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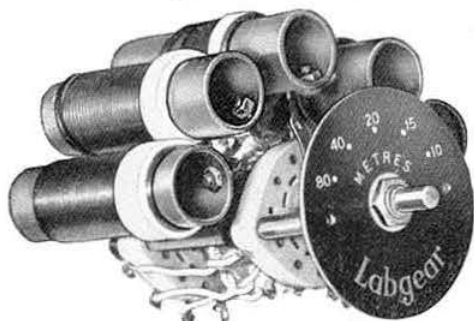
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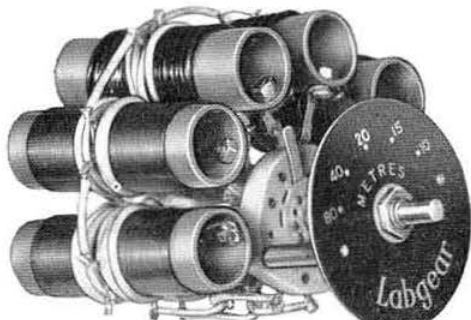
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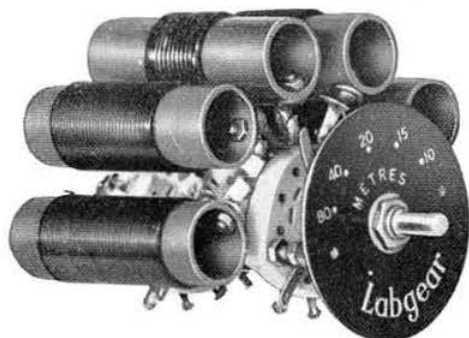
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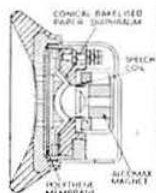


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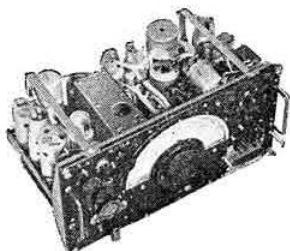
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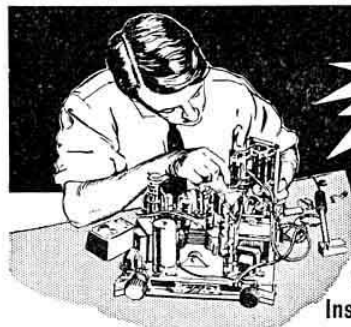
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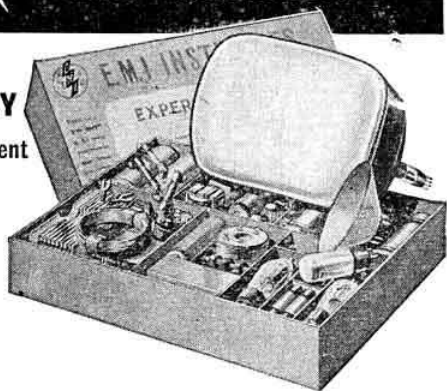


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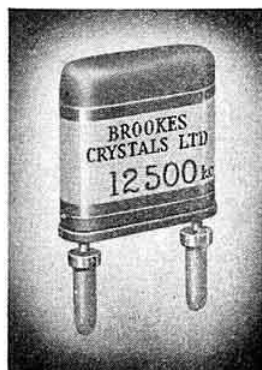
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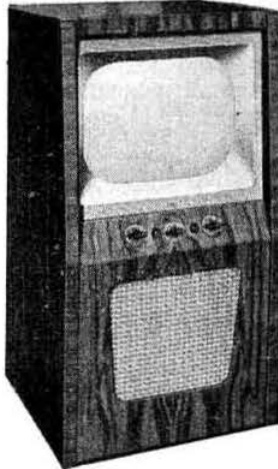
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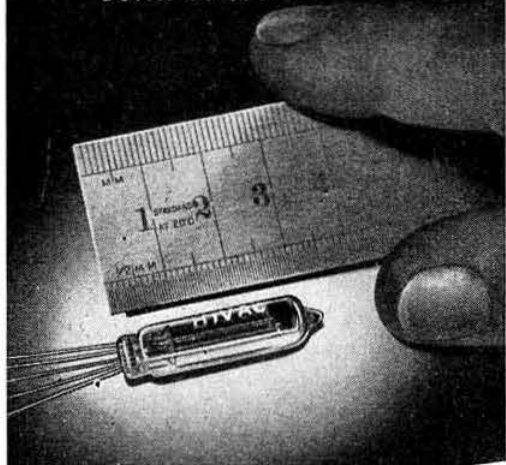
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R.S.G.B. BULLETIN, October, 1953.

