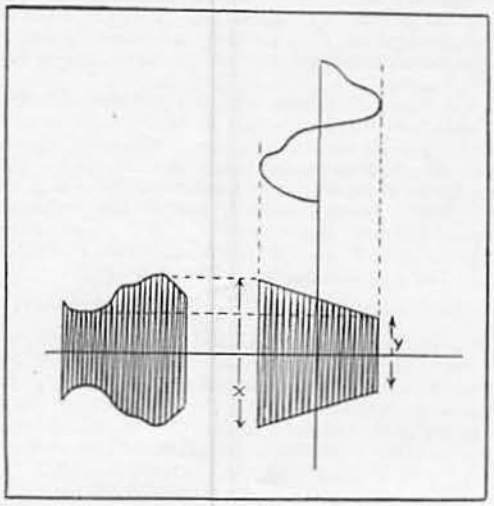


Fig. 9.
A method of measuring percentage modulation.

For the observation, one pair of deflector plates is connected across the audio-frequency stage in the receiver. The resultant figure will be as shown in Fig. 9, which is self-explanatory. If the modulation is linear, the figure formed will be a trapezium whose sides are proportional to the maximum and ini-m mum values of the modulating valve. If the modulation is non-linear the sides of the figure will be curved or irregular. No phase change must occur in the receiver between the R.F. and A.F. potential points, or the figure shown will not be obtained. The modulation co-efficient is given by $\frac{X - Y}{X + Y}$ X and Y being taken as shown in Fig. 9.

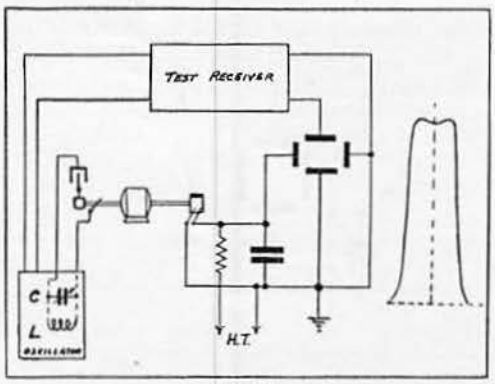


Fig. 10.
Circuit for checking the alignment of I.F. stages.

* The word 'thyratron' is the registered trade name of the B.T.H. Co.'s product, and is strictly only applicable to relays of their manufacture.

3.5 Mc/s Tests in December

If it is not possible to avoid phase shift in the receiver, the modulation can be measured by rectifying the R.F. before applying it to the plates. The two potentials thus obtained from the R.F. and A.F stages can then be used to produce a plane figure as described. If distortion is present in the receiver the figure will be irregular.*

Observation of Frequency Response and Allied Problems.

The essential requirements of frequency response curves are a vertical potential scale and a horizontal scale proportional either to ascending frequency or to cycles departure from a predetermined frequency. Fig. 10 shows a typical resonance curve of a tuned circuit, and a suggested circuit for obtaining the visual record. The main tuned circuit (L and C) is adjusted to a given radio frequency.

Across the tuning condenser is connected a vernier condenser capable of continuous rotation on its spindle, and driven by a small motor. On the other end of the motor shaft is fitted an ebonite cylinder with a short circuiting bar inset. The horizontal movement of the beam is produced by the charge of a condenser through a diode through the usual way. The short circuiting bar is, however, arranged to discharge the condenser once per revolution, thus locking the trace of the beam to the change of tuning capacity. In this case the diode serves to determine the length of horizontal travel of the beam in conjunction with the capacity of the charging condenser.

* A very full account of modulation measurements on amateur transmitters appeared in Q.S.T. for July, 1935.—G.P.

THE TEN METRE BAND.

By E. H. Swain (G2HG) *.

THE International Contest organised by the R.S.G.B. concluded on September 30 last, and it may be of interest to give a summary of conditions throughout the year as they applied to Great Britain.

The primary object of the Contest has certainly been achieved, for never before has so much activity been shown on this rather mysterious band of frequencies.

Contest entries forms are coming into Headquarters from all parts of the world, and it is anticipated that much useful information will be available when they are examined. The Contest was especially valuable because it took place during the year when conditions were changing. In one way it is a pity that it concluded in September, because some astounding scores would have then been returned by several G's and at least a dozen overseas stations. Looking on the bright side, however, it is safe to say that the Contest provided an incentive to try 28 mc., and a just reward has now come to those who have been the most patient observers.

The gradual lengthening of the skip which finally resulted in the contacts taking place between Europe and Australia was a particularly interesting feature of the observations.

The dates mentioned in the summary are taken from G2HG's log and also from information furnished by other British amateurs. It has not been considered desirable to include herein details of observations taken by amateurs in European countries, or in Ireland, but it is hoped that they will make public at an early date their records because it is known that in certain instances they have experienced conditions superior to our own.

Summary.

October, 1934.—Conditions on the whole very poor, but amateur signals audible at infrequent intervals from Hungary and U.S.S.R. 1st District. Very few commercial harmonics were heard, those audible being mostly of Spanish, Portuguese or Polish origin. WQU was, however, heard on the 21st.

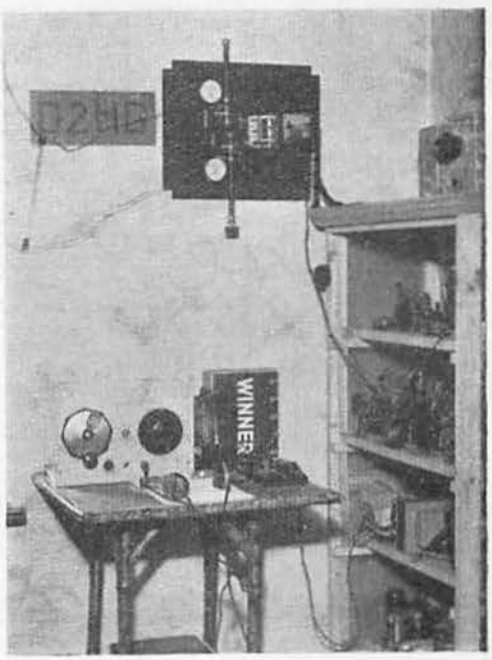
November, 1934.—Very poor conditions with occasional European commercial harmonics audible.

December, 1934.—As for November except that WQT was heard by G5FV on the 29th and VE1GZ, WQU and WIZ heard by G2HG.

January, 1935.—G2YL heard OK1AW on the 18th. Spanish, French and Dutch commercials coming through at times.

On the 20th a 14 mc. harmonic from G2WQ was reported heard by a listener in New Zealand.

February.—Conditions still poor.



G2HG.

Bottom shelf contains power supply for the C.O. and two F.D.'s; next shelf houses supply for final stage. Third shelf contains C.O. and two F.D.'s and the top shelf contains the neutralised T.P.T.G. Note the Collins coupler. This station has worked VK, LU, ZS, W1, 2, 3, 4, 8, 9, FA8, FF8, F, D, YM, SM, LA, HB, ON, PA, ZB1, OE, OK, EI and I on 28 mc.

* In collaboration with G6CL.

March.—Commercial harmonics becoming more frequent, PLL heard by G6YL on the 11th and FF8MQ by G2HG on the 16th.

April.—Conditions improving and reception of harmonics becoming commonplace. Amateur signals from FM8, U2 and 3 heard and a contact between G2MV and VU2BV reported on the 29th.

May.—Conditions still improving and the band once again open for European work. On the 13th G6YL heard ZT6K. Most European countries heard, the best DX being SU, FM and the Canaries.

June.—Local European conditions very good. G2HG heard LU1EP on the 9th and from this date he became the best DX station on the band. LU9BV was heard on occasions. Most of the other English stations experienced similar conditions except BRS1847, who also heard ZT6K and K6BAZ, and G6LK who heard a K6 and a W telephony signal.

July.—Similar conditions with W1AVV, LU1EP, 9BAJ, 9DU and J2HG as DX.

August.—Local conditions falling off towards the end of the month, but LU, PY, W1 and 2 heard. G6RH reported hearing VK2OC on the 11th.

September.—European signals disappeared, but DX stations appeared with regularity. On the 7th ZS1H got across, and since that date has remained the most consistent DX station. ZU1C, LU1EP, 3DD and others were heard.

These notes are necessarily brief, but readers who are interested in this subject are recommended to peruse G2HG's notes, which have appeared frequently in this Journal during the past year.

Summing up, we can say that local European conditions during the summer were similar to those experienced in past years, but the coming of DX presented a new feature, although it must be emphasised that this was expected.

First Contacts.

For the benefit of posterity it is considered desirable to establish a list of first contacts between Great Britain and other countries on this band. Any information on this subject will be welcomed by Headquarters.

October Conditions.

It is impossible to enumerate in detail all of the work which has been carried out since October 1st, but as most members now know, G6LK worked VK2LZ on the 13th to make the first of a series of G-VK contacts on this band.

On October 12 or 13, ZS1H made W.A.C. to be followed by G2YL on the 27th.

ZS1H, 6P and LU1EP have been the most consistent DX stations heard in London. During the month first contacts were made with CX1CG, whilst SU1SG and 1RO were also contacted.

Numerous VK's have been heard and several worked. On October 23 conditions were remarkably good for work with the U.S.A., and on this day G2PL and 6LK contacted W6CAL. G6WY worked several W5s and G6QB reported hearing all U.S.A. Districts. On the 24th G2YL worked VE3DU.

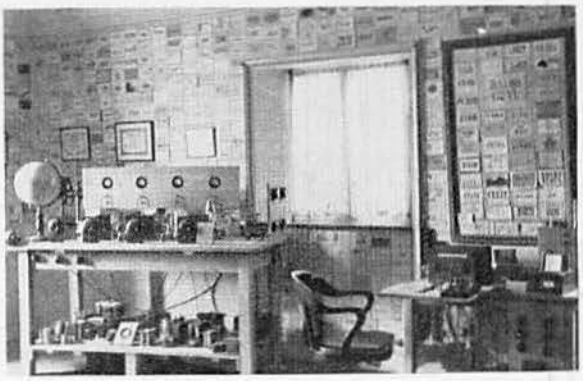
J2H (?), probably 2HG, was heard at R2 by G2HG on the 19th, whilst VS6AH was heard by G6LK on the 13th. VU2LJ was worked by G2YL, 6NF and others on the 27th.

On the evening of the 24th, G6CL and 6YL heard ZS1H giving A.R.R.L. a list of stations he had worked. The list included the following G's :— 2HG, 5WP, 2YL, 5FV, 6DH, 5BY, 6WN, 6LK, 2PL and 6CL.

G6DH worked X1AY on the 13th. He also reported that conditions vary considerably within 100 miles, for he can often hear G's at Clacton, Essex, calling DX stations which are inaudible on his receiver. G6CL and G2NH report similar effects.

BRS250 heard CX1CG working ON4JB on the 26th.

All readers who are experimenting on this band are asked to send any items of interest to G2HG by the 25th of each month.



G2YL.

Miss Corry's station at Walton-on-the-Hill. From this station all Continents were worked in 6 hours 20 minutes on 28 mc. Miss Corry was the first British amateur to work all Continents. She also qualified for the first 28 mc. W.B.E. in Great Britain.

Empire Calls Heard

W8JIW, H. S. Bradley, Hamilton, N.Y. July 15 to October 15 :—

14 mc. (CW) : G2ao, 2as, 2ax, 2bk, 2bl, 2bp, 2by, 2cj, 2db, 2dc, 2dh, 2dl, 2dw, 2dz, 2fo, 2gc, 2gk, 2hx, 2ic, 2im, 2jb, 2jt, 2km, 2kt, 2kv, 2kx, 2la, 2mg, 2ml, 2mr, 2nv, 2nm, 2no, 2nq, 2oa, 2oc,, 2oi, 2os, 2pl, 2pn, 2rf, 2rh, 2sd, 2sx, 2td, 2th, 2tm, 2us, 2wq, 2xr, 2yb, 2yd, 2yy, 2zb, 2zd, 2zp, 5bd, 5bp, 5ch, 5cm, 5cv, 5fa, 5fn, 5gi, 5gq, 5ik, 5ja, 5jo 5ju, 5jw, 5jx, 5kf, 5kg, 5kj, 5kt, 5ml, 5mp, 5nd, 5oj, 5ph, 5pl, 5pp, 5pr, 5ps, 5qa, 5qf, 5qy, 5ri, 5rv, 5rx, 5si, 5so, 5sr, 5sy, 5tb, 5to, 5tp, 5tw, 5ud, 5us, 5uy, 5vb, 5vd, 5vh, 5vm, 5vn, 5vs, 5vu, 5wi, 5wl, 5wt, 5wy, 5xb, 5xg, 5zg, 6ag, 6ah, 6ak, 6az, 6bq, 6bs, 6cb, 6cj, 6cl, 6co, 6dl, 6do, 6fb, 6fq, 6gd, 6gf, 6gh, 6gk, 6gm, 6gn, 6go, 6gs, 6hm, 6hw, 6if, 6jq, 6ki, 6kp, 6ku, 6lk, 6lm, 6mk, 6my, 6nb, 6nf, 6nj, 6nm, 6oo, 6os, 6ox, 6oy, 6py, 6qc, 6qn, 6qp, 6qx, 6rb, 6rj, 6rrs, 6rv, 6tr, 6tt, 6ud, 6uf, 6ug, 6us, 6ut, 6vd, 6vk, 6vn, 6vp, 6vr, 6wa, 6wr, 6wy, 6xi, 6xy, 6yq, 6yu, 6zs, 6zt, 6zu, 12kr, 5nj, 5wd, 6xs, Ei2g, 4g, 5f, 8b.

14 mc. (Phone) : G2ao, 2ic, 2in, 2kt, 2ld, 2mv, 2tm, 2xv, 5cv, 5kg, 5ml, 5qc, 5rd, 5rv, 5vb, 5vd, 5vl, 5wz, 5xa, 5yy, 6ag, 6dh, 6dl, 6fs, 6go, 6hw, 6lk, 6rv, 6wa, 6xq, 6xr.

7 mc. (CW) : G5to.

GETTING GOING ON EIGHTY METRES

By Austin Forsyth (G6FO).

At our invitation the following article has been prepared for the benefit of members who may wish to take part in the special Trans-Atlantic tests being arranged by Mr. J. H. Powditch, during December. Full details of these tests were published in our last issue.—Editor.

IN view of the forthcoming 3.5 mc. Tests, of which the schedule was given in the October Bulletin, it may be of interest and perhaps of assistance if some of the practical considerations of 80 m. working are discussed, as it is probable that a number of members who might otherwise take part in these Tests are deterred by the fact that they have not a suitable transmitter and/or crystal available, or else that they have only a comparatively small radiating system.

First, as regards the transmitter. Any CO-BA/FD-PA or CO-PA outfit used on one of the other bands can be adapted very simply for 3.5 mc. working by temporarily converting the CO stage into a master-oscillator. This is most easily done in the general case by substituting a low-impedance power valve for the CO valve, and replacing the crystal by a tuned grid circuit; in other words, by altering the CO stage to a TPTG type master-oscillator. Any biassing arrangement should be removed and a grid-leak and condenser connected in the usual way. With some valves which may be available, however, it might be necessary only to use a tuned coil in place of the crystal.

This MO should be tuned in to the 80 m. band if the transmitter is a two-stage converted CO-PA, but if the set is CO-PA/FD-PA, the master-oscillator can be operated on 160 m., using the BA as a doubler to 80 m.

At these frequencies, it will be found that the RF output from the MO will be ample for driving the succeeding stage, and with careful adjustment, the stability will be of a high order. In fact, there is no reason why the radiated signal should not be c.c. in character. As the output stage will be controlled by a self-excited drive, vibration must be avoided, and the best way of insulating the master-oscillator from keying and room-vibration is to rest the whole transmitter, or the MO portion of it only if it is a separate unit, on thick wedges of sponge rubber, such as are obtainable from the establishments of Messrs. Woolworth's.

From the schedule already published, it will be seen that stations on this side are required to keep within a given frequency-range on 3.5 mc. This range should therefore be checked off on the monitor or frequency-meter and the MO adjusted accordingly. *And here an important point emerges.* Anyone using a master-oscillator type of drive, either the temporary arrangement suggested for the occasion or an E.C.O., will have the important advantage of being able to QSY within the limits of this frequency-range and so avoid QRM.

As to inductance and capacity values for finding 80 and 160 metres, the following data will be sufficient guide:—

	3.5 mc/s.	1.7 mc/s.
MO coil	20 turns No. 18 s.w.g. b.c. spaced diam. of wire on 2" form.	40 turns No. 18 s.w.g. b.c. close-wound on 2" form.
MO condr.	.0003 μF.	.0003 μF.
MO tank	As above.	As above.
PA tank.	25 turns 7/22's spaced diam. of wire on 3½" form (Or similar type of coil.)	
PA Tank condr.	.0003 μF.	

If smaller tuning condensers are fitted (as for a transmitter normally used on 20m. and 40m.), the turn numbers will require to be increased in proportion. This will improve efficiency on the RF side, but in the interests of stability, the values given for the 80 m. MO circuit should be adhered to as closely as possible.

One last point in connection with the master-oscillator: Do not attempt to use too tight a coupling between MO and the succeeding stage. The RF available should be more than from an equivalent CO stage, so that the drive can be correspondingly reduced.

The next consideration is the radiating system. Those who are using aerial-counterpoise arrangements on 1.7 mc. will have no difficulty, but there are one or two points to be borne in mind. Depending entirely upon the length of the aerial and counterpoise and the method of coupling, it may be that with about 100 ft. of wire in each of the two arms, a folded "Hertz" action is being obtained on 1.7 mc.; the "equivalent length" of the system would be about 264 ft., or a half-wave on 1.7 mc. A half-wave on 3.5 mc. is 132 ft., which means that an aerial and counterpose of 100 ft. each would be too long to get a Hertz action on 80 m. without special tuning arrangements. But there is a simple way of getting effective radiation on 3.5 mc. under these conditions, and that is to tune the system to be ¾-wave in operation. This requires for 80 m. an "equivalent length" of approximately 198 ft. As we already have about 200 ft. of wire out, a fairly large coupling coil, say, half the size of the tank coil, is required with *series* tuning of aerial and counterpoise. The method of tuning is to get a half-wave on the coupling coil and a quarter-wave each on aerial and counterpoise. This will bring the two radiating sections of the system into phase, thus assisting radiation instead of tending to cancel it, as when a half-wave system is used with the two arms (aerial and counterpoise) one above the other and in the same vertical plane.

To get ¾-wave tuning, the method of adjustment is to set the two series condensers such that RF obtained in aerial and counterpoise is equal at the same distance from the ends of the coupling coil. This pre-supposes an aerial and counterpoise of more or less equal length and electrical value; generally, however, the counterpoise has greater capacity and is therefore of greater "equivalent length" than the aerial, so that it is usually necessary to have quite a small capacity in the series tuning condenser. A further point is that it should be understood that with this method of tuning it is possible to get a half-wave on the system and yet have the same meter indications as would be obtained for ¾-wave tuning! The way to avoid this is to start with an aerial coupling coil about the same size as the tank coil, and trim it till the series tuning condensers "come on the scale" sufficiently to allow aerial and counterpoise to be balanced.

In case the remarks above about "100 ft. aerials and counterpoises" has caused someone to put the BULLETIN down with a sigh and a muttered curse, let it be said right away that equally efficient radiation could be obtained with an aerial-counterpoise system down to a length of about 50 ft. in each arm. In this case, however, parallel tuning of the coupling coil would be necessary, and a fairly large coil would be required; start, as before, with a good big one and trim down.

There is now the man with the 33 ft. Windom to be thought of, he spending most of his time on 20 m., owing to the idea that the size of his aerial precludes efficient operation on any other band. But any aerial system involving feeders, such as a Windom or a Zepp., can be made to radiate quite well on *any* band (Yes! Any Band) by using the "G6JV" method of coupling. In the case of a Windom, the feeder is tapped on to the "hot" end of a coupling coil of the same size as the tank coil and tuned with a condenser which will resonate the aerial coil with the tank coil when the aerial is disconnected. In other words, a circuit equivalent to the existing tank circuit is set up and tuned to resonance, the degree of coupling between the two coils being adjusted such that normal load is obtained. The aerial or feeder is now tapped on the aerial coil at the end nearest the tank coil, when a change in plate current will be noted. It will go either up or down. The aerial tuning condenser is then set so as to bring the plate current back to the value obtained before the aerial was clipped on and when the aerial coil was tuned to resonance.