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Further Facts About Frequencies

THE suggestion was thrown out here in August that if we British radio amateurs do not use all the frequency allocations we have—so far as we are able—we cannot complain if covetous commercial eyes are cast upon them.

Added point is now given to that statement by the proposal (reported on another page) to operate Business Radio services within the 420-460 Mc/s band. Possibly lack of occupancy may not have been the reason that prompted this proposal. On the other hand, it may. The argument could well have been that a sparse population of amateurs scattered throughout the country is not likely to inconvenience Business Radio operators, should the latter be given a 70 cm. allocation.

If the threat develops it could represent a further encroachment on our rightful (if shared) allocations—and one that was not sanctioned at the Atlantic City I.T.U. Conference.

The Atlantic City Frequency Allocation Table states that the 420-460 Mc/s band in Region I is allocated to the Aeronautical Radio Navigation Service and the Amateur Service, the former having priority. The Amateur Service is admitted on condition that harmful interference is not caused to the Aeronautical Radio Navigation Service.

It may be asked: "Why did the G.P.O. consult the Ministry of Civil Aviation on this particular issue, but not the R.S.G.B.?" In fairness it must be pointed out that in the Atlantic City Allocation Table, the Aeronautical Service is given priority, and that at present the situation has proceeded no further than a tentative enquiry.

For the record, two things are worth noting here in respect of the 420-460 Mc/s band: first, that it was opened to U.K. amateurs five years ago for normal amateur purposes (on October 1, 1948, three months earlier than expected); and secondly, that it was opened to Amateur TV only as the result of intensive negotiations by this Society, followed by ground-to-air tests (personally ordered by the then P.M.G.) to prove that "no harmful interference was caused" to radio altimeters by amateur vision emissions.

Showtime

AS radio's ramifications extend so do the various branches of the art become more specialised. This observation is prompted by one's reactions on looking back over the National Radio Exhibitions of the last 20 years or so.

There was a period when radio was still so experimental that the annual National show held quite a lot to interest the radio amateur—but that was a long time ago. As broadcast receiver design resolved itself into standard patterns the "ham content" and interest of the National Exhibition diminished. The organisers themselves were clearly aware of the dangers of monotony if year

after year the Show turned out to be nothing more than an exhibition of "little brown boxes." In the last half dozen years the glamour of television and the exciting electronic devices that were to be seen—mainly on Service stands—effectively staved off that monotony.

Even so, the "ham content" still remains negligible. Specialisation is represented by TV, by those high-power export sets, by electronics—but the one form of specialisation in which the readers of this magazine are mainly interested is not catered for.

That is why the R.S.G.B. Annual Exhibition in November has come to fill, quite literally, a long felt want. In the calendar of British Amateur Radio it is now second in popularity only to National Field Day, representing winter's indoor counterpoise to summer's great outdoor event.

There is always something of the party atmosphere about the Amateur Radio Exhibition, for one of its great charms is the opportunity it affords for the individual member to meet friends old and new, seen and (till the moment) unseen.

Important as the social side is, the exhibits are, naturally enough, the main consideration. Never can it be said that they fall into the routine of monotony. One of the characteristics of our own specialised branch of radio is a questing restlessness which, urging the constructor forward to build that "last word" piece of equipment, persuades him within a short time that it could be better. This characteristic, while likely to be exemplified especially in the Amateur Constructors' Section of the Exhibition, is evident nevertheless among the "professional" exhibits, where the search for the efficiency that comes from perfection is never ending.

Seeing these things, the visitor to the Exhibition will almost certainly be spurred to further endeavour in his own pursuit of the "ideal rig"—which, like most ideals, is virtually unattainable. That is all to the good, for that way lies progress.

See you at "The Royal."

Just a Fortnight Left

HOW many Members, it is to be wondered, passed over page 130 last month and did nothing? By October 31st—as stated on that page—nominations for their local R.S.G.B. Representatives should have been made.

In organisations of any kind it is difficult to persuade the private membership to stir themselves once a year and name the people they would like to represent them. Let that not happen this year in our Society.

If it looks like happening then the present representatives themselves will have to get busy. But wouldn't it be so much nicer if all nominations came from the membership at large?

There's a fortnight remaining! Do not be left without a T.R. in your group on January 1st, of 1954!—J.H.

High Angle Propagation

by P. H. SOLLUM, B.Sc., A.C.G.I. (C3BCL)*

This article, based on a lecture delivered by the author to a meeting of the Society held in London on November 21, 1952, discusses the connection between m.u.f. predictions and aerial design. In particular, the simple propagation theory underlying "Skybeam and Howitzer" aerial systems (described in the R.S.G.B. BULLETIN, July and August, 1952) is outlined, and maximum skip distance predictions are given a new significance in relation to the problem of layer shielding.