The method of adjustment is most easily illustrated by some possible figures: No load mils. 15 m/a; with aerial coupling coil at resonance 55 m/a; with aerial clipped on 72 m/a (or perhaps 43 m/a). This last figure must be brought back to 55 m/a by adjustment of the aerial tuning condenser, nothing else being touched. Whether the plate current goes up or down when the aerial is clipped on depends upon its length in relation to the frequency. But the point is that an aerial of any length from 33 ft. to 120 ft. (which are the limits for 80 m.) can be made to radiate quite effectively, since the method of tuning automatically adjusts the length in such a way that, looking at the aerial and coupling coil as a single wire, there is a half-wave on it. Naturally, therefore, the radiation efficiency will be highest on 80 m. when the aerial is about 90 ft. long. As a 20 m. Windom will often have a feeder, which may be semi-vertical, about 40 ft. in length, thus giving a useful radiating length of roughly 55 ft. when the "G6JV" method of coupling is used, it will be seen that even with a small aerial system, it is possible to put out a good signal on 80 m. using this arrangement.

If the normal aerial system involves Zepp feeders, it is only necessary to disconnect and leave free the neutalising arm, when the useful length of the aerial becomes roof length plus feeder length. In a Windom, the useful portion is the feeder plus the length of roof from the tapping point to the far end. It is scarcely necessary to say that when "G6JV" coupling is employed in the manner indicated, the aerial ceases to operate as a Windom or a Zepp, or whatever it may be, but will function only in the manner peculiar to a "G6JV." It is therefore not correct to say that one is using a 20 m. Windom on 80 m.

Incidentally, the "G6JV" arrangement is a simple and effective method of coupling, applicable to any band, which has not had the attention it deserves since being first published in the BULLETIN some eight or nine years ago.

The suggestions outlined in this article—sketchy in themselves and not directed at the regular 80 m. worker, who will in any case have his own well-tried methods and arrangements to go on for the Tests—may give someone an idea about how to overcome some particular difficulty. And that is all that is intended, and no more than is hoped for.

Finally, a few words to try and encourage more 3.5 mc. working. It is a band on which practically all that is now possible on 7 mc. can be done in greater comfort, and the DX of past years includes W, VE and ZL. The only reason why more has not been done in the way of DX is because, like 1.7 mc., the band is not sufficiently used by DX stations. 3.5 mc. presents the same interesting unexpectedness as the others, as witness the fact that early in October the writer heard East Coast W's before 9 p.m. at QSA5, and one evening a D actually got QSO before 9 p.m., though he did not know it! A W8 came back to his CQ, but the D did not hear him, and even though another W replied to the second CQ, the D missed a chance of making a really outstanding contact.

Real QRP Work.

GI6YW reports being in contact with VE5LD on the 14 mc. band when the latter was using only 5 watts. VE5LD is situated at Gjoahaven, King William Land, N.W.T., and is well above the Arctic Circle. The operator is Mr. William Gibson, who hails from Co. Monaghan, and he has been in the Western Arctic for about 10 years, being Posts Inspector and a chief fur trader for the Hudsons Bay Co. He expects to be "out" again about November, 1936, and his next post out will be March, 1936. His permanent address is c/o Fur Trade Department, Hudsons Bay Co., Hudsons Bay House, Winnipeg, Manitoba, Canada.

His 14 mc. signals at GI6YW were about R5 pure D.C. note, but slightly unstable, and situated near the middle of the band.

FURTHER NOTES ON AERIAL MATCHING NETWORKS

By G. McLean Wilford, G2WD.

SINCE the original article, dealing with these networks, was published in the April, 1935, issue of this journal, the author has received many enquiries regarding their operation. These enquiries have made it desirable to amplify the earlier information. It is also now possible to give some details of experiments which have led to improvements being made to existing couplers.

It should be mentioned that in the majority of cases where members have encountered difficulties the root of the trouble has been traced to the method of attaching the coupler to the transmitter, and not to the coupler unit itself.

It will be generally appreciated that in any aerial system, which employs either tuned or untuned feeders, there must be correct impedance matching, otherwise the transfer of power from the output stage of the transmitter to the radiating portion of the aerial system will be to a greater or lesser extent inefficient (depending upon the degree of mismatching).

Under conditions of mismatching, power is wasted in the feeders or in the form of heat in the anode of the final stage valve. It is clear, therefore, that in any aerial matching system, it is imperative that the correct point (or points) be found along the final amplifier tank coil at which to connect the matching network or coupler.

(A word of warning: when feeders are used the connections between the coupler and the transmitter *must not be twisted*).

Selecting the Correct Tapping.

To achieve the most efficient results the following procedure should be followed.

After the transmitter has been correctly tuned and neutralised, a 60-100 watt 230v. gasfilled lamp should be clipped across two points along the final amplifier tank coil. Power is then applied to all stages and the key closed. The lamp will, if the correct points have been selected, light up to more or less normal brilliancy. (In the case of 10 watt stations a 20 watt lamp can be substituted for the higher wattage lamp previously mentioned).

If the initial setting of the clips does not give illumination in the lamp (which is, of course, acting as a dummy aerial) other points must be tried until maximum brightness is obtained, consistent with the power being used. When these have been found, the two input leads to the coupler should be connected to the plate tank coil at the selected points. The lamp is then transferred to the *output* side of the coupler with the aerial (or feeders) disconnected.

The coupling unit should then be tuned, in accordance with the information contained in the earlier article, page 369, April, 1935, until maximum brilliancy is obtained in the lamp. It must again be emphasised that on no account should the tuning of the final tank circuit be altered once the point of minimum plate current has been obtained, with the coupler disconnected.

The aerial system may now be connected and tuning carried out until maximum aerial current is obtained.

As an example of the effectiveness of the method outlined above, the author would mention that he had occasion to visit a 10 watt station using the coupling network. On examination it was found that the aerial current was barely .01 amp, but after the above procedure had been carried out the aerial current was increased to .29 amp. (We are inclined to the view that the amateur in question had not studied carefully Mr. Wilford's earlier article.—Ed.).

The writer wishes to reiterate that although the coupler will pass power into any aerial, it is highly desirable that the system in use shall conform in general with recognised principles.

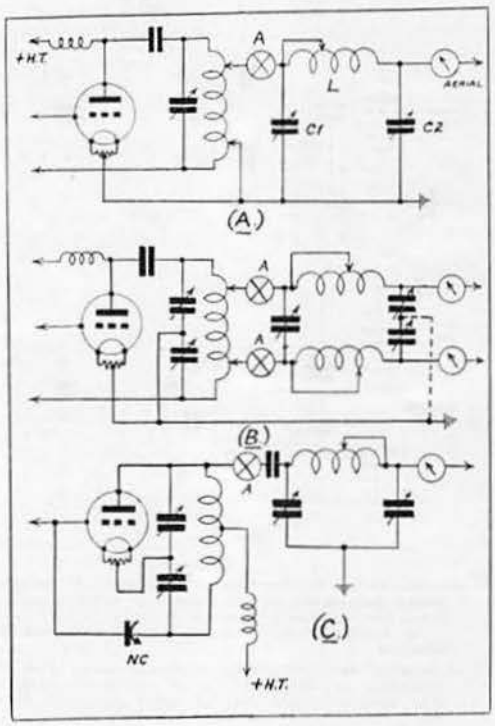


Fig. 1.

(a) For single-ended P.A. with single-wire feeder. The inductance L being as described in the previous article.

(b) For single-ended P.A.; split stator condenser tuned with two-wire feeders. C2 may be 350 μμF or a split stator 500 μμF each half 250 μμF effective with rotor earthed. If the P.A. is series fed a blocking condenser must be inserted to keep H.T. off the network inductance, as shown in Figs. 1 (c), (d), (e) and (f).

(c) For single-ended P.A. using split stator condenser in the final tank circuit. The input terminal of the coupler must be connected directly to the plate end of the tank coil. If this connection is made it will not effect the neutralisation of the final stage.

Coupler Connections for Different Types of Final Stages.

Several members have asked to be supplied with information regarding the correct position to tap on the coupler leads when a push-pull output stage is used. To obviate further enquiries of a similar nature, the diagrams forming Fig. 1 have been prepared showing six methods of termination. It will be noted that different forms of coupler have been shown with each, so that it should be a simple matter to select the one most suited for individual requirements.

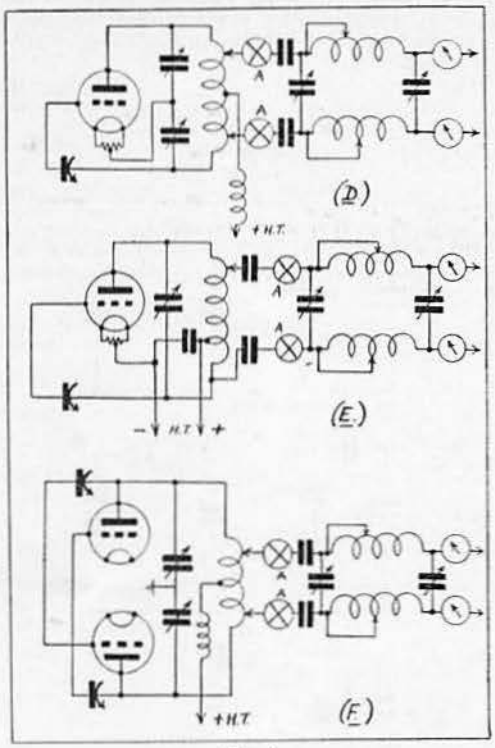


Fig. 1.

(d) Similar to (c), but for two-wire feeders, the coupler being tapped on at two points at equal distance from the mid point of the P.A. coil. With a two-wire feeder system neutralisation will not be effected.

(e) A method for connecting a single-ended P.A. to Zeppelin or other forms of two-wire feeders. The taps are connected at equal distances from the neutral point on the coil, i.e., filament or earth tap.

(f) Shows the normal method for a push-pull amplifier using two-wire feeders. The taps being made at the point found as explained in the first part of the article.

GENERAL NOTE.—The stopping condenser used to keep the plate voltage off the network in series-fed circuits may be of any value between .01 and .001 μF provided it is rated to stand the plate voltage on the P.A. stage. As an alternative the P.A. may be shunt-fed, which removes the necessity for using the stopping condensers in the coupler.

A Network for Single-ended Final Stages.

A simple type of network is illustrated in Fig. 2, but it must be understood that this is only suitable for single-ended amplifier operation or with output valves in parallel. It will not work with a push-pull stage. Furthermore, as will be apparent from an examination of the figure the final stage must be shunt fed. The input condenser C1 should be a transmitting type with a maximum capacity of 50 μμF, whilst C2 may be a receiving type with a capacity of 350 or 500 μμF. The coil sizes are shown beneath the diagram, but if the system is used for 1.7 mc. work a fixed condenser of 100 μμF must be inserted in parallel with C1 in order to raise the capacity to 150 μμF.

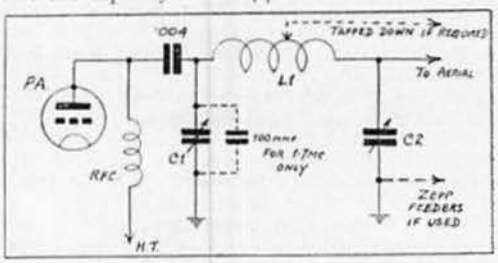


Fig. 2.
A simplified aerial coupling network.
C1, 50 μμF transmitting type.
C2, 350 μμF receiving type.
L1, For 3.5 mc. operation, 22 turns 2½ in. diameter.
,, 7 mc. ,, 12 ,, 2 ,, ,,
,, 14 mc. ,, 7 ,, 2 ,, ,,
,, 28 mc. ,, 3 ,, 2 ,, ,,
All coils No. 14 s.w.g. enamelled, spaced 2½-in. long.
NOTE.—For 28 mc. work it may be necessary to experiment with the number of turns.

It should be noted that the coil L1 forms both the aerial and plate tank. The rotors of both C1 and C2 are earthed. With this system of coupling the aerial may be any length between 50 and 150 feet.

The method of tuning is as follows :—C2 is set at maximum ; C1 is then rotated until minimum plate current is obtained ; the capacity of C2 is then reduced and C1 retuned for minimum plate current. The procedure is repeated until the required power is obtained. The maximum aerial current should coincide with the minimum plate current reading in final stage. If a lamp is used instead of an aerial ammeter, this should be shorted out before transmission commences.

It may be found necessary to tap the aerial at some point along the coil L1 instead of connecting it to the point where it joins C2, but this can only be decided upon by experiment.

For a single wire aerial this type of network is the most simple of all those previously described. It can, of course, be used quite successfully with Zeppelin feeder systems.

Inductances.

The inductances used for this particular network were made to the author's specification by *R.V. Transmitting Inductances*, a new firm who are specialising in this form of work. The coils are exceptionally well constructed, rigid and low loss, being air spaced. The turns are held in position by mean of celluloid strips, whilst the ends are terminated in plugs which fit standard sockets, thus permitting easy band changing. They could be used for all classes of transmission work as well as for those mentioned above.

It is hoped that these additional notes will prove helpful to those who have experienced difficulties with aerial matching networks, and also to those who have been successful with the earlier types described, and now wish to obtain greater efficiency.

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Frequency Stability on 56 MC.

PERHAPS some readers are becoming a little tired of this subject, but it is a most important one, and one which has *got* to be tackled by all who are working on the ultra high frequencies. This month we are happy to be able to publish an account of a crystal controlled transmitter working on 56 mc. We believe that crystal control on this frequency has been attained before, but owing to the fact that the successful experimenters have thought fit to hide their light under a bushel we must assume that for all practical purposes this is a first really successful attempt, in this country at any rate.

The most striking fact about this accomplishment is without doubt the simplicity of the apparatus used. A short examination of the accompanying diagram and sketch makes it quite clear that this transmitter is no more complicated than any ordinary short wave transmitter designed to work on several of our lower frequency bands.

Further examination of the article shows that the final valve is acting as a power Frequency Doubler, which is not, of course, so desirable a thing as a straightforward power amplifier, but nevertheless is quite a practical proposition on the ultra high frequencies.

At a later date we hope to publish another article from the pen of G5LB on the subject of a power amplifier for use with this transmitter. In the meantime our thanks are extended to G5LB for his prompt reply to an appeal for an article on the subject. May we say here and now that we hope that there are other public-spirited experimenters who will now come forward and let us have the benefit of their attempts at this subject.

This article shows quite clearly that crystal control *is* a practical proposition on 56 mc. The apparatus required is not more costly than that necessary for work on lower frequencies, and the design does not offer any great difficulty. In view of these facts we almost feel inclined to suggest that no further articles on the subject of self-excited transmitters should be published in this section. Any such article will have to be very good indeed in the future.

Now that the lead has been given we want to see articles on the use of more powerful transmitters, and, what is more important still, on receivers which do not depend on the "Quenching" principle for their sensitivity. These are the two chief lines of experiment to be considered, but there are a number of others. For instance, anyone who can produce short articles on the design of chokes, size of coupling condensers, by-pass condensers, etc., and a host of other points will be sure of a welcome in this section.

G6PA.

An Interesting Viewpoint.

Professor E. V. Appleton, D.Sc., F.R.S., in a recent lecture on "Scientific Progress," stated that "the density of the ionosphere appears to follow the sunspot cycle of 11 years, and it will be of great interest to continue the measurements now in progress until the next sunspot maximum in 1939. The minimum of solar activity occurred about the latter half of 1933, and both magnetic and radio observations now show that activity is increasing again. It is expected, as a result, that the radio-engineer will find substantial differences in the wireless wave-lengths best suited to his purpose for long-distance communication."

I.E.E. MEETINGS.

NOV. 22.—Discussion on Super-het receivers.

DEC. 20.—Annual General Meeting.

AN EXPERIMENTAL CRYSTAL-CONTROLLED TRANSMITTER FOR 56 MC.

By L. G. Blundell (G5LB).

Foreword.

It has been realised for some time that methods in use for 56 mc. transmission leave much to be desired when compared with the progress that has been made on the lower frequency bands.

In the author's opinion, this state of affairs is largely due to the fact that the majority of workers on 56 mc. will not entertain the idea of using four or five valves consuming a total of, say, 30 watts, and at the same time presenting a host of little difficulties to be surmounted, when they can (on the face of things) do much better with a single or push-pull oscillator taking only a few watts.

However, whatever the reason may be for crystal control being so badly neglected or overlooked in relation to ultra high frequency work, it is hoped that this article will persuade those with the slightest respect for C.C. to give it another trial and spend a little more time over the various difficulties peculiar to this class of work.

arrive at any definite conclusions regarding the rules the finished job should conform to. As will be seen from the circuit diagram, the arrangement follows lower frequency practice throughout (with the exception of one or two component values) and the C.O. circuit is well known by now.

With a 7 mc. crystal the second harmonic output of the C.O. is straightway utilised for driving the first doubling stage, and although normal capacity coupling is used from stage to stage no trouble is experienced in getting enough output from the second F.D. on 56 mc. to allow of aerial coupling (*via* a loosely coupled tuned circuit) and the radiation of a fairly strong signal up to about six miles. Recent tests have been made from G5LB under these conditions pending the addition of a push-pull neutralised P.A., and reports from users of both simple super-regenerative and superhet receivers are most encouraging.

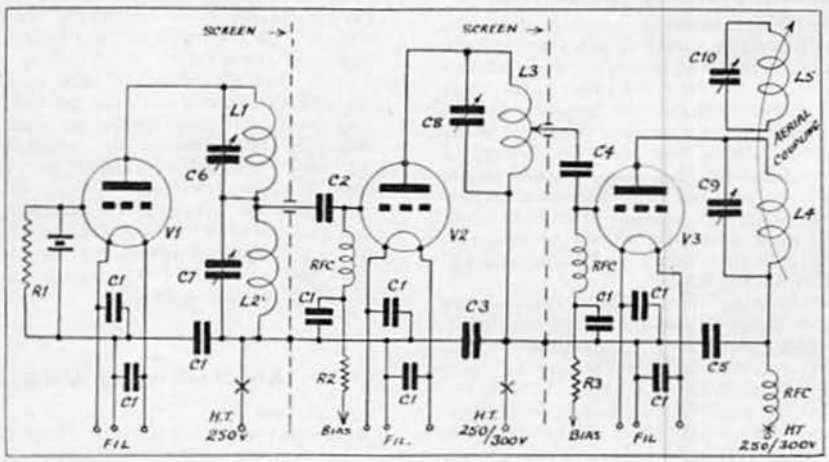


Fig. 1.

Circuit Diagram of 56 mc. Crystal Controlled Transmitter.

L1 14 turns, 1-in. diam.
L2 16 ,, ,,
L3 9 ,, ,,
L4, 5 4 ,, ,,
C1, .002 μF.
C2, .0003 μF.
C3, .0002 μF.
C4, .0001 μF.
C5, .00015 μF.
C6, .0002 μF. max.
C7, 50 μμF max.
C8, 9, 10, 25 μμF. max.
R1, 100,000 ohms.
R2, 3, 10,000 ohms.
V1, PM256 Mullard.
V2, 3, PV625X Ediswan.

Meter jacks at points marked X.

General.

The author makes no apology for the extremely experimental and unfinished nature of the gear about to be described, for it is most apparent from the amount of experimental work done at G5LB that the number of lines of investigation—particularly in relation to component values and valves—are too numerous to mention, and clearly indicate that co-operative work is required in order to

Construction.

A few details of layout, etc., will help to emphasise the simplicity of the work entailed and make readers realise that there is nothing freakish in the results obtained. "Bread-board" style is chosen as being the only one suitable for continuous experimental work in relation to components and component values.

From the rough layout sketch it will be seen that

the C.O. controls are mounted towards one side and front edge of the baseboard. This, apart from saving space, will bring the axes of the two coils at right angles to each other. (Details of coils and mounting follow.) Other stages are arranged as is convenient for wiring, component spacing, etc. Allowance should be made for a screen between each stage; these, while not essential, are definitely helpful in getting the utmost out of each stage.

In the transmitter at G5LB each stage is provided with separate filament terminals situated on the rear edge of the baseboard. This, while allowing for different values of filament voltage to each stage, also reduces the number of wires taken through the screens. Of course, where each stage is taking the same filament supply, each set of terminals can be wired up in parallel, and no difficulty is experienced with the screens or other wiring.

The coils are all single-space wound with 14 gauge bare copper wire. Winding presents no difficulty —simply wind on a wooden former and gently stretch for required spacing. The number of turns and diameter for each will be found under the circuit diagram. Each coil is mounted straight on to the appropriate condenser terminals, and under normal circumstances will be found quite rigid and free from vibration. All variable condensers are mounted on stand-off insulators, although there is no reason why rigid pieces of bakelite, mounted bracket fashion, should not be used. Small components like fixed condensers, chokes, resistors, etc., should be self-supporting. Good quality valveholders are essential, and meter jacks for each stage are, of course, necessary. All fixed condensers should be mica type. The variable condensers, by the way, may be BCL type suitably rebuilt and spaced to give the desired capacity.