THE geometry of a transmission path is illustrated in Fig. 1. A wave from transmitter T leaves at a wave-angle of θ° to reach the layer at L . The angle of incidence at the layer is ψ° . After reflection, the wave returns to a receiver at P . The centre of the Earth is at O ; the radius of the Earth OT (4,000 miles approximately) is designated r , the virtual layer height is h , so the length OL is $(r+h)$.

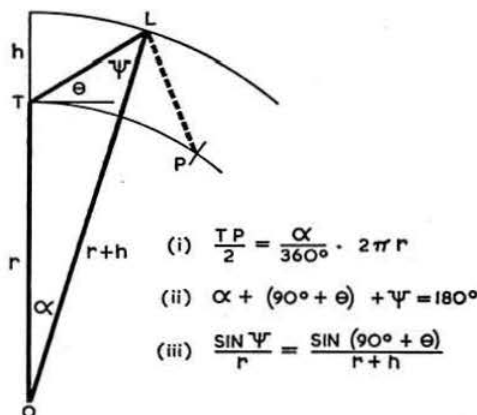


Fig. 1.—Diagram showing the geometry of ionospheric propagation, as discussed in the text. The three equations relate all the unknown quantities.

The three equations given in the figure relate all the quantities required. (1) The transmission distance TP is a fraction of the circumference of the Earth. If half the transmission distance subtends an angle α° at the centre of the Earth, then this half-distance is $\alpha/360$ of the circumference. (2) The angles of the triangle OTL add up to 180° . As θ , the wave-angle, is measured above the horizon, or tangent at T , the angle OTL is $(90^\circ + \theta)$. (3) In any triangle, the sines of the angles are proportional to the lengths of the opposite sides (standard theorem in trigonometry). The appropriate sides and angles give the third equation.

It will be observed that optical reflection and ray-paths have been assumed: the effect of layer thickness is neglected, and the height of the layer is assumed to be uniform. The effect of the Earth's magnetic field is also neglected. The results based on these assumptions are sufficiently

accurate for most practical purposes provided high angles of radiation are used (higher than, say, about 30°); at low angles the results will, of course, be only approximate, but nevertheless useful as a rough guide.

M.U.F. Factor

From the theory of reflection by an ionised region, it is known that the maximum frequency which will be reflected (m.u.f.) is proportional to the density of ionisation (a function of the position of the Sun, sunspots, etc.), multiplied by the secant of the angle ψ , at which the wave is incident on the layer. As the maximum frequency which is reflected at vertical incidence (for which $\psi=0^\circ$, $\sec \psi=1$) can be obtained from pulse and echo measurements, or predictions, it is not necessary to find the actual density of ionisation. To obtain the m.u.f. for any other value of ψ , the vertical incidence m.u.f. is multiplied by $\sec \psi$. The value of $\sec \psi$ is called the m.u.f. factor. Some difficulty arises in obtaining the correct value of ψ for a given transmission distance if allowance is made for layer thickness, etc.

Transmission Curves

The equations given in Fig. 1 have been plotted in Fig. 2 for typical heights of the three normal layers. This figure is built up as follows: Equation (1) relates the transmission distance to the angle α . The horizontal axis is therefore effectively calibrated in terms of α for the purposes of plotting the other angles. Equation (2) is used to plot ψ against α for particular values of the wave-angle θ . This gives the series of sloping lines drawn for every 10° of wave-angle. Equation (3) is used to fix the points corresponding to the layer heights on each of the sloping lines. The points for each layer height are then joined up to give continuous curves. Lastly, the vertical ψ -axis is recalibrated for m.u.f. factor, $\sec \psi$.

The figure refers to a one-hop transmission, or to the first hop of a multi-hop path. To use it, the required transmission distance is located on the horizontal axis. This point is projected vertically to meet the curve for the appropriate layer. The m.u.f. factor is obtained by reading horizontally to the $\sec \psi$ scale; the wave-angle required is found by interpolation between the sloping lines.

All, or part, of the information contained in Fig. 2 can be presented in many different ways. A graph relating wave-angle and distance was given in the R.S.G.B. BULLETIN, July, 1952 (Fig. 1, p. 8). Other figures (e.g. Figs. 6.7 and 7.3) are given in the N.B.S. Circular 462, "Ionospheric Radio Propagation." A detailed treatment of low-angle transmissions is to be found in D.S.I.R. Special Report No. 18 (H.M.S.O.).