Coupling and By-pass Capacities.

In the author's opinion, the values chosen for grid coupling and H.T. by-pass condensers should be the first items to receive experimental treatment in the way of increasing or decreasing capacity. As a result of tests at G5LB it is apparent that these capacities provide a very marked effect on the efficiency of the doubling stages. To cite an instance, when the .00015 μF. condenser across the 56 mc. doubler plate supply was increased to .0003 μF. the output dropped by about 50 per cent.! The values shown under the circuit diagram are as used in the author's transmitter at the time of writing, but in face of past tests and in accordance with the instance quoted above, these are, it seems, only approximate.

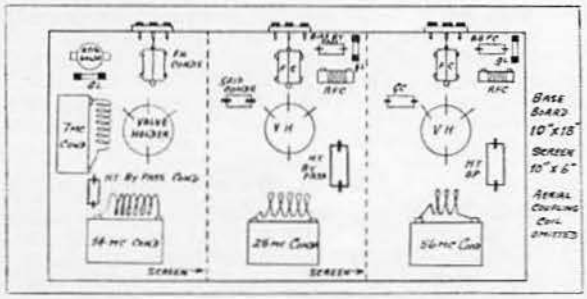


Fig. 2.
Layout of components for 56 mc. crystal-controlled transmitter.

Filament and bias by-pass condensers, while not apparently affecting performance to a great extent, should receive some treatment of a similar nature. Finally, all fixed capacities should be of minimum size physically, and of reputable make.

Valves and Power Supply.

The valves at present in use for this transmitter are all triodes with directly heated filaments—namely, *Mullard* PM256 and *Ediswan* PV625X's—although any moderately efficient valves of the same class have been found to give good results as alternatives. In the C.O. stage preference is given to a PM256 as giving slightly more output on the second harmonic with the 100,000 ohm resistor across the crystal and 250 volts H.T. Two PV625X's are used in the doubling stages, both being biassed back to "cut-off" point, with an anode voltage of 250-300 each.

The plate supply of the last stage is *via* a dropping resistance (shunted by a 2 μF. condenser) and the modulation choke. In this case the modulator valve is an LS5, and capable of modulating two PV625X's up to about 80 per cent., but modulation arrangements must be left to individual requirements as controlled by the valves employed. It is recommended that power for the final doubler and modulator should be taken from a separate source.

Tuning and Adjustments.

If the valves and component values as shown under the circuit diagram are adhered to, no trouble should be experienced in getting all stages working correctly on first test.

Starting with the C.O., first tune the 7 mc. tank coil for resonance and minimum plate current. Then slowly turn the 14 mc. tank condenser until a further small dip is noticed on the meter. Next, the 7 mc. tank condenser should be moved off resonance to a slightly higher frequency than the crystal, which should result in a rise of about 15 ma. in plate current. Retuning the 14 mc. circuit will result in a much more pronounced dip when picking up the 14 mc. harmonic, and it should be duly noted here that this stage should be tuned for greatest output on 14 mc. and not for minimum plate current, at the same time keeping the valve well within the rated dissipation figure.

The F.D. stages are tuned for minimum plate current in the usual way, and it is here that the tapping on the 28 mc. plate coil will be found useful in getting maximum drive to the 56 mc. stage—one or two turns from the plate end will be found best.

Approximate Input Readings.

If—as under the last heading—the original valves and component values have been adhered to, the following input figures for each stage may be of some assistance in judging whether the transmitter as a whole is giving of its best.

Stage.	H.T.	Bias.	Off resonance.	On resonance.
CO *	250v.	—	25 m/a	15 m/a
1st. FD	250v.	–120v.	40 m/a	20 m/a
2nd FD**	300v.	–120v.	40 m/a	30 m/a

*This reading is of the second harmonic dip.

**Reading taken when working from modulator power supply.

Aerial Coupling Arrangements.

This is a point which is governed by local conditions, etc., but it is recommended that some trouble be taken over getting the optimum coupling point when using a separate tuned circuit. As the amount of R.F. available for radiation is comparatively small, it is very doubtful whether small lamps would be of any use as indicators of aerial current. The method employed at G5LB is simply to connect and disconnect the aerial lead while adjusting the 56 mc. tank and coupling coils, and so obtain a setting for the largest rise in plate current when the aerial is connected.

General Remarks.

In view of the constructional details given, together with clues of where to look for trouble if any difficulty in getting good doubling is experienced, the author hopes that this article will have been of sufficient interest to persuade those with a fair stock of spare components, valves, etc., to undertake the construction of an experimental transmitter for 56 mc. with crystal control. Over 50 per cent. of the gear used in the author's transmitter came out of the " spares " box, and therefore the need for additional outlay is very small; in fact it should be practically non-existent to the average amateur. The author would like to hear from those who do make an attempt at this transmitter, with particular regard to difficulties experienced and other points which may occur in connection with constructional and operating methods.

And in conclusion, may this article serve to consolidate the association of crystal control and ultra high frequency work!

A New British R.F. Pentode.

By G. McL. Wilford (G2WD).

The writer recently had the pleasure of testing a pair of the new R.F. pentodes produced by *The* 362 *Valve Co.*, Stoneham Road, E.5. This production is an earnest attempt to fulfil an urgent need amongst British amateurs for a valve which possesses all the characteristics of certain well-known American valves.

Tests were conducted using the transmitter described by the writer in the T. & R. Bulletin for May and June last; no circuit modifications were made, except that English 5-pin valve holders were substituted in the PA unit. A dummy antenna was rigged up for tests on 3.5, 7 and 14 mc. Using a plate voltage of 780 and with no bias on the suppressor grids, a power of 135 watts was obtained. Biassing the suppressors 70 volts positive the input rose to 154 watts and under this condition with the key closed for several minutes, no sign of plate discoloration was observed.

It was found throughout the tests that these new valves were exceptionally easy to drive, especially when link-coupling was employed. As a point of interest, the grid current from the frequency doubler valve, which, it will be remembered, was an American 53, was between 6 and 8 milliamps, whilst the screen current was around 40 milliamps.

Suppressor grid modulation tests were next conducted, and an input of 92-95 watts was recorded when the grid was biassed to 70 volts negative. Reports were then sought from stations working in the 7 mc. band, and confirmation was readily obtained that the quality and signal strength was superior to that reported earlier when the RK20's were in use. Using the latter valves under identical conditions, the input never exceeded 65 watts.

Summing up, one can say that the four main requirements for a British RF output pentode have been met. The valves are easy to drive, and with maximum plate and screen voltages applied, as given by the manufacturers, at least 100 watts of suppressor gird phone and 200 watts c.w. should be quite easily obtainable using a pair in push-pull. The valves do not require neutralising, and furthermore, they are being marketed at a most reasonable figure.

The 28 Megacycles Band in North America

By E. H. Conklin (W9FM.)

Conditions during August on 28 mc. might be considered seasonally normal for the month, and similar to those existing in early May. The band on many occasions was open for two-way U.S.A. work for short periods, although around the 9th to the 14th there were some four and six hour stretches when signals were of very good strength and many contacts were made. There was a noticeable decrease in the number of stations on the air even when conditions were " wide open."

Students of magnetic storms say that a storm is likely to be followed by another, 27 days later. This phenomenon is traced to the rotation period of the sun at latitudes in which the sun spots occur. Good conditions in August followed the best July days by about four weeks.

Regardless of two-way work in this country, some DX contacts occur. LU1EP has worked U.S.A. stations nearly every week-end since the end of May. On August 17, when several observers report hearing no W signals, LU1EP when working W9FM said that he had worked two Europeans that day and heard seven W's. He later advised that W4AJY, using automatic keying, was R9 all afternoon Sunday, August 18.

It is to be expected that communication involving long skip can occur on days that are useless for QSO's in this country. It is not surprising, therefore, that DX can be heard when stations 500-2,000 miles away are unheard. Of more interest is the fact that LU1EP and other southern hemisphere stations have been working us during their *winter*. This indicates that those who stick to 28 mc. through the coming winter may do considerable DX work.

* * *

Good Work.

G5CM tells us that on September 6 he was qso W3CGU and W1BUX on 14 mc., using an input of 3.84 watts (240 volts, 16 mas.). His signals were reported QSA 5R6 by W3CGU and QSA 4R4 by W1BUX. He points out that contact was actually established with the above power. He uses an LP2 valve.

A SIMPLE CRYSTAL-CONTROLLED TRANSMITTER

By W. P. Cargill (G5LR).

At various times during the past five years the writer has used for 7 mc. work a low power transmitter consisting of two triodes in push-pull, with a crystal of fundamental frequency connected between the two grids. For a given input, it has been found that the output is almost identical with that from a TPTG set, while the aerial may be more closely coupled to the CC set without affecting stability. No difficulty has been experienced with the keying of such a set.

Recently a transmitter was built using two type '47 pentodes and a 14 mc. crystal. This has proved satisfactory, and both crystals will control up to 25 watts. The cost of the 14 mc. crystal is no more than that of a frequency doubling stage. Details of the '47 pentode have appeared in previous issues of the Bulletin (e.g., August, 1933, p. 46).

Such a set has certain advantages—it is compact, has only one tuning control, is ready for use at once without neutralising or other adjustments, and to change from one band to another takes only a few seconds. It will work on the lower frequency bands with crystals of suitable frequency.

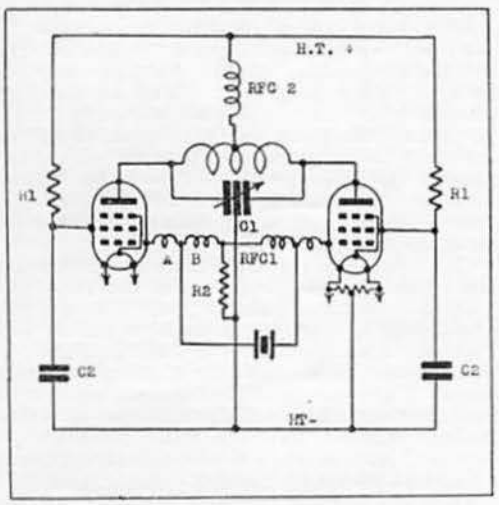


Fig. 1.
C1, .0002 μF. series gap condenser.
C2, .005 μF. mica condenser.
R1, 30,000 ohm 2 watt resistance.
R2, 10,000 ohm ditto
RFC1, No. 38 DSC on ¼" dowel (A-10 turns B-250 turns).
RFC2, Eddystone short wave choke.

The transmitter and power supply are housed in a portable case, size 20 ins. by 16 ins. by 7 ins., which was obtained from a London store as an ex-R.A.F. transmitting case. The layout is simple and almost identical with the circuit diagram. The centre-tapped anode coil is mounted on the outside of the case, leads passing from the stand-off insulators to the series-gap condenser. The two valves are mounted base upwards beneath this condenser, thus making possible the use of shorter plate connections. Grid H.F. chokes of 260 turns each are tapped 10 turns from the grid to make connection to the crystal holder, which is fixed on the floor of the case. Plug-in holders are used.

For the anode coil 12 turns are used on 7 mc. and eight turns on 14 mc., but the smaller coil functions quite well on both bands, with a decrease of about 5 per cent. in the output on 7 mc. as compared with that when using the larger coil. Using one coil only, the frequency may be quickly changed by plugging in the other crystal and altering one dial.

As the H.T. transformer is separate from that supplying the filaments of the DW3 rectifier and oscillators, primary keying is used, thus avoiding the application of high voltage to the pentodes when the key is up. Using 4 μF smoothing condensers the note is clear cut. The power supply gives either 250 or 350 volts H.T., two S·P.D.T. switches connecting high or low voltage tappings of the H.T. transformer secondary to the rectifier plates.

With an input of 25 watts the frequency on 7 mc. remains steady, but on 14 mc., if the key is kept down, there is a slight drift, insufficient to interfere with normal working. The note is usually reported as T9, occasionally T8. There is no spacer emitted.

It has been found advisable to reduce slightly the capacity of the anode tuning condenser after maximum aerial current has been obtained. A decrease of 3 per cent. aerial current is sufficient; or if a directly-tapped aerial is used, the condenser capacity should be reduced slightly below that value which gives minimum anode current, an increase of 2-3 mA. sufficing. If this is done the transmitter will be stable. On the other hand, an increase in the condenser capacity causes instability and dots may be missed.

This set would function well as a portable, as little adjustment is necessary to bring it into action. The filaments may be connected in series and a 6-volt battery used with rheostat to limit the current to 1.75 amperes.

STRAYS

VS6AQ advises us *via* G2PL that he is the first VS6 to contact Portuguese India. The station worked was CR8AA, J. Pimenta, Vasco da Gama, Portuguese India.

* * *

In accordance with the decisions recently made regarding Empire prefixes, Mr. Phil Moores has now changed his call from VQ8A to ZD8A. Mr. Moores is located at Eastern Telegraph Co., Ltd., Ascension Island.

* * *

2AAM has just returned from a short holiday in Denmark and desires to express his thanks to the many amateurs of that country who helped to make his stay so interesting. Especially he mentions OZ1I, OZ1K and OZ2H.

* * *

Mr. E. Mitchell, 2AJZ, is now G5MV, and asks for reports on his 7,088 kc. signals. His station is located at 40, North Marine Road, Scarborough.

SOLILOQUIES FROM THE SHACK.

By Uncle Tom.

(Our tame turtle-dove resumes his wonted orgy of cooing and/or billing—chiefly the latter, if we know anything about it.)

TEN, little nigger-boys, TEN! Once there was only one; but then he worked somebody, and then there were two. And so it has gone on, in the reverse direction to the touching ballad that we all know so well, until now that there is some real DX down there it's a question of "And then there were about 354."

'S a funny thing, this DX itch, as I've said before. I've been down on "ten" all these years because it's been such a nice quiet band, in keeping with my modest disposition. Now the DX has arrived, I've made a quick getaway to avoid being covered with showers of fruit from some of these Goyder-Lock-on-20-and-hope-for-the-best-on-10 fellows.

In all seriousness, before I put on the strawberry-coloured pantaloons and become my fatuous self once more, let me congratulate the pioneers of DX on 10 metres this year. It's taken a whale of a lot of patience to sit down there waiting for something to happen—but now it's happened. Stout work, you chaps! Up, School, and likewise Lapsus Fungi, and all that.

As for the rest of radio—what can we say about that? Suppose we had to make a grand survey of amateur radio in 1935, as compared with ditto in 1925. What should we find, in the long run? To my bleary eyes, it would be a whole series of paradoxes, like this: Transmitters much more efficient, BUT much higher inputs generally in use. Receivers much more efficient, BUT lots of people using ready-made ones.

Two, or possibly three more wave-bands in use, but still terrific crowding on one of them—strangely enough the one where all the lids congregate. (No, 7 mc. fans, don't bother to bow.)

As for *operating*—gentlemen, wait while I remove my hat and find a black tie. Thank you. I deliver it as my solemn opinion that the general standard of intelligence in operating is lower in 1935 than it was in 1925.

True, people know how to send dots and dashes so that one can distinguish one from the other with perfect clarity—but intelligence! Where is it? As a very elderly nephew of mine remarks: "Just fancy, in 1935, hearing a G station send test for three minutes before signing. . . . And why should the average G operator spend *minutes* saying How-do and Good-bye. . . . And Gosh, what are we coming to when QSA5 R7 means 'send double,' and QSQ means 'send double slowly'?"

Years ago I had a slam at this double-sending business. Why it should ever have started I don't know. Slow singles are more intelligent *and* more intelligible than sloppy doubles. Next time you speak to a neighbour two gardens away, with QRM in between from a lawn-mower, just you try saying "Good good evening evening Mr. Mr. Simpkins Simpkins. Lovely lovely weather weather isn't isn't it it??"

Of course, the bug key has been partly responsible for a *growth* in the practice of sending doubles. For one thing, the average ham's sending on the bug is perfectly foul; and, for another, it seems to be the opinion that it's easier to send fast than slowly on the things.

(Now don't start saying I'm jealous, because I *have* got a bug-key and I *always* use it—but not for sending fast doubles on.)

Another thing about this operating business—formula-QSO's again. I seem to have noticed a growth in the habit of sending "QRU" on the first time back. If a man replies to one of my test-calls and sends "QRU" as soon as he's got his report, that's *his* business. He probably suffers from the misguided idea that he was doing me a favour by replying to me.

But if a man puts out a "Test" or "CQ," and I spend three minutes of valuable time in replying to him, getting his O.K., giving him a report, and *then* he has nothing to say but "QRU," I feel like asking him what the d——l he was calling CQ for, anyway. (Of course I know, really just another little piece of cardboard with pretty-pretty drawings on.)

Rag-chewing seems to be on the decline except on the 56 mc. and 3.5 mc. bands. On 56, of course, you can listen to a couple of stations working duplex and wonder whether anybody else is *ever* going to get a look in. Ragchewing *in excelsis*!

3.5 mc. and 1.7 mc. appear to be the most intelligently-handled bands, although there are plenty of funny things on the latter nowadays. I have been listening on 28 mc. lately, and notice that most of the QSO's down there are of the formula variety. The only difference from the old mixture seems to be "*Sure* will QSL," with the "sure" underlined, so to speak. And perhaps a few "Vy FB's" instead of plain "FB's"—otherwise it's much the same old tack.

Oh, by the way—the month's funny story. Have you heard of the ham who thought that a "heptode frequency-changer" was a gadget that would help him get his transmitter shifted from 7 mc. to 14 mc. quickly? 'S perfectly true!

I suppose he thought the "intermediate frequency" was the broadcast band in between the two amateur bands? But, of course, all this is feeble compared with the radio periodical for October, which showed a circuit diagram containing a grid-leak labelled "2 mfds."

There's a shortage of radio howlers, as a rule. Any reader finding one is asked to seal it firmly within an envelope (preferably with a stamp on) and to forward it to "Uncle Tom," c/o R.S.G.B. The Editor's decision will be futile. No prizes offered.

QRP!

We could not repress a smile when we read a letter in a recent issue of our contemporary *R9*. The writer, having come to the conclusion that what his country needs most is a nation-wide QRP DX Club, proceeds to outline the requirements of membership of "The 210 DX Club." Their first rule reads:—

> "The applicant must use *not over* 150 *watts* to the final stage."

Comment would be superfluous, but it is nice to know that in this country QRP still means QRP!

THE 1936 B.E.R.U. CONTESTS.

THE Awards Committee have now had several years' experience of judging the B.E.R.U. Contests, and some opportunity to appreciate the difficulty of devising a scoring method which is equitable to all entrants. It has been their earnest desire to produce a set of rules which give, as far as it is possible, a reasonable chance to all competitors, and to be able to use these rules with but slight modification in each succeeding Contest.

The Committee have realised that with a scoring system based on the principle of allowing one point per thousand miles worked, it is practically a foregone conclusion that Great Britain, Australia, or New Zealand must provide the winner, by reason of the geographical position of these countries, and the large number of stations operating in each. On the other hand, a scheme such as that which was employed in 1935, gives no credit for working DX; farthermore, it places the isolated co npetitor at a considerable advantage, especialiy when a multiplier is also used. For example, a station, say, in Gibraltar, providing the operator had contacted a reasonable number of Zones, could run his score to a prodigious total by working only British stations.

The Awards Committee have given these matters a great deal of thought, and are deeply indebted to the many members who have expressed their views and tendered valuable advice.

It is believed that at last a real step forward has been made, and the Awards Committee now take pleasure in explaining the scoring method to be used for 1936. It is their hope that the system to be adopted will prove fair for all, without giving an advantage to any particular section of the Empire.

New Scoring Method.

Under the new rules a particular British Empire station may be worked once on each amateur band, *but the Zone in which the station is located, counts only once, e.g.*, G2MB works VK7AA on 3.5, 7 and 14 mc.; *this would count as three separate contacts but only one Zone.*

The first contact with each Zone counts ten points, the second nine points, the third eight points, and so on to the tenth contact which counts one point. Every contact with that Zone thereafter counts one point on whatever frequency band is used. In the example quoted above the 3.5 mc. contact would score ten points, the 7 mc. contact nine points, and the 14 mc. contact eight points, whilst the next contact with the VK7 Zone would count seven points, and so on. It will be seen, therefore, that *each new Zone worked counts ten points and not until ten stations have been worked in that Zone does the score become one point per contact for that particular Zone.* This system gives a definite incentive to work DX, and also as many Zones as possible. It is an attempt to strike a balance between the inequalities of the scoring methods used in previous years.

The scheme is simple and requires no charts and no multipliers.

A specimen log is reproduced together with an analysis of the number of stations and Zones worked thereon. It is a simple matter at the end of the Contest to run down the log sheet one Zone at a time, and enter the points per contact as laid down in the rules. The analysis can then be filled in, thus providing a cross-check at a glance.