Layer Shielding or Cut-off

As an example of the use of Fig. 2, consider the case of a 7 Mc/s transmission made at a time when the m.u.f.'s for vertical incidence are: $F_2=9.5$ Mc/s, $F_1=4.6$ Mc/s, $E=3.3$ Mc/s (Ceylon, November, 1952 noon predictions). On dividing the frequency in use by the m.u.f.'s, the following ratios are obtained: $F_2=0.74$, $F_1=1.52$, $E=2.12$. The significance of these ratios will now be examined.

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The frequency in use is below 0.85 of the m.u.f. of the F_2 layer for vertical incidence (it is 0.74 of the m.u.f.) i.e., below the optimum working frequency (o.w.f.), and is therefore suitable for "Skybeam" transmissions (see R.S.G.B. BULLETIN, July, 1952). There will be no skip zone. Signals will be reflected from the F_2 layer at all wave angles less than 90° , provided that the waves can reach that layer. But as the transmission distance reaches 430 miles, a wave angle of 40° is required, and at this wave angle the m.u.f. factor for the F_1 layer is 1.52. (Find the 430-mile point on distance axis and project it vertically to cut the F_2 layer curve. This point is on the sloping 40° wave angle line. At this wave angle—i.e. follow up the sloping line to the point where it cuts the F_1 layer curve, then read horizontally to the m.u.f. factor scale to obtain value 1.52). Therefore, at this wave angle, 40° , the frequency in use is the m.u.f. for the F_1 layer. At wave angles below 40° , the signal will be reflected from the F_1 layer and thus be prevented from reaching the F_2 layer. At this critical, or cut-off wave angle, the transmission distances for the two layers

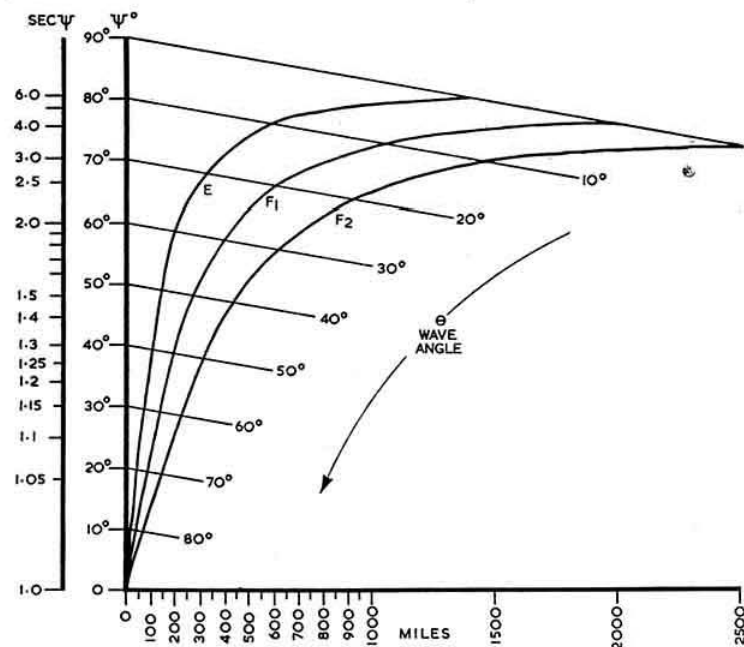


Fig. 2. — Transmission curves, drawn from the equations given in Fig. 1, for layer heights 100 km, 200 km, and 320 km of the E, F_1 , and F_2 layers respectively. The sec ψ scale is used to obtain the m.u.f. factor for a given distance; the vertical incidence m.u.f. for the appropriate layer is multiplied by this factor to give the m.u.f. for the path.

are important. (1) The distance by reflection from the F_2 layer is the greatest distance for which single mode propagation might be possible by suitable design, i.e. the wave angles of transmission might be restricted by aerial design so that only one main path from transmitter to receiver can occur. (2) The distance by reflection from the F_1 layer is, by definition, the maximum skip distance of the F_1 layer for the frequency in use. (Maximum skip distance is defined as the distance for which the frequency in use is the m.u.f. for the layer). From Fig. 2, this distance is 270 miles for the conditions quoted.

Similar cut-off conditions occur between the F_1 and E layers: the ratio 2.12 is the m.u.f. factor for the E layer at a wave angle of 28° , which is therefore the cut-off wave angle below which the E layer shields the F_1 layer. Signals that would be reflected by the F_1 layer to distances

beyond 270 miles cannot extend past 440 miles. The E layer returns the signals at and beyond 220 miles—the maximum skip distance for this layer.

TABLE 1

Distance (miles)	Layers Reflecting simultaneously	Number of Single-hop modes
0—220	F_2	One
220—270	F_2 E	Two
270—430	F_2 F_1 E	Three
430—440	F_1 E	Two
over 440	E	One

Multi-mode Propagation

The lesser of the maximum skip distances of the F_1 and E layers is the further limit of single mode propagation via F_2 layer as set by ionisation conditions alone. The nearer limit is the maximum skip distance of the F_2 layer itself. In the example above, this is 0 miles, as there is no F_2 layer skip. The distances and modes of transmission obtained above are classified in Table 1.

When two or three modes occur together, the received signal will suffer distortion due to the random mixing of the waves which have traversed different paths. This effect will be most severe when the path lengths and absorption losses cause the competing signals to have approximately equal field strengths. By designing aerials to restrict the wave angles of transmission (or reception), a particular mode may be much favoured, giving improved quality and reduced fading.

The F_2 layer mode is the most useful as it permits the use of the highest frequency for a given distance; also it is the highest layer and it is available day and night. Although emphasis has been given to daytime conditions, similar effects can occur at night via Sporadic-E layer.

The "skybeams" described in the R.S.G.B. BULLETIN (July, 1952), provide single mode transmission in the 0—200 mile range via F_2 layer when the lower layers are present (if the frequency used is close to the o.w.f.) with a minimum of interference to points outside the required area when the lower layers are absent.

Cut-off and Multi-mode Criteria

Having seen the significance of the ratio of the frequency-in-use to the m.u.f. for vertical incidence, it is possible to save the work involved in tracing particular cases through on Fig. 2, and to present the predictions on a chart from which

the cut-off conditions can be read directly. First, the vertical incidence predictions are obtained for the three layers. As an example, predictions for Ceylon, November, 1952, are given in Fig. 3. Suppose the frequency used for transmission is 7 Mc/s. This frequency is then divided by the predicted m.u.f. for each layer at each hour of the day to obtain the critical ratios at each time. These are plotted in Fig. 4. Now, from Fig. 2 it is possible to recalibrate the critical-ratio axis in distance.

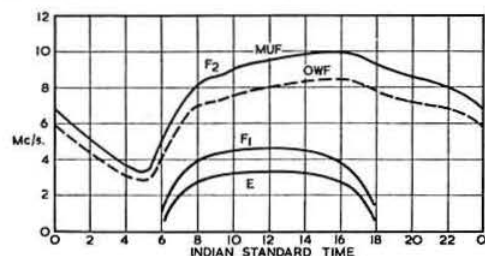


Fig. 3.—Predictions of vertical incidence m.u.f. for Ceylon, November, 1952. The optimum working frequency suitable for "skybeam" transmissions is shown 15 per cent. below the m.u.f. for the F_2 layer.

Two calibrations are required, one giving the maximum skip distances equivalent to the critical ratios for each layer, the other giving the furthest distance reached via one layer when the lower one starts shielding. These two calibrations are only slightly different at high angles of radiation, but appreciably different at low angles: the cut-off phenomena occurs at a particular wave angle, for which the incidence angles are different for each layer height.

If Sporadic-E data is available, it may be found that its m.u.f. is sometimes higher than that for the F_1 layer. The maximum skip distance calibrations still apply, but the distance via F_2 layer at cut-off depends upon which of the lower layers is shielding. A scale is given for this possibility of the E layer cut-off applying first.

The example given previously, quoting the noon conditions, can be checked on Fig. 4. It is important to use the scales appropriate to the layer being considered.

Short Skip Service

Vertical incidence reflection can occur whenever the critical ratio is less than 1.0, and might be used for a service so long as a 15% safety margin exists (the o.w.f. condition). However, for a particular frequency all three layers may have a skip zone. The maximum skip distance for the F_2 layer then gives the nearest distance for reliable reception, and the cut-off conditions are found as above. It is seen that ideal single mode coverage is then limited at both near and far edges by ionospheric conditions. It may be required to cover a greater range of distance employing a single frequency than would appear possible under these limitations.

For example, a distance range extending from 325 miles to 1,300 miles is to be covered by a single frequency. This would be almost impossible during daytime even by multi-mode single-hop propagation: cut-offs would compel the use of all wave angles between 49° (via F_2 layer for the near limit), and 0° (via E layer for the far limit). A practical solution (given enough transmitter power or aerial gain) would be to divide the distance range as follows: 325-650 miles to be covered by one-hop transmission via F_2 layer, and 650-1,300 miles to be covered by a second hop via the same layer. The aerial could be designed to concentrate the power into a restricted range of wave angles which would minimise multi-mode propagation, and offset the losses in the second hop. The important point is that the first hop must be effective over a 2:1 distance range, so that the second hop can merge to give good coverage of the required range (with a little two-mode service at the overlap, of course, depending on the sharpness of the aerial beam). For complete coverage, the skip distance of the second hop—twice that of the first hop—must not be beyond the cut-off distance of the first hop.