SPECIMEN ENTRY.
(ILLUSTRATING SCORING METHOD ONLY.)

CONTACT NO.	STATION WORKED	G.M.T.	BAND USED. FREQUENCY.	REPORTS.	POINTS SCORED.
1	VK3MR	1700	7		10
2	VK2GK	1714	7		9
3	SU1SG	1723	7		10
4	VP4BB	1742	7		10
5	G2MI	1800	7		10
6	G6CL	1807	7		9
7	G5FZ	1812	7		8
8	G6MY	1822	3.5		7
9	VK2NR	1834	7		8
10	G5YH	1842	7		6
11	G2VS	1854	7		5
12	VE3BW	1859	14		10
13	G2FB	1907	14		4
14	G6CJ	1920	14		3
15	VE4JT	1923	14		10
16	VE3PP	1933	14		9
17	G6YK	1943	1.7		2
18	G5FV	1955	3.5		1
19	G2PL	1959	7		1
20	VK3BJ	2010	14		7
21	G6NU	2020	14		1

Total ... ... 140 points.

ANALYSIS.

Prefix Zones.	Contacts.	Points.
Australia, VK2, 3, 7	4	34
British Guiana, Trinidad and Tobago	1	10
British Isles	12	57
Canada, VE3	2	19
Canada, VE4	1	10
Egypt and Sudan	1	10
Contacts and Points	21	140

Additional Prefix Zones.

In order to stimulate interest, the Awards Committee have decided to increase the number of Prefix Zones from 30 to 38, It will be noted that there are now three Australian Zones, four Canadian Zones, two British East African Zones, two New Zealand Zones, and two South African Zones. Other minor alterations have also been made to the 1935 Prefix Zone list.

Summary.

Here then is the scheme, and summarising its advantages we find that it will :

(1) Give a greater incentive to work DX.

(2) Encourage the working of as many Prefix Zones as possible.

(3) Dispense with the rather unfair multiplier.

(4) As far as can be seen place no one particular Zone at an advantage over any other.

(5) Be simple and straightforward to follow, providing its own cross-check.

(6) Involve no calculations other than simple addition, thus avoiding constant reference to a Zone Chart.

The Awards Committee believe that this is a definite step forward towards making a fair compromise in an admittedly difficult set of circumstances. It is hoped that the scheme will be given a fair trial and that it will be possible to adopt it without major alterations for all subsequent B.E.R.U. Contests.

A. O. M.

Empire Calls Heard.

R. J. Lee (BRS1173), Heathfield, Sussex, during VK/ZL Contest :—

14 mc. : vk2as, 2bq, 2bw, 2da, 2eo, 2fm, 2hc, 2hp, 2kx, 2lz, 2op, 2oj, 2sq, 2tf, 2th, 2xm, 2xu, 2yl, 2zw, 3cp, 3dk, 3dm, 3dp, 3eg, 3hk, 3ht, 3hz, 3ja, 3jk, 3kx, 3mr, 3wc, 3wp, 3xq, 4ap, 4bb, 4gk, 5fm, 5hw, 5kl, 5lb, 5ly, 5md, 5wj, 5wn, 5wr, 6fo, 6kl, 6lj, 6mn, 7jb, 7kv, 7rc, zl1dv, 1fe, 1gx, 1hy, 2bz, 2ci, 2gn, 2ja, 2ki, 2kk, 2oa, 2of, 2qm, 3ab, 3aj, 3bj, 3bq, 3gn, 3ja, 4bq, 4ck, 4fo, 4gw, zs1bi.

W7BPJ, Oregon. March-August, 1935 :—

14 mc. : g2bk, 2by, 2in, 2ki, 2nm, 2ol, 2pl, 2tm, 5ab, 5bd, 5cw, 5dp, 5gq, 5ku, 5ml, 5mp, 5nb, 5oj, 5pl, 5qa, 5qu, 5qy, 5rb, 5us, 5vb, 5vl, 5yh, 5yu, 6bj, 6bs, 6cl, 6cj, 6dl, 6fn, 6lk, 6nj, 6ot, 6oy, 6qx, 6rb, 6uf, 6us, 6wr, 6wy, 6xl, 6yl, 6yu, 6yw, 6zs, ei5f, ei8b, ei8g, vs1aj, vs2ag, vs6aq.

BRS1674, London North. August 29 *to September* 18, 1935 :—

7 mc. : zl2bv, 2ci, 2gm, 2gs, 2ja, 2qt, 3ab, 3ay, 3bl, 3fp, 4ap, 4bq, 4fo, 4gm, 4mm, ve1ea.

14 mc. : ve1dm, 1dz, 1ep, 1ge, 1gi, 1hk, 2dg, 2dm, 2dv, 2ee, 2et, 2fm, 2gq, 3ro, su1fs, 1ro, 1tm, 1wm, zs4m, zt6m, zt6w, zu6b, 6p, ze1jb, 1jn, 1js, vk3nw, 4bb, vs1aj, 6aq, vp2at, 5ac, 5'pz, vq4crh, 4kta, zd2c.

By E. R. Westlake (2ARP), Shrewsbury. From September 1 *to* 29, 1935 :—

14 mc. : su1ro, 5nk, ve1aa, 1aq, 1dm, 1ea, 1ed, 1ep, 1ga, 1hg, 1ih, 2ah, 2bm, 2ca, 2cf, 2dg, 2et, 2hm, 2ov, 2uy, 2wb, 3ax, 4du, vk2eo, 2er, 2hf, 2hn, 2jg, 2kx, 2la, 2ob, 2oj, 2tg, 3bq, 3dp, 3eg, 3mr, 3nw, 3ok, 3pg, 3rj, 3wc, 4ap, 5jc, 5ly, 5wk, 6jf, 7kv, vo1l, 1e, 3r, vp2bx, 5pz, 6yb, 9o, 1jr, vs6ua, zb1e, 1h, 1s, ze1jm, zl2ch, 2ds, 2of,, zl3ah, 3bo, 3lk, 3rp, 4ck, 4fo, 4gm, zs6a.

By E. W. Trebilcock (BERS195), at Moonta, South Australia. From August 1 *to August* 11, 1935 :—

7 mc. : ei9d (5.6), g2mi (5.5), 2nn (5.4), 2qu (3.3), 5jm (5.5), 5xt (5.4), 6fs (4.3), 6lx (4.4), 6qz (4.3), 6rq (5.4), 6ui (4.4), 6us (5.4), 6vp (5.5), ve5av (5.5), 5hs (5.6), 5nt (5.5), vq2wab (5.5), 4crh (5.4), vs1aj (5.7), 6ao (4.5), 6aq (5.6), 6ax (4.5), vu2by (5.5), 2cq (5.6).

At Tennant Creek, North Australia. From August 24 *to September* 1, 1935 :—

7 mc. : g6hw (3.3), su5nk (5.4).

14 mc. : g6dl (5.5), 6wy (4.4), ve3qd (5.5), 4fi (4.4), 5bi (5.6), 5ha (4.4), 5kc (5.3), vr4ba (5.8), vs1aj (3.4), 3ac (4.3), vp5pz (5.6), vu2by (4.4), zl2bz (5.6), 2ja (5.5), zb1e (5.5), 1h (5.6).

By J. R. Cragg (BERS273), P.O. Box 391, *Hong Kong, China. From August* 17 *to September* 11, 1935 :—

7 mc. : vk2ci (5.5), 2dd (4.5), 2ed (5.5), 2ej (5.6), 2fk (5.6), 2fy (5.5), 2rg (5.5), 2ss (3.4), 2tf (3.4), 2tg (5.5), 2zc (5.7), 2zr (5.5), 2zp (5.7), 3eg (5.6), 3ja (3.4), 3oz (4.5), 3wp (5.6), 4es (4.5), 4le (4.6), 5 md 5.7), 5mk (5.7), 5yk (5.5), 6ko (5.5).

14 mc. : g2ic (4.4), 2la (3.4), 2td (4.4), 5cw (4.4), 5gq (5.7), 5kg (4.5), 6bq (3.4), 6cj (5.5), 6dl (4.5), 6nb (3.3), 6nj (4.4), 6us (4.5), 6 vp (3.4), 6xl (3.3), 6zs (3.3), zb1h (4.4), zs4u (3.3), zs6t (4.5), ze1ju (4.4), zu6b (5.7), vq4kta (3.3), zu2au (4.5), vu2lj (5.7), vs1aj (5.7), vs2ag (5.7), vs3ac (4.4), vk4el (5/2, 6/2), vk5hw (3.5/3).

E. C. May (BERS308), Royal Signals, Hong Kong. From September 7 *to* 10, 1935 :—

7 mc. : zl2ci (4.7), vk5gk (3.5).

14 mc. : g2cs (3.3), 2tm (4.5), 5gp (3.3), 5gq (5.4), 5kg (3.4), 5wy (3.4), 6bq (4.5), 6cj (5.7), 6gd (3.4), 6kp (5.5), 6vp (5.8), 6yl (5.6), 6ys (2.2), 6yu (5.8), 6zg (3.4), vk3eg (4.4), ze1jm (4.4).

Valve Review.

OSRAM DET8.

The *Osram* DET8 is a directly heated transmitting pentode of 25 watts anode dissipation, having the suppressor grid brought out to a separate pin. The valve is fitted with a 7-pin base.

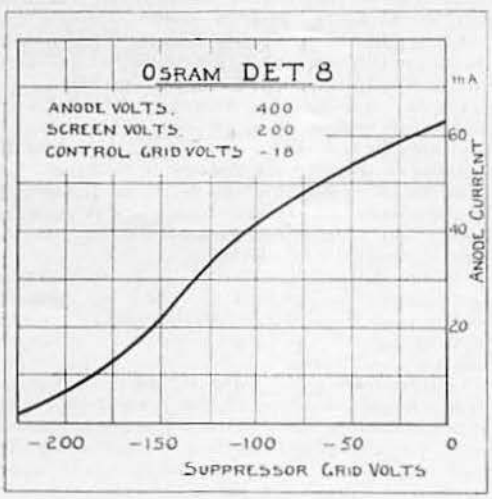
Characteristics.

The valve has characteristics similar to those of the *Osram* PT25, but is hard pumped. Two samples were submitted for test, and the results are given below :—

	Makers.	*Sample No. 1.*	*Sample No. 2.*
Filament volts	4.0	4.0	4.0
,, current (amps.)	2.0	1.95	2.05
Anode volts (max.) ...	400	400	400
Screen volts (max.) ...	200	200	200
Anode current, m.a.			
(max.)	80	—	—
(normal)	62.5	62.5	62.5
Grid volts for 62.5 m.a.	—22	—18 *	—19 *
Mutual conductance ...	4.0	3.9	4.0
Amplification factor ...	100	not measured	
Impedance (ohms) ...	25,000	,,	
Screen current (m.a.) ...	10	11.0	10.25
,, dissipation (max.) watts	2.6	—	—

*Taken with negative end of filament earthed.

The valves were found to be quite hard, No. 1 having 0.5 microamps of gas and No. 2, 2.0 microamps of gas after having been run at maximum dissipation for 15 minutes.



The characteristic curves were checked and found to be in general agreement with those of the PT25 and no useful purpose would be served by publishing them here, but the characteristics of the suppressor grid were taken. Both samples were found to have a similar curve, which is shown herewith. As can be seen from the curve, satisfactory suppressor grid modulation would be obtained with about —110 volts bias requiring an audio-input voltage of about 80 volts R.M.S. under conditions of maximum power output.

In view of the general characteristics, the valves would seem to be entirely suitable as Tri-tet oscillators, and in consequence they were tested under these conditions. The general method of test was as described in the BULLETIN for May, 1935, page 428, for a comparative test of another British pentode, compared against the *Raytheon* 59. The anode voltage was maintained at 400 volts and the screen voltage at 200 volts; the circuit was similar, apart from the fact that the cathode coil was wound with twin wire, due to the DET8 valves having a directly heated filament, and in consequence the results below may be compared with those published in the May BULLETIN, and afford a comparison between the DET8 and the *Raytheon* 59.

Using a 1.7 mc. crystal and the anode circuit tuned to 3.5 mc., the currents were as follows :—

Anode current	62.5 m.a.
Screen ,, ...	10 m.a.
Grid current	6 m.a.

The results below show the R.F. voltage across the anode tank and the power output into various load impedances at fundamental and harmonic frequencies : No. 1 sample was used for the test, but a check showed that the output of each was almost identical :—

Band.	*Load Impedance.*	*Volts.*	*Watts.*
1.7 mc. ... Fundamental	Open circuit ...	430	—
	30,000 ohms ...	383	4.85
	15,000 ,, ...	345	7.9
	10,000 ,, ...	335	11.2
	7,500 ,, ...	316	13.3
3.5 mc. ...	Open circuit ...	264	—
	30,000 ohms ...	242	1.95
	15,000 ,, ...	230	3.5
	10,000 ,, ...	220	4.85
	7,500 ,, ...	206	5.7
5.1 mc. ...	Open circuit ...	144	—
	30,000 ohms ...	125	0.52
	15,000 ,, ...	106	0.75
	10,000 ,, ...	98	0.97
	7,500 ,, ...	96	1.23
7.0 mc. ...	Open circuit ...	110	—
	30,000 ohms ...	100	0.33
	15,000 ,, ...	96	0.62
	10,000 ,, ...	91	0.83
	7,500 ,, ...	83	0.99

The above figures show that the valves are very suitable as tri-tet oscillators and give an adequate output. But it is not advised that they be run at full dissipation when used as crystal oscillators, as the grid current of 6 m.a. indicates an R.F. voltage of about 150 volts across the crystal, which is excessive, unless a power type crystal or one using an adequate air gap is employed. The valves would also behave satisfactorily as power doublers, and the writer hopes to be able to publish further information in this connection shortly.

D. N. C.

BOOK REVIEW.

MODERN RADIO COMMUNICATION. Vol. 2. By J. H. Reyner, B.Sc. (Hons.), A.C.G.I., D.I.C., A.M.I.E.E., M.Inst.R.E. 165 pages and 112 illustrations. Published by Sir Isaac Pitman & Sons, Ltd. Price 7s. 6d. net.

The first volume of this work is already widely known and appreciated. The present volume is intended for the more advanced student, especially one preparing for the Final Examination in Radio Communication of the City and Guilds of London Institute.

Speaking generally, the subjects of Vol. 1 are treated in more detail and carried further in Vol. 2.. There are additional subjects such as filters, attenuators, short-waves and directional aerials, radio frequency measurements, cathode ray tubes, time bases, etc. The only suggestion which might be made with regard to the scope of the work is that direction-finding might have received further treatment in this volume.

Throughout the book the explanations are refreshing in their clearness, particularly in the cases of filter circuits and feeders. In the latter case the questions of partial and total reflection, and the proper termination, deserve a special word of praise for being almost brilliantly simple in treatment. At the same time the explanation is sound and thorough.

The book is almost as non-mathematical as Vol. 1, but the subjects demand at least a simple mathematical knowledge; the average student will have more than sufficient to benefit by the proofs and follow the work easily.

As an amateur I was interested in three references in this book: in the introduction to the section on short waves the author mentions the early work of amateurs, and in particular the pioneer work of Goyder and Bell. And in the ultra-short wave section there are two references to the published work of Megaw.

The author supplies pertinent references where the student may require further detailed treatment, and at the end of suitable chapters there are specimen questions.

A slip occurs on page 22, where the current distribution in an aerial (Fig. 16) is described as the voltage distribution.

Perhaps the suitability of this book to the examinee has been stressed too much; it is clearly a book which, with Vol. 1, provides an excellent groundwork in the fundamentals of the whole subject and keeps the practice well in view. It should find a place on the book shelves of amateurs . . . after being read.

T. P. A.

Home Representation

FOR some years past Home Representation has centred around our District and County Representatives, the former being appointed annually by Council and the latter elected by the membership.

In many cases C.R.s have been unable, owing to the geographical size of their counties, to keep in close touch with the various local groups within their county, and as a result it has been found necessary to appoint sub-C.R.s. On frequent occasions the members have failed to nominate C.R.s and consequently Council have been compelled to make appointments.

Bearing these facts in mind Council have decided, in view of the large increase in home membership, to inaugurate a more localised form of representation within the British Isles.

As from January 1 next, groups of members in each town will have the right to nominate one of their number to serve for the ensuing year as a Town Representative. Towns may appoint a representative providing not less than six fully paid up Corporate members are resident in the town or within ten miles of its boundaries.

Town Representatives will be responsible to their D.R. for the collection of reports for the T. & R. BULLETIN. They will also be responsible for organising local meetings and for making such arrangements as they consider are necessary in order to create and stimulate interest in Society work within their area.

Nominations for Town Representatives must in all cases be forwarded to the Secretary on the prescribed form which appears in this issue. In the event of more than one person being nominated from a specific town, a ballot will take place. (A voting form for this purpose will, if necessary, be published in the December issue of this Journal.)

As from January 1 next all District Representatives will be empowered to appoint a District member to act as District Scribe.

All reports from Town Representatives must reach the D.R. (or the scribe, if one is appointed) not later than the 25th day in each month.

For the year 1936 the Districts of England and Wales will remain as at present unless a wish is expressed by any D.R. that a modification of the boundaries forming his district is desirable.

In regard to Scotland and Northern Ireland, the arrangements at present in force will continue, except that Town Representatives may, if considered desirable, be elected.

In the case of the four London Districts the arrangements at present in force will continue, except that Town Representatives may be elected in those parts of the Districts which lie outside the London Postal area.

Council reserve the right to appoint additional Town Representatives as the need arises. Such appointments will be based on recommendations from the D.R.s and the appointments will hold good only until such time as the next annual election of T.R.s takes place.

For the benefit of newer members we would reiterate that D.R.s are responsible to Council for the forwarding of District Notes; for commenting upon high power or other licence applications, and for organising District meetings or Provincial meetings, if the latter are arranged to take place in the District.

D:R.s are not responsible for organising local activities, but they are expected to keep the Council advised on all matters affecting policy which may be brought to their attention.

Nomination Form in page 204

NEWS AND VIEWS FROM 53.

I.E.E. Meetings.

London members are reminded that Mr. G. G. Samson, ex-ZL4AI, will open a discussion on the subject of "Amateur Band Super-heterodyne Receivers" on the evening of November 22. Tea will be served from 5.30 p.m., and the discussion will commence at 6.15 p.m.

The Annual General Meeting will take place at the same venue on the evening of December 20, when Mr. F. Addey, B.Sc., M.I.E.E., Assistant Inspector of Wireless Telegraphy, will lecture on "British Wireless Services."

Contests, 1935-36.

The dates of forthcoming local contests are as follows :—

1935.—November 23-24, 3.5 mc. Transmitting.
1936.—January 11-12, 1.7 mc. Transmitting.

Members desirous of entering these Contests are requested to make application in advance for entry forms.

W.B.E. Certificates.

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

Name.	*Call sign.*	*Date.*
E. N. Arnold	VK2OJ	October 1, 1935
D. C. McDonald	VK3DM	,, 9 ,,
T. Marshall	SU1TM	,, 22 ,,
J. Butcher	G5XG	,, 25 ,,
L. Arnott	ZE1JO	,, 29 ,,

The attention of members is drawn to the fact that the rules governing the award of W.B.E. certificates are available on application to Headquarters. In the case of overseas members, arrangements have been made for B.E.R.U. Representatives to approve claims locally. Certificates are then issued from Headquarters.

New District Representatives

Council have much pleasure in announcing that Messrs. J. J. Curnow (G6CW, of Nottingham) and R. A. Bartlett (G6RB, of Bristol) have been appointed representatives for the East Midlands and Western districts respectively.

Our thanks are extended to the retiring D.R.'s Messrs. H. B. Old (G2VQ) and W. B. Weber (G6QW). Mr. Weber was compelled to resign owing to increasing private business.

London Meetings

A suggestion has been made that London members should be asked to contribute short papers to be read at forthcoming I.E.E. meetings. Members interested in this project are invited to inform the secretary in order that a date may be assigned for this purpose. Papers should be in written form suitable (if the subject-matter permits) for subsequent publication in this journal. A period of between 10 and 15 minutes will be allowed for the reading of each paper, followed by a short discussion.

Important 28 MC Tests

Mr. John Reinartz (W1QP), one of the leading radio amateurs in America, informs us, *via* Mr. G. McLean Wilford (G2WD), that he is carrying out some important tests on 28 mc.

The first tests began on November 10, but are being continued daily at 17.30 G.M.T., when a regular schedule is worked with W1MY.

Week-end tests will be made at the following times :—

Saturdays : 15.00-16.00 G.M.T. ; 17.30-17.45 G.M.T.
Sundays : 15.00-16.00 G.M.T.

W1QP will call on 28 mc. for the first 15 minutes and listen for the second 15 minutes in each hour, repeating the transmitting period for the third quarter and listening on 14 mc. during the first quarter hour and 28 mc. the last quarter hour.

I.C.W. will be used for the first 10 minutes in each period, the tone being 1,000 cycles and the frequency 28,080 kcs.

All G stations are invited to co-operate in these tests and reports from either receiving or transmitting stations should be sent to G2WD.

A New Lightning Calculator.

A Lightning Ohm's Law Calculator has just been produced by the A.R.R.L. This is the second of a series, and is one which will appeal to all who have occasion to make rapid calculations. The device can be used for solving problems involving the determination of current, voltage, resistance, power and wire sizes in D.C. circuits. A useful table of equivalents and the R.M.A. standard resistance colour code are given, together with a detailed explanation of the methods to be used in solving problems. The price is 4s. 6d. from Headquarters.

Headquarters' Bargains!

A recent consignment of A.R.R.L. handbooks arrived damaged by sea water. The covers only are discoloured. We propose clearing these at half price, viz., 2s. 6d. each post free.

We also have for disposal three office copies of recent issues of the Call Book, price 2s. 6d. each post free.

Certain back issues of the T. & R. BULLETIN are available, price 6d. per copy. Send in your list of requirements.

Commercial Activity Check

The organisation of the above check is now well under way and some of the stations taking part have already commenced operations. It has been decided to restrict attention to the band of frequencies between 7,300 kc. and 7,500 kc., and it is hoped that before long a strong group of checking stations will be working throughout the Empire.

There are still a few vacancies in the British Isles and volunteers will be welcomed. Those offering their services must be prepared to spend a reasonable amount of time on the work over a period of about two years. Further, they must

possess a receiver which can be accurately calibrated to the band under review. They will be expected to render a monthly return of their activities. Log pads will be supplied from headquarters to approved participants, together with an extract from the Berne List covering the check band.

Members able and willing to lend their aid are asked to write to G2MI as soon as possible in order that the work may be got under way quickly.

A Remarkable Log

We have received from Herr G. P. Baron (DE1752-G), of Hindenburg, Germany, a most remarkable log of British stations heard by him during the past four years. The log is contained in 32 pages of specially printed forms, each sheet containing 74 entries. Besides giving the usual information, such as call, time, date, tone, band, etc., a column is devoted to R strengths, and the whole series of QRK observations on each page are illustrated graphically by a curve in this column.

This very meritorious effort should, we believe, be of interest to our members, therefore arrangements will be made for it to be loaned to any member or group of members on request.

Possibly the feature that interested us most was the fact that out of over 2,300 stations logged, less than 100 were reported with notes other than T9, and of these the vast majority were given as T8.

DX Charts.

We have been asked by Mr. Sadler, G2XS, to express his thanks to all members who assisted him in the preparation of DX Charts.

A full year has been covered and as repetition is likely to occur, publication will now cease. Mr. Sadler will, however, consider publishing DX Forecasts, providing sufficient members show an interest in the suggestion.

Mr. Sadler is compiling statistics concerning DX conditions, and he will be glad to hear from members who find during the coming year any wide divergencies from the charts which have appeared in this journal.

R.E.F. Cup Contest.

We have been informed by R.E.F. that Mr. C. E. Jefferies (G5JF), of Burton-on-Trent, won the British award in the above Contest. G5JF scored a total of 77, to lead G5JM by 6 points and G2LB by 22 points. Other British entrants were: G5OQ, 5WI, 6HA, 6TK, 2VD, 6QQ, 6LH, 5IJ, 5KA, 5GO, finishing in the order named.

Polish Contest.

Just as we go to press details are to hand regarding a Polish DX Contest to be staged between December 8 and 22. Full information can be obtained from P. Z. K., Lwow, Bielowskiego 6.

"Radio QRA" Contest

We have received from *Radio QRA* details of two international contests which are to be held from December 1 to 31. Members who are interested may obtain a copy of the rules from H.Q. or direct from *Radio QRA*, Calle Luis, Fabregas No. 5, Palma de Mallorca.

Swiss Tests

Special tranmissions to the U.S.A. are being arranged by Basle Radio Club, HB9B (P.O. Box Basle 1, Switzerland). These will take place between 20.10 and 21.15 G.M.T. on 14,044 kc. on December 2, January 6, February 3, and reports from listeners are solicited. We are not clear whether these are telephony or C.W. tests.

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

A list containing dates, times and frequencies of the stations sending slow morse for the benefit of those members wishing to learn or improve their code will be found below. As usual, test matter will be taken from recent issues of THE T. & R. BULLETIN. The page number and month of issue will be given at the end of each test—by telephony. It is emphasised that reports will be appreciated and are desired in order to ascertain range of transmission and numbers utilising the service. Reports may be sent *via* the Society's QSL Section. If, however, replies are desired, stamps should be sent. Station G6VK, of Bristol, is not resuming owing to lack of support, as indicated by the few reports received. Station G6QM, of Hornsey, is a newcomer to this service, and the North London district should be well served. G5GC, of Hull, will in future use a crystal cut to 7,149 kc. Stations willing to assist, particularly from those districts without a service, are invited to communicate with Mr. T. A. St. Johnston (G6UT), 28, Douglas Road, Chingford, E.4. Telephone: Silverthorn 2285.

SCHEDULE OF SLOW MORSE TRANSMISZIONS.

Date, 1935.			G.M.T.	Kcs.		Station.
Nov.	21	Thur.	23.00	1990	...	G6AU
,,	23	Sat.	22.45	1930	...	G5OD
,,	24	Sun.	09.00	1860	...	G6QM
,,	24	,,	09.30	1785	...	G5BK
,,	24	,,	11.00	7104	...	G6PJ
,,	24	,,	12.00	7149	...	G5GC
,,	28	Thur.	23.00	1990	...	G6AU
,,	30	Sat.	22.45	1930	...	G5OD
Dec.	1	Sun.	09.00	1860	...	G6QM
,,	1	,,	09.30	1785	...	G5BK
,,	1	,,	11.00	7104	...	G6PJ
,,	1	,,	12.00	7149	...	G5GC
,,	5	Thur.	23.00	1990	...	G6AU
,,	7	Sat.	22.45	1930	...	G5OD
,,	8	Sun.	09.00	1860	...	G6QM
,,	8	,,	09.30	1785	...	G5BK
,,	8	,,	11.00	7104	...	G6PJ
,,	8	,,	12.00	7149	...	G5GC
,,	12	Thur.	23.00	1990	...	G6AU
,,	14	Sat.	22.45	1930	...	G5OD
,,	15	Sun.	09.00	1860	...	G6QM
,,	15	,,	09.30	1785	...	G5BK
,,	15	,,	11.00	7104	...	G6PJ
,,	15	,,	12.00	7149	...	G5GC
,,	19	Thur.	22.45	1930	...	G6AU

QRA Section.

Manager: M. Williams (G6PP).

NEW QRA's.

G2JF.—J. C. Foster, "Burghfield," Dornoch, Sutherland, Scotland.
G2OG.—J. M. Hogg, "Churchill House," St. John's Road, Dudley, Worcs.
G2RD.—R. E. Dabbs, 4, Nutfield Road, Thornton Heath, Surrey.
G2UF.—H. Bailey, 35, Manchester Road, Denton, Manchester.
G2VK.—C. E. Willingham, 6, Hale Road, Tottenham, London, N.17.
G2YP.—D. B. Piper, 65, Glendale Avenue, Edgware, Middlesex.
G5AD.—A. Adams, County Police Office, Poulton-le-Fylde, Blackpool, Lancs.
G5CJ.—A. L. Sherriff, 30, Sandes Avenue, Kendal, Westmoreland.
G5CP.—C. R. Plant, 33, Manley Road, Sale, Cheshire
G5HH.—H. J. Hunt, 29, Newcastle Road, Reading, Berks.
G5QV.—F. L. Stollery, "Mendota," Hamilton Gardens, Felixstowe, Suffolk.
G5RQ.—G. W. Tonkin, 6, Glentworth Road, Redland, Bristol.
G5SP.—W. Stink, 32, Shirley Road, Southampton, Hants.
G5UZ.—H. W. Leonard, 7, Stadium Road, Bristol, 6.
G5XJ.—J. W. Moorhouse, 15, Broadway, Royton, near Oldham, Lancs.
G5YZ.—R. S. Meakin, "Dunromin," Weybridge Park, Weybridge, Surrey.
G6AM.—E. A. Mackay, 46, Marchmont Crescent, Edinburgh, Scotland.
G6CB.—R. L. Castle, 79, Upland Road, East Dulwich, London, S.E.22.
G6HZ.—J. E. A. Huschman, 16, Durham Place, Bonnyrigg, Midlothian, Scotland.
G6KL.—S. G. Button, 35, Westfield Road, King's Heath, Birmingham.
G6OD.—C. F. Suffolk, 258, Roman Road, Bow, London, E.3.
2ACQ.—W. E. Crook, 7, Hampton Road, Bristol, 6.
2ADK.—H. V. Dyer, 52, Glenloch Road, Belsize Park, London, N.W.3.
2AOP.—R. M. Owen, 14, Watermead Road, Bromley Road, Catford, London, S.E6.
2ARU.—H. Beadle, 13, Chandos Street, Keighley, Yorks.
2ATL.—Midwest Radio-Vision Co., 10, Mansel Street, Swansea, Glam.
2AUS.—P. Malvern, Boldre Villa, Selkirk Street, Cheltenham, Glos.
2BHZ.—E. A. Hayward, "Wyoma," 44, Llanishen Street, Cathays, Cardiff.
2BJK.—J. H. Emmerson, Lawrence House, Imperial Service College, Windsor.
2BLU.—A. H. Bird, 20, Gladstone Road, South Willesboro, Ashford, Kent.
2BQP.—F. N. Bedwell, "Rosemont," Evesham Road, Stratford-on-Avon, Warwick.
2BSN.—D. A. Dyer, 109, Connaught Road, Roath Park, Cardiff.
2BTW.—B. W. Beswick, Girdlestoneites, Charterhouse, Godalming, Surrey.
2BTY.—J. R. Barnard, 53, Woodhouse Road, Doncaster, Yorks.
The following are cancelled:—G2NL, 2AAF, 2AMS, 2ANM, 2ANS, 2AYX, 2BIK, 2BJC, 2BUS, 2BVF.

NEW MEMBERS.

HOME CORPORATES.

D. R. Holroyd (G2GR), 52, Burlington Road, Coventry.
C. K. Murray (G6DY), Paultons, Romsey, Hants.
W. A. T. Allen (G6GT), 6, Monks Way, Southcote, Reading, Berks.
J. A. B. Horner (G6HN), 22, Raymend Road, Bedminster, Bristol, 3.
E. Spencer (G6SP), 18, Fairfield Terrace, Old Bank Road, Earsheaton, Dewsbury, Yorks.
T. Ball (G6SW), "Meadsfoot," 53, Dartmouth Road, Cannock, Staffs.
R. E. Gemmell (2APL), The Pollards, Keysers Estate, Broxbourne, Herts.
G. Bridge (2BGU), "Brookside," Carstang Road, Lulwood, Preston, Lancs.
P. C. Kidd (2AWK), "Ryecroft," Longstanton, Cambs.
G. M. Reston (BRS2043), "Woodlands," Airdrie, Lanarkshire, Scotland.
F. A. Green (BRS2044), 8, Llanover Road, Coedpenmoen, Pontypridd, Glamorgan, S. Wales.
J. Flanders (BRS2045), 55, Craigcrook Road, Blackhall, Edinburgh, 4.
A. Frazer (BRS2046), 1,308, Ivy Terrace, Loveclough, Crowshawbooth, Rossendale, Lancashire.
C. H. Wanger (BRS2047), 171, Grove Road, Walthamstow, E.17.
J. C. P. Clark (BRS2048), Goonhavern, near Truro, Cornwall.
G. A. Ettie (BRS2049), 156, Forton Road, Gosport, Hants.
V. J. Flowers (BRS2050), 72, Willifield Way, Golders Green, N.W.11.
W. D'Arcy (BRS2051), 8, Winifred Street, Winton, Manchester.
J. W. D. Simpson (BRS2052), 120, Main Street, St. Ninians, near Stirling.
F. Wm. D. Rouse (BRS2053), Rose Cottage, Willersey, Broadway, Worcs.
G. F. L. Beresford (BRS2054), "Yetson," 21, Hansol Road, Bexleyheath, Kent.
M. D. Mason (BRS2055), 67, Hereford Road, Bayswater, W.2.
F. D. Aldridge (BRS2056), 28, Poplar Walk, Herne Hill, S.E.29.
G. V. Thomas (BRS2057), "River View," 6, Station Road, Powey, Cornwall.
A. J. C. Ring (BRS2058), "Arcadia," Hempstead, Chatham, Kent.
R. W. H. Benson (BRS2059), Church Lane, Prestwich, Manchester, Lancashire.
R. J. Hardy (BRS2060), "Sunset," Queen's Road, Swanage, Dorset.
F. Brown (BRS2061), Lychgate Lane, Burbage, Leicestershire.
Miss M. E. Barnard (BRS2062), 36, Cowdor Road, Fallowfield, Manchester.
J. H. Brazzill (BRS2063), 45, John Street, Brightlingsea, Colchester, Essex.
R. H. Dutton (BRS2064), "Gandria," Macclesfield Old Road, Buxton, Derbyshire.
H. J. Barton-Chapple, B.Sc. (BRS2065), Baird Television, Ltd., 58, Victoria Street, S.W.1.
F. B. Le Pavoux (BRS2066), 8, Upper Canichers, St. Peter-Port, Guernsey, Channel Island.
H. Tee (BRS2067), 104, Rectory Road, Burnley, Lancs.
C. A. Clare (BRS2068), 127, Coronation Avenue, Oldfield Park, Bath, Somerset.
A. B. Blackburn (BRS2069), 26, Peasey Hills Road, Malton, Yorks.
J. P. Blair (BRS2070), 35, Market Place, Selkirk, Scotland.
H. J. Snelgar (BRS2071), "Nyumbani," 22, Moberley Road, Salisbury, Wilts.
J. G. Wilson (BRS2072), 28, Silverdale Road, Hull, Yorks.
E. J. Napier (BRS2073), 44, Cranmer Road, Hayes End, Middlesex.
R. J. Brandon (BRS2074), "Ronda," Ferndale Road, Burgess Hill, Sussex.
H. E. Daft (BRS2075), 21, Eastfield Road, Peterborough.
L. Bainbridge-Bell (BRS2076), "Polesdon," Buccleuch Road, Datchet, Slough, Bucks.
H. L. Wise (BRS2077), 13, Charles Road West, St. Leonards-on-Sea, Sussex.
H. Fenton (BRS2078), 25, Abbey Road, Blackpool S.S., Lancs.
J. Schefer, F.B.O.A., F.S.M.C. (BRS2079), 11, Beaconsfield Road, St. Albans, Herts.
E. P. Jones (BRS2080), 118, Robertson Road, Eastville, Bristol, 5.
E. Williams (BRS2081), "Hafan," 1, De Villiers Avenue, Crosby, Liverpool, 23.
B. Coia (BRS2082), 14, Waterside Street, Strathaven, Lanarkshire.
A. F. Puddicombe (BRS2083), 10, Bennetts Bank, Wellington, Shropshire.
D. W. Wells (BRS2084), "Bareilly," Milbank Road, Darlington.
F. J. Trash (BRS2085), 19, Keppel Road, East Ham, E.6.
J. M. Lowden (BRS2086), Ballywooley House, Crawfordsburn, Co. Down, Northern Ireland.
E. Sutcliffe (BRS2087), The Welbeck Hotel, Queen's Drive, North Shore, Blackpool.
V. D. Morse (BRS2088), 108, Bacchus Road, Handsworth, Birmingham, 18.
D. L. Breeden (BRS2089), "Bryn-Arden," Claverdon, Warwick.
J. W. Hargrave (BRS2090), 11, Tilbury Road, Elland Road, Leeds, 11.
J. Quarmby (BRS2091), 42, Kensington Road, Oldham, Lancs.
J. A. Mann (BRS2092), 207, Shirland Road, Maida Vale, London, W.9.
H. Cragg (BRS2093), 23, Windlesham Road, Brighton 1, Sussex.
F. E. Brittain (BRS2094), 8, Cambourne Park, Belfast, Northern Ireland.
M. S. Hancock (BRS2095), Fulbeck Manor, Lincoln.

DOMINION AND FOREIGN.

C. Tilling (BERS317), c/o P.O. Box 6246, Johannesburg.
G. E. Eva (BERS318), 17, Ferret Street, Kensington, Johannesburg.
J. L. Hall (BERS319), Cheruvally Estate, Kanjirapally, Travancore, India.
G. D. Walker (BERS320), 7, Kerry Road, Parkview, Johannesburg, South Africa.
P. D. Devadasan (BERS321), Agricultural College, Allahabad, India.

Mr. Ralph Nicholls (W1CNU), of P.O. Box 202, Stamford, Conn. in collaboration with W6QD is arranging to publish lists of W, VE, K4, 5, 6, 7 and KA calls heard in the West Coast journal, *Radio*. He will be pleased to receive such lists by the 10th of the month from our members.

QSL Section.

Manager: J. D. CHISHOLM (G2CX).

At the Council Meeting held in October, it was decided that after January 1, 1936, the society would be unable to accept report cards from listening members for distribution in Great Britain and Europe. It was also agreed that from this date no further cards from European listening stations would be accepted for distribution in Great Britain.

This move has been under consideration for some time past, and now that the matter has been thoroughly examined by Council and put before the members at Covention, it is felt that action should be taken to remedy the present state of affairs.

The above amendments to the Section's Rules do not include cards for the 1.7, 28 or 56 mc. bands, as reports on these bands have a definite value which is absent from those sent for 7 and 14 mc. transmissions.

QSL agents for the following countries are required, owing to the absence of the present agents:—

ZB ... Malta.
ZC ... Palestine and Trans-Jordan.
ZD ... Nigeria and Gold Coast.

Members in these districts who are willing to carry on the work will be gratefully welcomed.

TRADE NOTICE.

W. Andrew Bryce & Co., Woodfield Works, Bury, Lancs., have sent us a copy of their latest catalogue entitled "Quality Components and Circuits." "Bryce-Peak" products are already well known throughout the electrical trade, and many amateurs are using them at their stations. This new catalogue describes in detail the various classes of transformers, condensers and chokes manufactured, and also gives a page of useful formulæ. Several circuit diagrams are included for different types of rectifier arrangements.

A copy of this useful book will be sent free of charge to members mentioning this Journal.

Strays.

Mr. G. L. Brownson has been compelled for personal reasons to relinquish his call G5BR, and in doing so desires to convey his thanks to all who have rendered him assistance in the past.

* * *

GI5QX asks us to mention that during July and August he worked seven W5 stations on the 14 mc. band between 22.50 G.M.T. and 00.15 G.M.T. These are rather unusual times for such contacts.

* * *

BRS191 informs us that K6CMC is anxious to work G phone stations. His signals were heard by BRS191 at 06.00 G.M.T. September 3 on the 14 mc. band.

* * *

VR4BA is the call of ex-VK2BA. His QRA is B. Chapman, Makambo, British Solomon Islands (located in Pacific Ocean). He has a good signal on 14 mc.

* * *

BERS195, now located at the Telegraph Station, Tennant Creek, North Australia, reports that signals from "ZB" stations are being heard by him consistently on 14 mc.

W8JIW, H. S. Bradley, 66, Main Street, Hamilton, New York, will be pleased to receive reports on his 14,036 kc. telephony transmissions. His input is 15-20 watts.

Folkestone Radio Amateurs

Our enthusiastic group of Folkestone and District members have recently launched a local amateur society to be known as Folkestone Radio Amateurs.

It will be remembered that it was entirely due to the energies of this group that the Hythe lifeboat was installed with radio equipment. This achievement is but one of many to their credit, and it seems clear that now a recognised local society is in being, numerous other worth-while projects will be attempted.

The headquarters of the society is to be at "The Valiant Sailor," a rendezvous famous as the site of many field days and 56 mc. tests. We understand that a power supply is shortly to be made available for members of the club, an arrangement which will permit the carrying out of certain tests of an important nature.

Excellent publicity to the new venture has been given by the *Folkestone Herald*.

At the inaugural meeting, Mr. T. Hesketh, M.I.E.E., A.N.I.M.E., M.A.I.E., was elected president, whilst our Kent C.R. (Mr. G. Anthony Chapman, G2IC) became the first chairman. Mr. G. E. Jones (G6XB) is the hon. secretary, and Messrs. J. G. Elmer (G2GD) and J. Clarricoats (G6CL) are the first honorary vice-presidents.