With reference to the example, a detailed examination will now be made: The m.u.f. factor for 325 miles via F_2 layer is 1.28, so the factor giving the o.w.f. is 1.28×0.85 , i.e., 1.09.

The F_1 layer m.u.f. factor for cut-off of F_2 layer at 650 miles is 1.9. The E layer need not be considered in this example as it is intended to use only F_2 layer propagation, and F_1 cut-off will always apply before E cut-off except for intense Sporadic-E occurrence. The critical ratio deter-

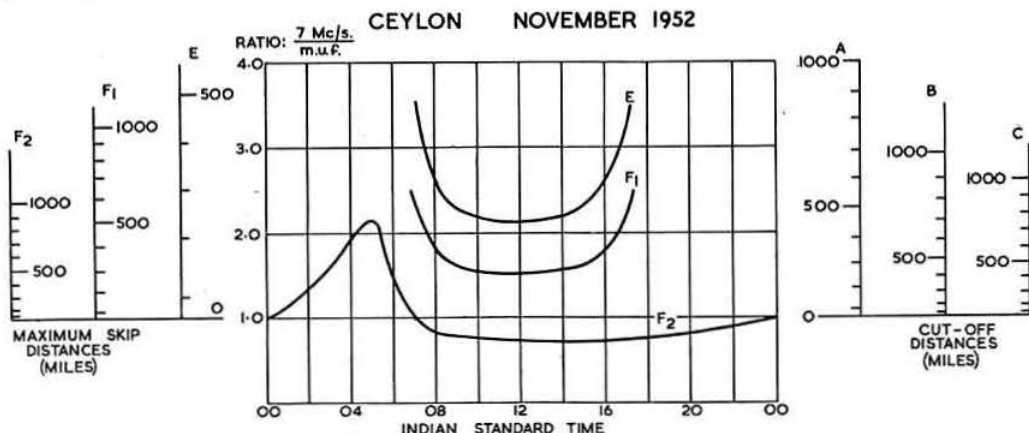
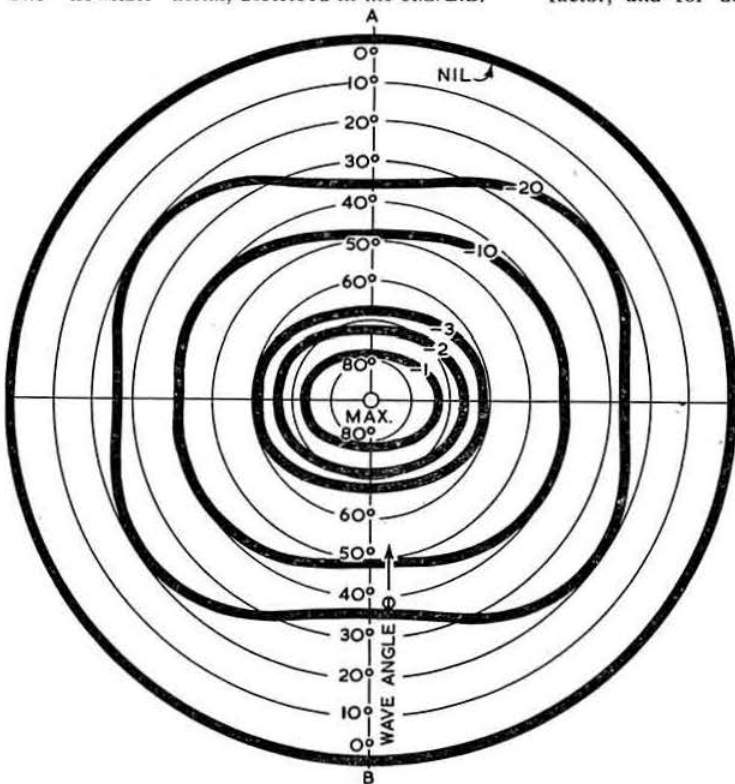


Fig. 4.—Calibrated critical ratio chart, with curves drawn for a frequency of 7 Mc/s with m.u.f. conditions from Fig. 3. Maximum skip distances are determined by using the appropriate scale for the layer concerned. Cut-off distances are found thus: the distance via the F_2 layer when F_1 cut-off just applies is read from scale C in conjunction with the F_1 layer curve. The distance via F_1 layer when E cut-off just applies is read from scale A using the E layer curve. The distance via F_2 layer in the exceptional case of E cut-off applying directly to this layer is read from scale B using the E layer curve.

mining the possibility of a 2:1 distance range for the first hop, will be the ratio of the lower layer cut-off m.u.f. factor to the o.w.f. factor for the F_2 layer for the near distance limit. This ratio is 1.9/1.09, i.e. 1.74. If the ratio of the vertical incidence m.u.f.s of the F_2 and F_1 layers is found to be not less than this critical ratio at any time, then the required service will be possible.