A cordial welcome to the club is extended to all members resident in the South-East Coast area. Full details are available from either Mr. Jones or Mr. Chapman.

Good luck—F.R.A.!

Reports Wanted

VU2EQ (Peshawar) on his 7 and 14 mc. transmissions.

* * *

G5YC, City and Guilds (Eng.) College, London, S.W.7, on their 7,191 kc. transmissions.

* * *

F. W. Benson (2BWF), 55, Corona Drive, Thorne, Doncaster, wishes to correspond with amateurs in any part of the world.

A SILENT KEY

It is with deep regret that we have to record the passing of one who was amongst the earliest of radio amateurs in the country. We refer to Mr. F. J. Hughes (G2NL), of Bath, Somerset. Mr. Hughes began transmitting in 1914, using a Telefunken set. During the war he was a telegraphist at Lagos, returning later to continue his experimental work under the call 2NL.

Mr. Hughes was well known to all transmitters living in the West Country, and his loss will be felt by them and by many others who have been privileged to work with him. Our deepest sympathies are extended to his widow, relatives and friends.

NOTES and NEWS from the BRITISH ISLES

DISTRICT REPRESENTATIVES.

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

DISTRICT 2 (North-Eastern).
Yorkshire (West Riding, and part of North Riding), Durham, and Northumberland (Middlesbrough is in this district.)
MR. L. W. PARRY (G6PY), 13, Huddersfield Road, Barnsley, Yorks.

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

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

DISTRICT 5 (Western).
(Hereford, Oxford, Wiltshire, Gloucester.)
Mr. R. A. BARTLETT (G6RB), 31, King's Drive, Bishopston, Bristol, Glos.

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

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

DISTRICT 8 (Home Counties).
(Beds., Bucks., Cambs., Herts. and Hunts.)
Mr. G. FEATHERBY (G5FB), 30 Lindsey Road, Bishops Stortford, Herts.

DISTRICT 9 (East Anglia).
(Norfolk and Suffolk.)
MR. H. W. SADLER (G2XS), Redways, Wootton Road, Gaywood, King's Lynn, Norfolk.

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

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
Mr. T. Vaughan Williams (G6IW), "Malincourt," Grosvenor Ave., Rhyl, Flintshire.

DISTRICT 12 (London North).
Mr. S. BUCKINGHAM (G5QF), 9, Brunswick Park Road, New Southgate, N.11.

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

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

DISTRICT 15 (London West and Middlesex).
MR. H. V. WILKINS (G6WN), 81, Studland Road, Hanwell W.7.

DISTRICT 16 (South-Eastern).
(Kent and Sussex).
MR. A. O. MILNE (G2MI), "Southcot," Larkfield, Kent.

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

DISTRICT 18 (East Yorkshire).
(East Riding and part of North Riding.)
MR. T. WOODCOCK (G6OO), "Conakry," Cardigan Road, Bridlington.

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

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

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

DISTRICT 1 (North-Western).
Manchester Section

SEVENTEEN members attended the October Manchester meeting, when G2WP gave a very interesting talk dealing with the difficulties met with in the building and designing of modern all-wave superhets. He explained the latest form of capacity earth coupling and the benefits to be derived therefrom, also the merits of the different types of multi-grid valves used in short-wave mains driven super-hets. A vote of thanks was extended to 2WP at the end of this talk for the very interesting and lucid way in which he explained the technicalities of his subject.

The following stations report active:—G5XC reports working his first real DX, 7 W stations and 1 VE—one of these give him a report of R8. He is busy building a four-shelf rack transmitter and suggests Pendle Hill as an ideal location for field day work. (Thanks for the suggestion, OM, we will have a look at it.) 2RB is active; 5ZN busy working W's on 7 and 14 mc., and would be glad to get into touch with anyone using twisted feeders; a welcome is extended to BRS1975, who is working in co-operation with 5ZN; 6KS testing QRP 7 and 14 mc., will appreciate reports from any members, QRA Liverpool, BRS1504 general reception; 6ZU reconstructed for 28 mc. now waiting signals on this band; 2DH active on 14 mc.and about to put up new gear. 5PX active on 7 and 1.7 mc., 6TL on 14, 7 and 1.7 fone. 2BZX at Morse, 2WP active on 14 mc., 2BPJ on 56 mc., 2WQ on 14 and 56 mc., 5OZ on 14 mc. 6GV rebuilding to Collins type transmitter. 5YD on 1.7 and 56 mc. 5CH on 1.7 and 14 mc. 2OI is doing a spot of cleaning up and removed three inches of dust off the racks—still busy on mobile 56 gear, with some fone on 14 and 1.7 mc.

Will everyone please note that all reports must be in to G2OI before the 18th of each month in future.

G6GX is busy experimenting with home-grown Rochelle salt crystals. Congrats to Mr. Adams, who is now G5AD; he is working 7 mc. with a CO FD PA; G6FW is working 1.7 mc. CW and hopes to be on fone soon; 6ZS, 6QA, 6AX all busy on supers and 14 and 1.7 mc. We are glad to see that Mr. Dennis, BRS1810, is now recovering from

FORTHCOMING EVENTS.

Nov. 20.—District 1 (Liverpool Section). 8 p.m., at 38, Mason Street, Edge Hill, Liverpool. Talk by J. Drudge Coates, G2DC, "56 mc. Equipment."

Nov. 20.—District 15, 7.30 p.m., at G2IY, 2, Tring Avenue, Ealing Common.

Nov. 20.—Scotland "D" District. 7.30 p.m., at Royal Society of Arts, 16, Royal Terrace, Edinburgh.

Nov. 21.—District 13. 8 p.m., at Brotherhood Hall, W. Norwood.

Nov. 22.—London meeting at I.E.E. 6.15 p.m., tea 5.30 p.m.

Nov. 24.—District 4. 3.30 p.m., at Swan Hotel, Church Street, Mansfield, Notts.

Nov. 25.—District 14 (Essex Section). 8 p.m., at G6IF, The Chalet, Woodside, Belfairs Garden Estate, Leigh-on-Sea.

Nov. 26.—District 14 (East London Section). 8 p.m., at G5AR, 59, Gordon Road, S. Woodford, E.18.

Nov. 27.—Scotland "A" District. 7.30 p.m., at Institute of Engineers and Shipbuilders, 39, Elmbank Crescent, Glasgow.

Nov. 29.—Scotland "B" District. 7.30 p.m., at Belmont Street Hall, Aberdeen.

Dec. 1.—District 17. 3.15 p.m. at Mason's Arms Hotel, Louth.

Dec. 1.—District 7. 2.30 p.m. at G2YL, Redholm, Walton-on-the-Hill.

Dec. 4.—Medway A.T.S. 6.30 p.m. Dinner at Tudor Cafe, Chatham. Tickets 3/- from G6QC.

Dec. *4.—District 1 (Manchester Section). 7.30 p.m., at Brookes Café, Hilton Street, Manchester.

Dec. 4.—Scotland "D" District, venue as above.

Dec. 4.—S.L.D.R.T.S. 8 p.m., at Brotherhood Hall, W. Norwood. Discussion and Demonstration of Amateur uses of R.F. Pentodes. Opened by P. Johnson, G5IS.

Dec. 10.—District 12. 7.30 p.m., at Wander Inn Café, Church End, Finchley. Discussion on 28 mc. work.

Dec. 13.—Scotland "B" District, venue as above.

Dec. 18.—District 1 (Liverpool Section), venue as above.

Dec. 20.—Annual General Meeting at I.E.E. 6 p.m., tea 5.30 p.m.

* Sale of disused apparatus at this meeting

IS THE DATE OF YOUR NEXT DISTRICT MEETING MENTIONED ABOVE?

a serious illness, and wish him a speedy return to his normal self. 2AXH is suffering from auto QRM, but hopes to join in 56 mobile tests. Our DR, G6TW, is doing good work on 7 mc. phone, and would like to try duplex work.

Liverpool Section

The Liverpool Meetings are now exceedingly well supported, and 21 members attended the October meeting. The great majority of those supporting the meetings are comparatively new members, and the C.R. would be glad to see some of the older members at future meetings. The accommodation of the usual meeting place has been regularly overtaxed for some time now, and it has therefore been arranged to transfer the meetings to the premises of the Royal Army Signal Corps at 36, Mason Street, Edge Hill, Liverpool, this having been arranged through the good offices of G2DC. The November meeting and all future meetings will, therefore, take place at that address.

A number of proposals suggested by the recently-appointed Committee of five members came up for discussion at the October meeting. Some of the members had previously indicated their preference for Sunday as the day for holding the monthly meetings, but after some discussion, it was resolved that the meetings should continue to be held on the third Wednesday of each month. Will all members please make a note of this, and of the address of the new meeting place, and please drop the old excuse for not attending, namely, that they do not know when or where the meetings take place.

It has been decided that a hot-pot supper would be a suitable device for getting the new and old members acquainted, and it is hoped to make arrangements to hold this in November or December. Members from the Manchester area, Southport, North Wales, and other districts, are invited to attend, and full details will be given later. The suggestion is to hold this on a Saturday so that members coming from a distance will have time to get to Liverpool during the afternoon. The Committee hope to be able to arrange several visits to places of interest, including the Clarence Dock Power Station, the Mersey Tunnel, Seaforth Radio Station, the Police Radio Station, and the works of the Automatic Telephone Company, and further details will be discussed at the November meeting.

Several talks have been arranged for the winter months, but further volunteers are required, and are asked to communicate with the Committee, namely G2RF, 2DC, 6CX, 2BNA, and BRS1839. The Committee hope to arrange for a representative of the Post Office to give a talk on "The Elimination of Radio Interference" at an early date.

Among other activities on behalf of R.S.G.B., G2RF has found time and energy to prepare a complete list of the licensed stations in the area covered by the West Lancashire District, and it is believed that there are between seventy and eighty members included in the list. Having shown such a capacity for hard work, the members have appointed 2RF to the onerous position of Treasurer, and he is painting a glowing picture of what N.F.D. will be like next year with so much wealth available.

The Southport members are now very active, and suggestions have been made for bringing them and the Liverpool men into regular and personal

contact. It would be helpful if Southport could organise local meetings once a month, the Liverpool and Southport meetings to be open to members from both districts, and by this means members might get together with advantage to the two centres. What about appointing a member to collect reports for the bulletin, Southport?

The local activities are as follows:

G2JT is considering changing over from C.C. to electron-coupled oscillator. 6DP is experimenting with QRP fone, using a Pentode C.O. with harmonic output. 6KY is trying to get efficient transference from his Tx to the aerial. 2AIY has passed P.M.G., and is trying various artificial aerial circuits. BRS1839 is listening on 28 mc. BRS1937 is in the throes of rebuilding. 2DC is experimenting with PP amplifiers and 56 mc. portables for duplex working (see District Calendar). BRS1901 is listening on 1.7 mc. 2ASO expects to have his full licence soon (good luck, O.M.). BRS1589 is experimenting with S.G. detectors. 2OA is working a little DX occasionally. 6TT is working on commercial station checking. 2RF is using a Collins filter successfully. 6CX is relieved to find that his new 40 ft. masts safely withstood recent gale blowing directly from sea, but has not yet tested aerial's radiating capabilities owing to lack of time. 5ZR is active on 14, 7 and 1.7 mc., and is co-operating with 2AMQ in research work on stable 56 mc. transmitters. He has been using an extremely stable oscillator to excite a P.A., which departs considerably from the conventional circuit. (What about some details, O.M. ?) 2AMQ reports hearing five continents in five minutes on October 5, using an O-V-O receiver—Africa, Australia, North America, Europe and Asia—time 18.35 to 18.40 B.S.T.

DISTRICT 2 (North-Eastern).

Area reports are very scarce this month, although two months ago they were so prolific as to cause some pruning! It is requested that sub CR's will send in regularly a short resume of local affairs, so that the notes will have a really representative aspect.

A visit to the Newcastle meeting last month was made by G6ZT and 2FO, who had pleasant personal contacts with G2PN, 2TR, and 6AY. Telephony on 7 mcs. is being tried by G2FO and 6ZT, and the latter has done some good DX on 14 mc., including VK, PK, VU, and ZT. 2BQO is now restricted to work on Sundays, as his occupation takes him out of the district during the week.

The area around Bradford is quite active, and this reaches a climax on Sunday mornings, when most of the stations go on the 1.7 mc. band using telephony. The chief object of these stations seems to be that of putting out good quality, and many Reisz type microphones have been constructed, and matching transformers tested out. A good response from about 50 to around 6,000 cycles has been obtained from piano reproduction by certain stations. It is suggested that members in the district make use of this band on Sunday mornings for inter-area work, when very enjoyable contacts on CW can be had, particularly before about 11 a.m., when the QRM is apt to become rather severe. The next meeting of the Bradford area will be held at G5VD on Saturday, November 23, at 7 p.m. Owing to the accommodation being somewhat restricted, it is essential to inform 5VD if you intend to be present.

DISTRICT 4 (East Midlands)

The monthly meeting was held at Derby on Sunday, October 27, and considering the wretched weather the attendance was very gratifying.—twenty-seven members, two visitors.

Several points were raised with relation to the procedure of future meetings and the programme for the coming season. It was decided to hold the meetings in the main towns of the district in rotation, and it is hoped that as many members as possible will attend from outlying districts. The monthly notes are to take the form of a calendar of events, and items of outstanding interest.

The next meeting will be held at the Swan Hotel, Church Street, Mansfield, November 24, at 3.30 p.m. A junk sale will follow the tea interval.

At the Kettering Radio Show, held last month, over 60,000 people were attracted to a demonstration of high-definition television. Sterling work was done by the members, to the advantage of the Society, in selling over 70 copies of the "Guide."

Thanks are due to Mr. W. M. Vendy, G6VD, on taking over the post of Leicestershire County representative for the remainder of the year.

News from members for inclusion in next month's notes would be welcomed.

Don't Forget Mansfield, November 24.

DISTRICT 5 (Western)

The usual monthly meeting was held in Bristol when the attendance was greatly increased by a number of visitors who were interested in our efforts at the recent local Radio Exhibition. An enlightening and humorous talk was given by G5FS on Amateur Radio, which proved very helpful to those who came to get an insight into "Ham" radio. After the address, questions were invited from the visitors, and these were suitably dealt with by Mr. Andrews. There seems no doubt that an increase in membership will result from this meeting.

Plenty of activity is taking place in Oxford, especially on 28 mc.; on this band G5LO reports splendid reception. G5TB is carrying out aerial experiments, whilst G6QQ is working DX. BRS 1955 has obtained his A.A. licence.

DISTRICT 6 (South-Western)

Most members seem now to be well set for the winter, and all the amateur bands are in use in the district. The local meetings have started, and there is evidence that these will be as popular this winter as last. It is sincerely hoped that all who are within reasonable reach of one of the centres will make a point of attending regularly. Meetings have already been held at Torquay and Exeter, and the attendances have been most encouraging. Many matters of interest have been dealt with, chief among these was the question of starting letter budgets once more. It is felt by some members that a letter budget in addition to the meetings would greatly improve the circulation of ideas.

Will all those interested in letter budgets please notify the D.R. before the end of November, so that a statement as to arrangements can then be made in District Notes? Unfortunately, only a limited number can be taken as contributors, so it is essential that those who are keen should apply early,

otherwise they may be left out. One other point regarding district matters which the D.R. would like to emphasise is that of local representation. The end of the year is approaching, and it is highly important that members in each town should elect their own T.R. Don't leave it to your D.R., as it is nothing really to do with him, and it is far better for you to elect a man of your own selection. See to it, OMs.

Cornwall is at last waking up, and although 5IJ, who intended to help things along a bit, has left the district, a worthy successor in 2AQB has offered his services. He wants to get a local letter budget going, and would like to see regular meetings started as well. If once a month is too difficult for the scattered membership, then he thinks once in three months could be managed. Good luck to you OM.

There have been increases in membership in Plymouth and North Devon, and in the latter region 6FO is making a gallant attempt to arouse interest. 2AMO thinks it should be possible to have meetings in Plymouth, but please OMs, get a move on.

No reports have been received for some time from Somerset. Let's hear from you soon.

As regards individual activities, many members have been working on 14 mc., and have found conditions generally good. The D.R. has been using a T aerial with Zepp feeders which seems practically non-directional, having produced many good contacts all over the world. He has also been on 28 mc., but contacts are very few. Many stations have been heard, however, and often at good strengths, LU, ZS, W1, 2, 3, 4, and 8 all being logged during one period of listening.

Experiments on 56 mc., in conjunction with 6WT and BRS1918, have been very successful, and 5SY has been heard at R8 to R9 at 15 miles. 5WY is rebuilding with 59s and an RK20, while 5VL and 6FO are working on 3.5 mc.

DISTRICT 7 (Southern).

The main items of news this month concern the excellent work done by members of No. 7 District on the 28 mc. band. Our congratulations to G6LK and G2YL in particular. The results attained are a fitting reward for the many fruitless hours that have been spent maintaining a watch on this band, with only occasional semi-local QSO's. In this connection, it is interesting to note that although the D.R. has been receiving the South African stations on this band at an average strength of R7 with peak periods of R9 signals, and has had several reports of R8 from ZS1H, he is unable to hear a single VK, even when 6LK and 2YL are giving them R6 and R7 reports. This is using a 99 ft. Zepp aerial for reception, running due North and South, and goes to show how an aerial with more than three or four half waves of wire is strongly directional at very small angles to its length. Experiments are being carried out with half-wave aerials running in the same direction to see if matters can be altered in this way, although it must be admitted that, so far, results have not been according to theory.

Now for the individual reports. G2YL had an FB time in Algiers on October 8, thanks to the hospitality shown by FA8CR and FA8IH. She advises any G's who are in Algiers to look them up. FA8CR is an R.S.G.B. member. A first report to hand from 2BSK and 2AIF who run a joint station at the Imperial Service College, Windsor. They have been carrying out tests with 16 ft. aerials for reception, and find them unusually successful for 14 and 28 mc., providing they are inclined at about 70 degrees to the horizontal. They are always pleased to give reports on transmissions on any band.

BRS1535 has been trying the Collins aerial matching unit for reception with considerable success, as it improves the signal to background ratio very considerably, especially on 7 mc.

BRS2049 sends a first report. Due to naval duties he is often away from G for short periods, but makes frequent calls at Portsmouth. His home address is 156, Forton Road, Gosport, Hants.

The Guildford meeting was well attended, and we had a most interesting discussion on Collins units and aerial problems in general.

Details of next month's meeting will be found in the district calendar.

DISTRICT 8 (Home Counties).

The D.R. apologises for the non-appearance of notes in the last two issues, an omission for which he is to some extent responsible. Owing to pressure of other work, he has been seriously considering the question of resigning, but has, however, decided to carry on with the assistance of a district scribe. The name of this person will be announced next month. He will be responsible for collecting and editing the notes.

In his report this month, G5RL mentions the following: G6WA, 6DX, 5OV, 2AWK, and BRS 1670. BERS88 has now returned to Burma, taking with him a really fine transmitter. Mention is also made of the Cambridge group, who are alleged to be very active, but no report has been received from them. Other members who are active are G5ZJ, 2PL, 5VT, 2HJ, 2AZD, BRS1990, 1991, 1873.

DISTRICT 9 (East Anglia)

It is good to note that things are brightening up again in this area and we are glad to note considerable activity from most stations. G2MN has finished the rebuilding necessitated by his change of address and hopes to be on the air again very shortly with a completely link-coupled TX. G2UT is also rebuilding his TX and is hoping to try some one-valve experiments after noting the excellent results obtained by G6FB.

G5IX having moved from a shack to bedroom is now coming back to a brick-built shack in the garden. G5UD has been rebuilding his RX.

There is a suggestion that the fixing up of some regular meetings in Norwich, during the coming winter, would be useful. The D.R. would be glad to have any suggestions *re* same and would like to know how many desire them.

As regard the Cambridge fixture, it is regretted that the news given last month still applies. And speaking of Cambridge, the D.R., who has recently visited G5JO, feels he must say a word or two in praise of that station. It will certainly make a place for itself in the air when it gets going—and be the envy of all who call and see it.

We are very sorry to lose one of our members, G6BT, who has taken up his residence in the Birmingham area. We had hoped that he would

eventually make an effective link in a 5-metre chain between Lynn and Norwich—a project which we hope is not too far distant.

And whilst we have such good conditions on the higher frequencies the D.R. would especially like to ask both receiving and transmitting members to get on these frequencies, for there is far more interesting and worth-while work to be done there than can be found around 7 mc. What about it, fellows? How many will send me in reports of 28 or 65 mc. activity for the next Notes? Why not have a No. 9 District Contest on 28 mc.?