Reference to Fig. 3, and use of a slide rule will show that the minimum ratio of F_2 m.u.f./ F_1 m.u.f. is 1.98 at 0930 hrs. This is well above the critical ratio for the required service which is therefore possible at all hours of the day. There is, in fact, a very useful operational margin: it is usually necessary to employ the nearest lower allocated frequency channel instead of the ideal o.w.f.

The "howitzer" aerial, described in the R.S.G.B.



BULLETIN (August, 1952), was designed to concentrate the radiation between wave angles 29°-49° for a service from Ceylon to India, to which the above example corresponds.

Conclusions and Observations

The above discussion has illustrated the significance of the ratios of the m.u.f.s of the three layers: the ratios to each other being criteria of possibility of a required service; the ratios to a given frequency determining the skip distances and cut-off conditions. It is fortunate that the three layers always ionise in roughly similar proportions, depending as they do upon the same solar radiation. Investigation of the ratios prevailing over a period is, however, desirable to ascertain minimum values if a consistent service is to be established. The parameters of aerial design can then be fixed, and the arrays scaled up or down according to the actual frequency required.

It should be noted that the ionosphere has been assumed to be uniformly ionised over the area involved in reflection of high angle signals—about 300 miles radius from the transmitter. As in the case of the other assumptions made for high angle propagation, this is justified for most practical purposes, particularly in the tropics where ionisation density does not change rapidly with latitude. However, the density always changes quite rapidly with longitude around sunrise and sunset, and therefore there may be occasions when it is desirable to make allowance for the possible error. To do this, the vertical incidence m.u.f. is obtained for the actual reflection point for each distance considered (located at half this distance measured from the transmitter in the appropriate direction), and this value is used when applying the m.u.f. factor, and for determining ratios.

Application

The transmission curves in Fig. 2 give the relation between wave angle and distance which is necessary to correlate a great circle map (centred on the transmitter) with the power distribution diagram of the transmitting aerial. Such diagrams which were introduced in the R.S.G.B. BULLETIN in August, 1952, show contours drawn through points (specified by wave angle and direction) towards which the radiated power has

Fig. 5.—Power distribution diagram for a four-element "skybeam": two side-by-side rows of two co-linear dipoles, all fed in-phase, at $\lambda/4$ height above ground. The gain of this aerial is just over 9 db. relative to the $\lambda/2$ dipole in free-space. The contours, which are calibrated in db. relative to the maximum intensity of radiation, pass through the space-directions towards which equal power intensity is radiated. The direction A-B is parallel to the wires of the dipoles.

the same intensity. An example is given in Fig. 5. It shows the performance of a four element "skybeam" suitable for coverage of England and Wales. In this array two rows $\lambda/2$ apart, each containing two co-linear dipoles spaced $\lambda/2$ centre to centre, all at a height of $\lambda/4$ above ground, are so fed that the four elements carry equal currents in-phase. The maximum radiation is therefore directed vertically upwards, as is shown at the centre of the chart. Contours are drawn for -1, -2, -3, -10, -20 db relative to the maximum intensity; the -3 db contour encloses the space-directions of the useful beam.