DISTRICT 10 (South Wales & Monmouthshire)

Glamorgan members will be sorry to hear that G2SN has resigned as C.R. for business reasons. He has done excellent work during his term of office and all members will join in this expression of thanks. Until the end of the year G2UL is to take on for him. Members will be interested to read in this issue of the new scheme of Home Representation. I have studied it carefully and think it will be an unqualified success as no group should find itself out in the cold by isolation from its C.R. as of late. I suggest the starting of a No. 10 District letter budget to keep individuals in touch with one another and for the more experienced to help the beginners. To those who support this idea I suggest that during November you should send me a station description of your station or apparatus with any queries or points of interest you think would be of general interest. A resumé of the month's work and activities with any abnormal phenomena noticed should be recorded. Letters should reach me not later than the 28th of each month and will then be pinned together and circulated to all those who have contributed in turn. By keeping to this date I can extract notes for the next month's District notes. One rule I am going to stick rigidly to is that the budget will only be forwarded to those who contribute to it. It is also desirable that the size of the paper should be uniform and the standard R.S.G.B. notepaper is the size required. Letters should be marked " Budget " so as to distinguish it from private correspondence.

G2UL has his 50-watt permit and is busy working VK, ZL and VU.

A short-wave club has been formed at Neath. G6JV wants VK for WAC. We congratulate 2BYB on getting his call G5VX; he is busy on 7 mc., and doing well. G2JL has now worked W on 7 mc. and reports that fourteen members attended the last meeting at Newport. G5WU has sailed for South Africa and expects to return in the spring in good health to pursue his experiments. The Hamfest at Cefn Coed was quite a success but the attendance was rather disappointing. G5FI has been on 1.7 and is rebuilding for the higher frequencies. G5TJ has been heard on 1.7 after an absence of over two years. G6GW is QRT for mains. G6BK has his mains now, but is having trouble with smoothing. G6PF is on 1.7, 7 and 14 mc., his DX including ZL, PY, CM. He is trying a Collins coupler. G6YJ has been on 7 mc. and is shortly going on 1.7. G5BI has A.C. at long last and has been putting out good phone on 1.7 and would be pleased to co-operate with anyone after 23.00 G.M.T. G5KJ has now worked ZL and VK and awaits confirmation for his WBE and WAC. G2WO is on both 1.7 and 7 mc., using Collins coupler, and has been testing on 56 mc. with G2SN, who has also been active on 1.7. The D.R. acknowledges receipt of letters from G2JL, 2SN, 5FI, 2UL, 5BI, 6JW, 5VX, 2ARS, 2BSN, 2BBO, BRS 1739 and 2035. The date for the 1936 Provincial meeting was incorrectly printed in the October issue; the date should be April 26. As regards location Swansea is objected to by several members at Newport and Cardiff. I am open to reason but not to threats, and if I can get a definite assurance from Bristol and Birmingham that they will support us at Newport and not at Swansea I will arrange accordingly. Will the respective D.R.'s please note this and let me know at their earliest convenience how many will definitely attend if I alter the location to either Newport or Cardiff. The next two meetings of the Newport group will be held at the Queen's Hotel, Newport, on November 14 and December 18, both at 7.30 p.m. Are there any volunteers for the post of District Scribe? Applications to the D.R. The work is voluntary!!!—G2OP.

DISTRICT 12 (London, North)

At our last meeting G5NQ gave a very interesting talk on an S.S. Super with crystal gate. He explained its construction stage by stage: one interesting feature was the use of tone correction enabling the gate to be used for 'phone reception. After the discussion which followed the talk, a motion for the formation of a social section was rejected, but despite this apathy a pleasant afternoon was spent by four active members playing tennis. The result was that the QRO's beat the QRP's. If there is anyone in the district who wishes to play any game (either indoor or outdoor), will they please write to G5BO? The high spot of this month is G6CL's DX on 28 mc. Despite the fact that he has been unable to get his Collins to work on this band, he has been qso with ZS, W1, 2, 4 and 9. He is using a 4211E as a power doubler in the final. G6QM reports for the first time. Activity at this station has been on 1.7 mc. and 7 mc., and much trouble has been expended in adjusting a ribbon mike. G6QI has burst forth on 56 mc., and wants co-operation with other members. Will those interested please communicate with him? G5WW is continuing his work on 1.7 mc., and is testing a DO.60 in the modulator. In his hands the district top band TX is taking shape. He is unable to complete it, however, as he still needs two .0005 variable condensers, and a modulation choke to carry 120 ma. G5CD is testing a new 200-watt modulator and crystal microphone. G2SX and 5BO are now licensed for 25 watts. Before dismantling his old equipment, G2SX worked ZL, VK, VS6, PY, CM and W6 on 7 mc. He is now carrying out bench tests of new amplifier and doubler circuits, in conjunction with G5BO. Prior to rebuilding, 5BO decorated his shack, and removed the qsl cards, obtained at wholesale prices from Uncle Tom! G5QF is another that has been bitten by this rebuilding bug, and hopes to have an efficient 28 mc. TX going shortly. G5NQ has been trying out a DET8, and finds it a very efficient doubler or amplifier. G5DJ has rebuilt his SG-SG-Pen. with peaked audio. Choke control modulation, in conjunction with a Reisz mike, has been installed, and reports indicate that the quality is excellent. K4 has been worked on 7 mc. We are pleased to welcome to the district Mr. Nicole, of Canada.

We regret that owing to lack of interest no district dinner will be held this year. It appears that at least two people read last month's notes, and we wish to thank them for sending reports. For the benefit of those interested, G5WW's correct frequency is 7090.6 kc.

DISTRICT 13 (London South).

The October District Meeting was as usual very well attended. The most important item on the agenda was the sale of certain articles of junk, the proceeds of which went to the District funds. It is very pleasing to record that the sale was an unqualified success and the D.R. would like to take this opportunity of thanking all those who responded so generously to his appeal for support. The District balance sheet is now in a very healthy condition and with the proceeds of a further sale, which is fixed for the Spring, it is felt that South London will be in a very strong position as regards N.F.D. funds. A further item on the agenda for the October meeting was the Commercial Activity Checks. The scheme was fully explained and a request for assistance made. There should be no doubt in the minds of anyone as to the importance of these " checks " and we are very glad to say that two members of this district have already volunteered to co-operate with Mr. Milne, G2MI, who is organising the work.

G5OX and 2UW are both still experimenting on the higher frequencies, but have no special report this month. G2ND is active on the 1.7 and 7 mc. bands and complains of his inability to have a QSO on the latter band owing to the fact that everyone appears to call " Test DX " on this frequency. 2AOP is working on the construction of station monitor and power pack; he hopes to commence tests shortly. G5HF has gone to Scotland and will be there until December. He comments on the lack of co-operation he received whilst working on the 56 mc. band, and hopes the " District Who's Who " will put matters right. G2JB has been active on 7 mc. and a number of American contacts have been made during the last month. 'Phone has been used and found very successful with an input of 6 watts and using choke control. G2AI is erecting a new mast and mentions that he is having some trouble from interference in the neighbourhood. Activity at G5JW this month has centred around improving the speech-amplifying and modulating gear. A Reisz microphone has been constructed and is giving remarkably good quality. A two-stage speech amplifier has been set up with excellent results, very encouraging reports having been received. The amplifier is resistance-coupled throughout, but contrary to expectation and advice it has not been found necessary to earth it. In fact, no part of the transmitter at G5JW is directly earthed and attempts to do so have always caused hum and instability which is not normally present. G5JW would welcome views on this question of earthing. G2GZ is very busy with the " Who's Who " but still finds some time to be on the air.

We are very pleased to welcome G5LG as a newcomer to South London. We wish him the best of luck and are looking forward to welcoming him at a District meeting in the near future. It is always gratifying to see new members present at the monthly District meetings and it is earnestly hoped that all the many new members will make an effort to come along to the Brotherhood Hall.

The December meeting of the S.L.D.R.T.S. will be held at the usual venue on the 4th of that month. A discussion and demonstration of amateur uses of R.F. Pentodes will take place and will be opened by the chairman, Mr. P. Johnson, G5IS. In conclusion, do not forget that the next District meeting is fixed for November 21.

DISTRICT 14 (Eastern).

There was only a small attendance at the October meeting held at BRS1977, Leyton. Continuation of the Morse classes held at 2AYB, 16, Station Road, St. James' Street, Walthamstow, were arranged for at 8 p.m. on the following dates, November 25, December 4, 9 and 18. Offers of a QRA for the December meeting are invited. G6FJ is at Portsmouth for a time. A Field Day is projected early in December, provided a sufficient number of requests are sent the D.R. BRS1988, of Witham, reports that he will shortly apply for A.A. call, and is at present using new " V " doublet aerial system. Will 14 mc. fone stations anxious for QSO with W2BSD, write to 2AYB, who will fix schedules? Activity with the exception of G6JI seems to have died out on the 56 mc. band. BRS1988, of South Chingford, has reported, and hopes to meet members shortly. Congratulations to G2XG, of Chingford. His previous calls were 2BDI and FOA8H.

The October meeting of the Essex section, held at G5VQ, was attended by a dozen members. At this meeting, as at the East London meeting, the question of Town Representation was discussed; as this will again be discussed at the next meetings, it is hoped that " distant " members will put in an appearance, so that nominations can be put forward. G2WG has re-erected his mast, which was blown down by a gale. He is now modulating on 7 mc., and is desirous of reports. G2KT has a sked with VU2FY on Sunday afternoons, and asks for reports of the reception of VU2FY to be sent him. G6IF has been working DX on both 7 and 14 mc., and is coming on 28 mc. shortly. G6KV has built a new 7/14 mc. TX, and is getting results, using both C.W. and fone. G5VQ also rebuilding TX for all bands. G2SA working fone a lot on 3.5 mc. with good results.

DISTRICT 15 (London West and Middlesex)

Should the numbers attending the District meetings increase further, it will be necessary to discuss the possibility of obtaining a hall suitable to accommodate such a gathering. Do not, however, let the numbers frighten you and preclude your attending! The 27 who turned up at the D.R.'s QRA seemed to thoroughly enjoy themselves in spite of the fact that some were unable to find a seat. Those who came had the pleasant surprise of seeing the Society films. See Calendar for next meeting.

The letter budget is gradually growing, and has reached a total of nine letters, but still needs more contributors to compare with the growth of the District meetings. The D.R. appeals to all newer members to drop him a line, so that he may be kept acquainted with their activities. The reports will provide details for THE BULLETIN notes and news. Reports by the 25th of the month at the very latest, please. Owing to the film display, it was not possible to discuss the budget at the last meeting, but this and N.F.D. will be mentioned at the next.

G5JL suggests we should try a district magazine, and while it is a very good scheme, the position of editor might prove difficult. (Any offers? D.R.) G5LI sends a list of DX too numerous to mention. In fact, there seems to be only the planets left to work. He intends applying for 28 and 56 mcs. permits. G5SR has worked VR2VW, whilst G5ZS has contacted his first W. G6CO managed a few contacts, but found conditions not too good. G6VP is using a vertical reflector behind his aerial, and finds that at the correct length or shorter it reflects, but if a shade longer it leads and draws the propagation in its direction. He is now leading signals into South Africa and reflecting them into W6. (Details, please.—Ed.) G6WN has been on 28 mc. most of the time, but not had very much success. However, all continents have now been heard, but it has only been possible to raise ZS1H during the recent good spell. He seems to be the only representative of the district on the band. 2BAI is keen on meetings for BRS and A.A. members only. He visited G6CT, 6IF, 2AKA and 2BCF while on holiday. BRS1226 only has to wind coils for his new receiver to get it going. BRS2073, although only recently joined, sends a very welcome report, and is to be congratulated on the amount of DX heard. A welcome to him.

DISTRICT 16 (South-Eastern).

The best news of the month comes from North-West Kent, from which place G2GB reports that 5LB has been running a successful 56 mc. transmitter on 56.72 mc. An article on this appears elsewhere in this issue. Our heartiest congratulations to you OM on your achievement.

The North-West Kent Group are now two years old, and the fact was celebrated at 2GB by means of an impromptu musical evening. Ham Whyte's top notes have to be heard to be believed! The community singing, accompanied by 6QB and 2GB, at the piano, should have been broadcast! G2QR's versatile voice is worthy of official recognition—or something.

G2AW, 2NK and others are turning their attention to 2½ and 1¼ metres as well as 5 metres, and superhets are becoming more popular. 2AW still holds the shack to shack record of 40 miles at R8/9. (Bulletin articles, please.—Ed.)

G2JV sends in the first official report from the Ashford and District Radio Society. Thanks, OM—keep it up. He states that 5QL has now completed his long line 56 mc. Tx, and they have succeeded in fairly good 'phone QSO'S. 2BLN is also very interested, and has nearly finished a receiver. 6SY is still QRT, owing to power supply, and refuses to go on to 56 mc. until he gets CC to work. 2KJ is sometimes heard on 7 mc., but has little time for radio at present.

In Tunbridge Wells 5OQ is now WAC, and we congratulate him. All in one week, too, on 14 mc. 5KV and 6OB are both going out well on 7 mc., 2BVO is waiting for his morse test—good luck, OM.

The Folkestone section are very busy, and have now formed a club under the name of "Folkestone Radio Amateurs." 2IC is chairman, and 6XB is secretary. 2BOW (ex BRS21) is deputy chairman, whilst 2AZM, 2BAX and 2BZZ form the rest of the committee. The membership was doubled within two weeks of the formation of the club, and good support is expected. The headquarters are at the famous "Valiant Sailor," and application has already been made to the Post Office for permission to establish a station there for the purpose of carrying out research work on behalf of RES, and to fulfil the idea mentioned by Uncle Tom in last month's Bulletin. But, please note, Nunk, that application was made ten days before The Bulletin was published!

The Club are honoured to have Mr. T. Hesketh (ex G2RS) as President, and G6CL and 2GD as Hon. Vice-Presidents.

It is nice to know that Sussex has, in BRS1173, one keen member who does his best to keep the county in the notes, and the older men would do well to follow. He reports that with G5JZ and BRS2000 he visited 2AFX at Uckfield, and the three made a return visit to his QRA. He is enjoying himself in the ZL/VK contest, and has done quite well up to date.

There is no report from the Medway District or from Gravesend. The Medway men are in the throes of a local contest for the *Observer* trophy. G2MI is organising the Commercial Activity Check. Incidentally out of our 2,000 odd BRS stations only one has offered his services!

DISTRICT 17 (Mid-East).

As reported in the October issue G6LI has resigned his office as D.R. and G6LH has been appointed his successor. G6LI has held office for many years, and has been a worthy leader of this district. His technical ability and his numerous contributions to the Bulletin carried his reputation as an able technician far beyond the borders of this county. The whole of the District wishes sincerely to thank him for all he has done, and to wish him every success in his undertaking. Thank you, OM.

As this is the first occasion on which G6LH has written these notes as D.R., he would like to say that he means to carry out his duties to the very best of his ability, and he would like to have the assurance of the backing of every member. He has written to everyone individually in order to establish a close personal link with them, for unless members will rally round their D.R. in a real "ham" spirit, his work is foredoomed to failure. He has greatly appreciated the kindly letters so far received, and judging from reports practically everyone is active.

G6AK is the new C.R., and his enthusiasm is already in evidence in the fine response from Grimsby, which is now once again a hive of industry. Weekly meetings have been organised, and are held every Thursday at The Black Swan Hotel. On October 26, a meeting was held, at which the D.R. and G6GH and nine of the local members were present. The D.R. in particular would like to express his sincere thanks for the warmth of their reception.

G5GS is a busy man at all times, but he is finding opportunities to do some really interesting experimental work, and is getting more than his share of DX. He is now testing on 56 mc. G2VY, with visions of DX, is re-building his TX and re-winding transformers. G6RN will shortly be back on the air to increase the local QRM.

Great credit is due to a new call, G6UG, who has erected a splendid 48-ft. lattice mast and is using a vertical ½-wave Windom on 14 mc. G6AK has just finished a complete rebuild, and awaits a 56 mc. permit. He is giving Morse instruction to local BRS. 2BVU is studying at Hull Technical College, but returns to DX at the week-ends. 2BFC is busy grinding crystals. BRS1021 has taken advantage of a local dealer's liquidation sale and has produced an FB power supply. A few more sales and he will be on the air! BRS1871 has just taken unto himself a wife and is busy fixing up his gear at his new QRA. Best wishes OM. BRS1515 turns his attention to short-wave superhets and 56 mc. receivers. He is also busily swotting morse. BRS1830 has taken advantage of the *Guide* and has built a new RX. Congrats to BRS1495, who is now 2BYS.

That amazingly efficient person, G5BD continues as before! This month he was WBE in four hours; a splendid achievement. He has had four contacts on 7 mc. with W6GRX, which brings their number of QSO's this year up to 115. G5CY is busy building the *QST* Double-doubler, using two type 53's, and gets excellent results right down to 28 mc. G5LL is rebuilding his PA stage, and hopes to get going on 14 mc. soon. He reports that someone is pirating his call.

Autumn brings G5XL, of Lincoln, back to the fold. He had considerably more than his licensed power in his aerial when lightning brought it to the ground. His new TX is nearly complete, and he is now building a superhet. Good luck to 2BSR, who is beginning another course of study.

From Cranwell comes the news that G6AC has had a brief spell in hospital, but it now happily well on the way to recovery. Several experiments have been made on 56 mc. with a field strength measurer, with as much forward radiation as possible. Tests are continuing, but a forward gain of 20 to 1 has already been achieved, and he is now concentrating on a TX with greater frequency stability. G2LR replaced his home-made layer wound H.F. chokes with *Eddystone's* and increased his output by 75 per cent. He is anxious to see greater use made of the 3.5. mc. band, and also wishes to express his warm appreciation of the splendid organisation of this year's Convention.

G5FY is rebuilding and finds the Collin's Coupler all that it is claimed to be. BRS1892 sends in his first report with interesting details of a new superhet. He complains to be suffering from paralysis of the pockets! BRS1951 is also busy on a new super RX and is doing his best to spread interest in rather a blank area. Welcome to BRS2030, who likewise is in rather a lonely position.

At Boston G6GH continues active on 14 mc., but complains of deteriorating conditions for the 10-watt man. He has installed the new Amateur Bands Two with complete success. 2BJY is rebuilding his co-fd-pa in rack form, and apparently his full call will soon be on the way. The D.R. has completed a tuned H.F. receiver with ganged tuning and has built a frequency meter in the same *Eddystone* 24-inch cabinet. Having seen the C.R.'s TX, he is about to rebuild.

The attention of all members is called to a District Meeting, which will be held at the "Masons Arms," at Louth, on Sunday, December 1, beginning at 3.15 p.m. Tea will be at 4 p.m., followed by a business meeting at 4.30. Several very important matters will be discussed, and it is hoped that there will be a record attendance.

DISTRICT 18 (East Yorkshire).

It is gratifying to note that more and more members are reporting. G6UJ has been carrying out contacts with South American stations on 14 mc. and some very high reports have been exchanged, whilst telephony is being used with great success on the 7 mc. band.

G5VO is busy building up 56 mc. apparatus, and television work is also being done. 2APU is rebuilding receivers.

G6WP does most of his work on 7 mc., using C.W. only, and has obtained contacts from every call put out, using a Tritet outfit.

Owing to an oversight 2AVR was not mentioned as being present at Convention this year to help in the representation of our district membership. A Scarborough member, namely, BRS1321, was also at Olympia, but unfortunately he had to miss all Convention meetings and festivities.

The Scarborough Short Wave Club has resumed the winter session of meetings at The Bellvue Hotel, Scarborough, on alternative Monday evenings at 8 p.m., and quite a good turn-up is usually assured with plenty of enthusiasm and Morse practice.

2AUN is having to relinquish his office as C.R. for Scarborough owing to pressure of business and studies, which is unfortunate, after all the work he has put in. All the members wish to offer him their thanks for his enthusiasm and help in the past.

The Hull and District meeting place has now been changed to the Young People's Institute, 83-93, George Street, Hull, owing to the fact that this building is easily accessible and central. There seems to be some misunderstanding with regard to the appointment of G5BP as our district scribe, as announced in last month's BULLETIN. This appointment was brought about with a view to obtaining more news and notes regarding the Hull membership, and in no way whatsoever does this alter the position of G5FV as C.R., but should relieve him of the work entailed in collecting and typing out the notes and news only!

G5FV sends in a list of the activities at his station, as this work is practically confined to 28 mc., both he and his brother must be very warmly congratulated on their fine performances, as all continents (with the exception of Asia) have been worked. Six contacts with ZS1H (also called by ZU1C), two with ZT6K, one with LU1EP, three with W4, one W1, one W9, one W2, and numerous W3's, whilst the crowning success was a contact with VK3BD. Quite a number of European stations have been contacted, and G5FV states that he thought he had raised a VU on October 20, but the VU signals faded completely before a report was received. Here we have an example of patience well rewarded! Carry on with the good work, brothers 5FV.

56 mc. activity is recommencing and G6OS, 5MN, 5GC have transceivers under way. G6OS has now built up a very fine unity-coupled push-pull transmitter which is being modulated with a pair of 50's; this is the main transmitter at the station for use on the lower frequency bands. Schedules will shortly be made.

G5GC is using break-in for local work and has had good duplex contacts on 1.7 mc. and 3.5 mc.

G6FQ has worked ZB and W on 7 mc. and is very active on this band. G6KN is also on 7 mc.

The visitor to the stations of G2QO and G5BP respectively, mentioned in last month's BULLETIN, was W6AWG and not W6AW, as stated in error.

G6OO is on 7 mc. and 3.5 mc., using telephony for as much work as possible; he hopes to contact more district stations in the near future.

Scotland.

News is still very scarce, but from "B" and "D" districts comes word that they have now completed arrangements for meetings. "B" are again holding theirs in the Belmont Street Hall, Aberdeen, while "D" move to the rooms of the Royal Society of Arts, 16, Royal Terrace, Edinburgh. Both districts hold their meetings once a fortnight. Full details of forthcoming meetings in "A," "B" and "D" districts will be found in the Calendar.

There is a general lack of reports from members. If you cannot find any news from your district just stop to think if you, *yourself*, have sent any to your District Officer. District Officers are not thought readers! G6LG, 2OX and 5TA are rebuilding their 7 and 14 mc. transmitters. G6ZX continues the construction of his new rig, but both he and G5YG, who is building a S.S. receiver, complain of delays due to the slow delivery of necessary components.

Few changes fall to be recorded this month: "A" district, BRS1803 is now 2AXA; and in "D" district BRS1919 becomes 2BSO. Several full licences are understood to have been issued, but the holders have failed to advise us at time of writing.

The first award of the trophy presented by Mr. Wyllie will be made at the end of November, and steps are being taken to arrive at a formula on which the award will be based.

As there are several applications for QRO permits brewing, applicants are reminded that increases of power are only granted on technical grounds, and, consequently, full details of the work necessitating the increase must be given. In addition, all applications must be accompanied to Scottish Records Office by a covering letter from the Applicant's District Officer; needless to say, such covering letter will be regarded as strictly confidential.

The only Scottish entrant in the VK-ZL contest, as far as is known, was G5YG, who finished with a score of 1,860 points, obtained by 62 contacts with VK and ZL districts. Conditions after the first two week-ends depreciated seriously, and only 21 contacts were made during the remaining two week-ends. It is understood that G6RV started, but had to give up due to serious QRM.

During the evening of the 18th and early morning of October 19, a particularly violent gale swept over Scotland. G6ZX, "A" district officer, it is believed, suffered the greatest loss, for a builder's shed was bodily blown into his garden totally wrecking his main mast in its progress.

EUROPEAN NOTES

Belgium.

By ON4AU.

On October 5, ON4AU succeeded in effecting the first Europe-Australia QSO on 28 mc., when he worked VK4EI. The QSO lasted from 09.55 to 11.20 G.M.T., and the QRK was R6/7 on both sides. The two stations concerned have exchanged a souvenir in commemoration of this fine contact.

ON4AU has heard ZL2BN and VS6AH. ON4AC has worked VK, W, and SU on fone on 28 mc. ZS1H and ZT6K come in very well all day, but ZT6K is very chirpy and hard to copy. SU1SG has been heard at R8/9 on 28,780 kc. Most districts of W and VE, and also LU, have been heard at good strength.

On the other bands conditions have also been good. A number of new stations are working on 14 mc. On 7 mc., which should be particularly good for DX this winter, HJ4ABG and fone from LU and YV have been heard every morning.

A lot of Belgian stations are preparing for the 3.5 mc. tests of the R.S.G.B. in December. The VK/ZL contest went off very well on 28, 14 and 7 mc.

Denmark.

By OZ7Z.

There are 185 licensed amateurs in Denmark, and quite a number of applications have been received by the P.M.G. lately. This is probably a result of the society's new policy, and it is hoped that the 200 mark will be passed soon. New licenses issued are: OZ3KT, 5DC, 8Z, and 9MN.

The E.D.R. has been working on improvements for Danish amateurs, and this has resulted in the following changes in Danish amateur regulations:—

The first licence issued to any person will cost Kr. 20, but if any licence is renewed in continuance of an old one, the fee is only Kr. 10. This is, of course, a great benefit for the old and regular amateur.

Licences can now be issued to persons under age—when from 16 to 18 years old. In this case, the parents or the guardian of the person applying for licence must sign the application form, etc.

Holland

By G6FY.

Another milestone in the history of the N.V.I.R. was passed recently when the 500th member was enrolled. This figure is in itself very gratifying for a small country, and is also noteworthy as representing a 25 per cent. increase in membership since the beginning of the year.

The N.V.I.R. DX contest will be in full swing by the time these notes appear, being scheduled for November 9-11, 16-18, 23-25, and November 30-December 2.

A novel type of event is being arranged to take place in the spring, when a "fox-hunt" field day is to be arranged, in which a 56 mc. and a 3.5 mc. transmitter will radiate from the same location. Search groups will endeavour to locate the transmitters by taking bearings on either or both frequencies, and keen competition is expected between the old frame aerial 3.5 mc. direction finders, and the more modern portable spaced aerial 56 mc. gear developed by a number of Dutch amateurs.

Empire B.E.R.U. News.

B.E.R.U. REPRESENTATIVES.

Australia.—I. V. Miller (VK3EG), P.O. Box 41, Tallangatta, Victoria. *Sub. Representatives.*—J. B. Corbin (VK2YC), 15, Yanderra Flats, East Crescent Street, McMahon's Point, Sydney, N.S.W.; R. Ohrbom (VK3OC), 22, Gordon Street, Coburg, N.13, Vict.; A. H. Mackenzie (VK4GK), Fire Station, Wynnum, Brisbane; G. Ragless (VK5GR) South Road, P.O., St. Mary's, S.A.; N. F. Ollivier (VK6FO), 26, Merriwa Street, Hollywood, W.A.

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

Burma.—W. G. F. Wedderspoon (VU2JB), Government High School, Akyab, Burma.

Canada.—C. S. Taylor (VE1BV), Stewiacke, Nova Scotia; Earle H. Turner (VE2CA), 267, Notre Dame Street, St. Lambert, P.Q.; W. P. Andrew (VE3WA), 1337 Dougall Avenue, Windsor, Ont.; A. E. Howard (VE4CJ), 2401, 25th St. West, Calgary, Alberta.

Ceylon.—G. H. Jolliffe (VS7GJ) Frocester Govinna.

Channel Islands.—Capt. A. M. Houston Fergus (G2ZC), La Cotte, La Moye, St. Brelades, Jersey.

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

Hong Kong.—C. Emary (VS6AX), P.O. Box 391 Hong Kong.

Irish Free State.—Col. M. J. C. Dennis (E12B) Fortgranite, Baltinglass, Co. Wicklow.

Jamaica, British Honduras, Turks Island and Cayman Island.

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

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

Malta.—L. Grech (ZB1C), 44, Sda San Benedetto Chircop, Malta.

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

New Zealand.—C. W. Parton (ZL3CP), 69, Hackthorne Road, Cashmere Hills, Christchurch.

North and South Rhodesia.—R. A. Hill (ZE1JB) P.O. Box 484, Bulawayo, S. Rhodesia.

North India.—J. G. McIntosh (VU2LJ) Baghjan T. E. Doom Dooma P.O. Assam.

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

South India.—J. Shepherd Nicholson (VU2JP), c/o Kanan Devan Hills Produce Co., Ltd., Munnar, Travancore.

Egypt, Sudan and Transjordania

By SU1SG, *via* G6RS.

Summer is practically over in Egypt, the return of cooler weather and amateur activities are synchronous, and once again local QSO's on 7 mc. between the various districts, including ZC, are linking up the members for a ragchew during the afternoons.

Most members are returning to 7 mc. after a successful season on 14 mc., during which SU1AQ, 1RO and 1TM have qualified for W.A.C.

14 mc., although practically dead in the evenings, is still good for ZL/VK contacts in the early mornings.

SU5NK has returned from G and is operating a C.C. rig on 7 mc. with good results; SU1RK has contributed his first article on ham radio to the local broadcast magazine, *Egyptian Radio*. This is to be followed later by descriptions of some of the licensed SU amateur stations.

SU1TM has circulated his first DX chart with a request for more support from members, and it is hoped that everyone will in future contribute calls heard and help to make this useful monthly circular on DX conditions a success.

All members will by this time have received full information concerning the 80-metre tests to be organised by the R.S.G.B. and scheduled to take place during December; this is an opportunity for everyone to do some useful work, and should not be missed.

A station signing SU1SS has been very active lately, in fact everyone appears to have heard it except people in the country from which the call is supposed to originate: this station is unknown in SU, consequently QSL cards cannot be delivered.

SU1SG is now active on 28 mc.; results have been encouraging; his signals are usually R9 in Europe and R6 in U.S.A. A successful break-in QSO was carried out with FA8CR, whose frequency is 28,780 kcs.

Hong Kong.

By VS6AX, *via* VS6AQ, VK3EG, ZL4CK, ZL4FO and G6WY.

VS6AH has returned from his honeymoon and has settled in his new QRA. He has a twisted pair of feeders for his transmitting antenna on 7 and 14 mc. During VK/ZL Contest, VS6AH was busy on 28 mc. and had numerous QSO's with VK,

he has also heard ON4RX; these are the first VK-VS6 QSO's on 28 mc.

VS6AQ has been on 14 mc. working West Coast U.S.A. about 12.00 G.M.T. with considerable success. VS6AX, also in for the VK/ZL Contest, has been on 14 mc. with 30 watts working Europe. VS6AZ has been rebuilding. BERS273 has been on 7 and 14 mc.; he has submitted his application for a transmitting licence. May is now BERS308, and, though he submits a report, is in hospital. BERS282 is busy working. Cleveley is BERS309 and sends a 14 mc. report. VS6AQ is now on 28,600 kcs. and will soon be testing daily.

Conditions on 7 mc. are improving greatly and G stations are head about 21.00 G.M.T., while 14 mc. is excellent for DX.

Irish Free State.

By EI9D.

Reports are scarce this month, although there has been considerable activity on 7 and 14 mc. in connection with the VK Contest. Conditions have been good on both bands, and some very creditable scores have been secured with moderate QRP.

EI5F has put up a good score, but details are not available. EI2B and EI6F are QRT, but will be on the air again in a few weeks. EI8G has been dividing his time between rebuilding his PA, erecting a Zepp and passing examinations. He did all three successfully, and, as a result of the first-mentioned, succeeded in making five VK contacts during the Contest, as also other good DX, using low power.

BRS1932, of Sligo, has submitted his licence application and is awaiting his morse test.

We welcome BRS2032, Mr. J. G. Carroll, of 9, Georges Place, Kingstown, as a new member.

A meeting of I.R.T.S. was held in Dublin on the 10th inst., when a satisfactory winter programme was arranged.

Kenya, Uganda and Tanganyika

By VQ4CRH.

The 14 mc. band continued to maintain its liveliness during September and was taken advantage of by nearly all active stations.

Ex-VQ4CRL has now left for South Africa and he wishes to state that his address will, until further notice, be c/o A. Bodley, 34, Currey Street, Kimberley. He hopes to be on the air shortly after his arrival. He is travelling down by road from Kenya and will no doubt look in at a few shacks en route.

VQ4CRO is now on fone on 14 mc. and will welcome reports on his transmissions, especially from G.

BERS191 (O. M. Walker) is now fully licensed with VQ4CRC call and hopes to be on the air before many days.

Active stations: VQ4CRE, VQ4CRO, VQ4CRR, VQ4CRH, VQ4LMA and VQ4KTA.

Malaya and Borneo.

By VS1AA.

VS2AG is the only station to report this month. 7 mc. conditions are improving, and 14 mc. DX appears to be on the wane. 2AG lost the first week-end of the VK/ZL contest owing to a well-earned spell in the cooler clime of Bukit Fraser. He is most enthusiastic over his new *McMurdo Silver* 5C receiver.

The letter budget with set of DX charts circulated by 2AG has not yet percolated back.

VS2AC (BERS179) is busy with volunteer apparatus, and so has little time to spare for the amateur bands. Hope to hear you soon, 2AC, and have the pleasure of a good QSO.

VS1AA (ex VS2AF) does not anticipate getting on the air for some time yet, as he is busy building up power units and finishing off the transmitter started many months ago.

We offer a hearty welcome to BERS303 and BERS304, both of Sandakan, British North Borneo. Please let us have a short report some day, OMs.

There has been a slight hiatus in connection with the use of our full 100 watts, owing to a limiting regulation which permits only of the use of 30 watts. Above this limit the special permission of the Director-General of Posts and Telegraphs is necessary. VS1AA requested permission to have the limit raised to 100 watts in respect of R.S.G.B. members, but this was refused. It is now up to each individual member to make good his own particular case for an increase in power. It must not be overlooked that those who do not seek covering authority, and who use powers in excess of 30 watts, are breaking the regulations.

New Zealand.

By ZL3CP, *via* ZL4FO and G6WY.

ZL3AJ reports that on October 12 at 01.00 G.M.T. he heard ON4AU on 28 mc. Earlier he heard W5, 7, 8 and 9 and one American was heard to say that he had worked ZS1H on 28 mc., this giving him the first WAC for this band.

The week before VK4EI worked F, ON, and D on 28 mc. ZL3GN has worked 41 countries in three months, 11 being contacted in 3 hours.

Southern India.

By VU2LJ, *via* VS1AJ and G2PL.

Local news is scarce this month, but most VU's have been busy in the VK/ZL contest. A distinct improvement in the tone of the VK signals was noted. It has been suggested that the letter budget be made the official gazette of all VU transmitters and BERS men and VU2JP will be glad to hear from those in favour of this suggestion. The idea is to give ourselves some official standing in regard to amateur radio matters. We propose forming ourselves into a club, which will deal with all matters relating to licences, frequency control, etc., and we hope that everyone in VU will support it. In this way we shall be able to give more active and useful support to the rest of the R.S.G.B. Will any member who does not already get the letter budget, and who is interested, kindly get in touch with either VU2LJ or VU2JP, as soon as possible? Further, will those who are not receiving the budget regularly, but wish to do so, write to VU2JP? This applies to every member of B.E.R.U. in India.

Heavy QRM is still being experienced by persistent CQ calls from VU2CQ.

BERS218 has proceeded on furlough to G, and we wish him a very good leave. BERS241 is now VU7MF, and we hope to hear him active soon.

(*Continued on page* 204.)

EDITORIAL.—(*Continued from page* 163.)

With 2,000 kc/s. available it seems strange that no one is yet making use of the high frequency end of the band, for it is quite conceivable that conditions for DX may often be better at one end than at the other. Some experimental work in this connection seems desirable.

We wish now to refer to the outstanding records which have been set up during the last few weeks. Probably the most important stands to the credit of Mr. E. J. Laker, G6LK, who at 5.30 a.m. on October 13 worked Mr. W. Bischoff, VK2LZ, thus making the first G-VK contact on 28 mc. On the same day Mr. Laker worked three other continents and heard VS6AH.

The next record of distinction is held by Miss Nelly Corry, G2YL, who at 9 a.m. on October 27, worked VU2LJ to gain the first 28 mc/s British Isles W.B.E. and the first R.S.G.B. W.A.C. She had previously worked Australia, South Africa and Canada. Following up her VU contact Miss Corry proceeded to work the other five continents in a total time of 6 hours 20 mins.! Her contacts were with VK4BP, CX1CG, G2MV, FA8CR and W4AGP.

We believe that the first 28 mc. W.A.C. was won by Mr. G. A. Shoyer, ZS1H, of Cape Town, whose signals have been the most consistent of all the DX stations for many weeks past.

Our congratulations are extended to those whose names have been mentioned and to all who have set a lead in the attempt to conquer the world on 28 mc.

B.E.R.U. NOTES—(*Continued from page* 202.)

Southern Rhodesia.

By ZE1JB.

October saw the first meeting of the recently formed Radio Advisory Committee in Salisbury, which lasted two days. Everything went smoothly, and if the recommendations of the Committee are fully embodied in the proposed new Experimental Radio Regulations, we shall have achieved all we had hoped for with a few minor exceptions. The postal authorities have promised to consider alterations of call signs in the near future, but exactly what the change will be is not at present clear. The prefix will necessarily be retained, but it is probable that the country will be divided into either three or four divisions and numerals allotted to stations according to situation.

ZE1JB won the Seventh International Relay Contest organised by A.R.R.L., in March, and is proud of his new certificate, which is the second he has won in these contests.

ZE1JC was unfortunate enough to have his outfit struck by lightning recently, necessitating various replacements. ZE1JE is using suppressor grid modulated phone with an RK 20. ZE1JH is busy on a 5-metre transmitter and receiver, and hopes to be on with it soon. ZE1JM is testing choke control of his grid modulation. ZE1JN has, at last, contacted South America, and is now WAC. South America has been a bugbear in Bulawayo for some time. ZE1JO had a nasty accident to his hand, but is now back on the air. He contacted U.S.A. on phone on 14 mc., using a class of grid modulation, the equivalent of about 10 watts. He has been awarded his WBE.

ZE1JS is doing a lot of DX and is out for the Rhodesian record for WAC.

ZE1JY has only been on the air for a couple of weeks, but has already worked VK on 7 mc. He is now trying grid modulated phone with success.

The September BULLETIN arrived too late to enable ZE Stations to participate fully in the VK-ZL Contest.

G5JH

We regret to record that Mr. Jack Hamilton (G5JH), of Gloucester, met with a serious motor-cycle accident recently, which has resulted in his station being closed down for some months. He asks us to express his regrets to the Dutch stations he worked during their last contest and to whom he has been unable to send QSL's. Mr. Hamilton's address is G Ward, Bristol Royal Infirmary. He will be pleased to receive letters.

Stray.

Mr. Hodgens, EI5F, informs us that, owing to a probable change of address shortly, all QSL's should be sent to him either *via* R.S.G.B. or c/o Radio Dept., Technical Institute, Kevin Street, Dublin.

Nomination Form

To The Secretary,
R.S.G.B.,
53, Victoria Street,
London, S.W.1.

DEAR SIR,

T.R. Elections, 1936.

I wish to nominate Mr.....

Call..... to serve as Town Representative for..... and have obtained his consent for the nomination being forwarded.

Signed .....

Call.....

This form must be returned not later than November 30, 1935.

Note: A copy of this form will be accepted.

EXCHANGE AND MART.

RATES.

Private members' advertisements 1d. per word, minimum 1s. 6d. Trade advertisements 2d. per word, minimum 3s., cash with order. First line, if desired, will be printed in capitals. Copy to reach 53, Victoria Street, or the Advertising Manager, Parrs, 121, Kingsway, W.C.2. not later than the 1st of the month preceding date of publication.

BARGAIN. 20/-.—Marconi Hand Generator, on stand. Gives 400v. at 25 m.a.—G5CM, School House, Alfold, Surrey.

BRS830 offers Magnavox MC Speaker, 2,500 ohms, field, 13/6. .0005 3 Gang Condenser Drum Dial, 8/6. SW Chokes (Igranic), 1/3. One-watt Resisters, 5d. All guaranteed.—106, Norlands Lane, Widnes.

CRYSTALS.—1.7 and 3.5 mc. bands; specify Frequency, 4/6; Holders, 2/6.—2BGG, 293, Rothbury Terrace, Newcastle-on-Tyne.

ENCLOSED HOLDERS for circular Crystals, 4/-. Universal (square or circular), 4/3. Vertical type for panel mounting, 4/6.—G6WQ, 10, Aberdour Road, Goodmayes.

EXCELLENT oak Cabinet to house Transmitter up to 250 watts. £4, or offer.—G5YH, 78, Nightingale Lane, S.W.12.

FOR SALE.—Eddystone Ham Band Two-receiver, complete with Mazda Valves and Coils for 3.5, 7 and 14 mc. bands; recently overhauled; best offer secures.—Apply, G5ZG, Ashleigh, Manor Road, Chigwell, Essex.

G5KT.—Attractive new designs QSL Cards. Lowest prices obtainable. Finest quality. Samples will convince.—QRA: 33, Howard Road, Westbury Park, Bristol, 6.

G6DS For neat and snappy QSL Cards, Log Books and Pads. Send for samples. QRA, "Inglenook," Orlando Drive, Carlton, Nottingham.

G6RL.—For all Short-Wave Components.—32-34, Earls Court Road, London, W.8.

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