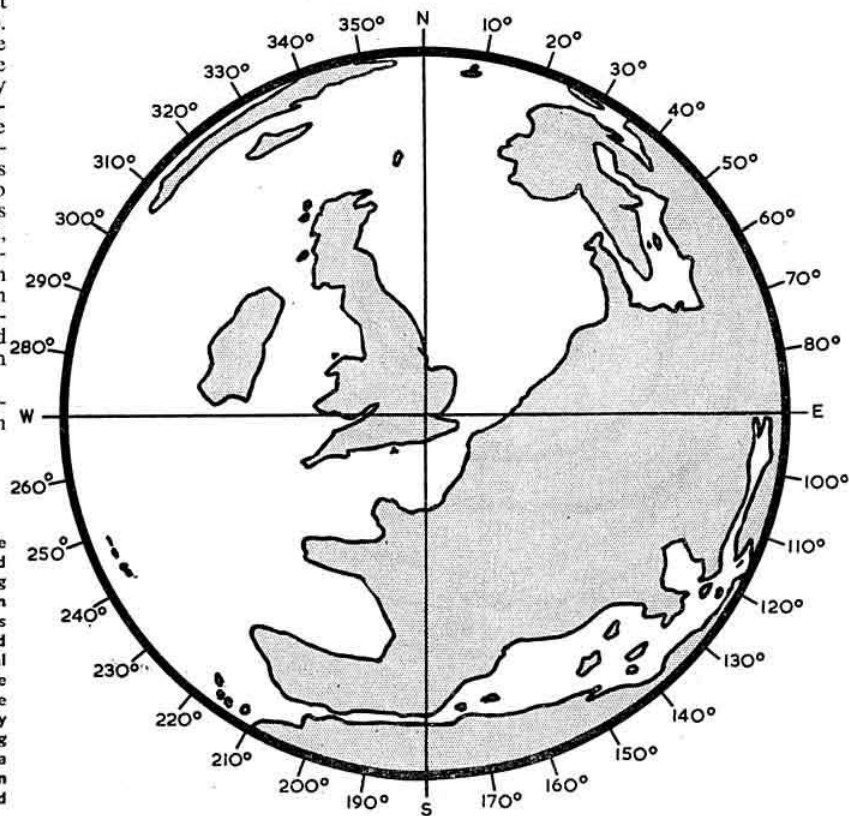
The general arrangement of this diagram corresponds to that of a great circle map, except that wave angle is measured (in a decreasing sense) outwards from the centre of the chart, whereas it is distance that is measured from the centre of the map. As the relation between wave angle and distance has been found, it is possible to distort the great circle map by adjusting its radial

distance scale so that it corresponds to the wave angle scale of the chart. If such a map is superimposed on the chart with the direction of the aerial correctly orientated (a tracing of the map may be made and placed over the chart), the contours then show the map area covered by the beam, i.e. all the area inside the -3 db contour, and the other contours indicate the relative power intensity radiated towards all other points of the map.

A correctly distorted great circle map centred on London, of the same size as the aerial chart, is given in Fig. 6. This figure has been prepared as follows: a tracing of the usual great circle map was made, and then photographed. The negative was projected in an enlarger onto a sheet of polar graph paper which had been calibrated in wave angle like the aerial chart. Choosing a particular distance-radius on the map, the projected length of this distance was adjusted by the enlarger until it corresponded exactly to the wave angle radius required for that distance (from Fig. 2). The coastlines were then plotted at the points where they crossed the appropriate wave angle circle. This was repeated for distances sufficiently adjacent to enable a continuous coastline to be drawn, the degree of enlargement being adjusted in each case to obtain the correct correspondence of projected distance-radius with wave-angle-radius.

In order to emphasise the concentration

Fig. 6. — Great-circle wave-angle map centred on London, assuming single-hop propagation via F_2 layer. The scales of this map correspond to those of the aerial data chart, Fig. 5, so the exact coverage of the beam can be seen by superimposing a tracing of this map on the data chart. The preparation of this map is described in the text.



of power on the aerial charts in a suggestive way, the contours may be coloured similarly to height contours in an atlas. The author has found the following colour scheme to be suitably distinctive: interior of -1 db contour mauve, the space between -1 db and -2 db contours brown, between -2 db and -3 db contours red, between -3 db and -10 db yellow: a pale colour to emphasise the edge of the darkly coloured useful beam and suggest a weakening of signals; between -10 db and -20 db pale blue, and outside the -20 db contour, no colour suggesting no radiation.

At some later date, it is hoped to present a series of aerial data charts to the same scale as the map in Fig. 6. Several charts have already been prepared for the horizontal half-wave dipole, the two-half-waves-in-phase, and the one wavelength long wire, each at various heights above ground.

Radio Servicing Certificate Examination

NEW regulations for entry to the Radio Servicing Certificate Examination have now been approved and details may be obtained on application to the Secretary, Radio Trades Examination Board, 9 Bedford Square, London, W.C.1. The closing date for entries for the 1954 Examination is February 1, 1954.

British Institution of Radio Engineers

A LECTURE on "Printed Circuits: Some Principles and Applications of the Foil Technique" will be given by P. Eisler, Dr. Ing. (Technograph Electronic Products, Ltd.) at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1 on October 21 at 7 p.m., after the A.G.M. of the Institution.

R.S.G.B. BULLETIN, October, 1953.

Miniature Top Band Transmitter

by M. W. S. BARLOW (G3CVO)*

The simple transmitter described in this article is admirably suited to the conditions now prevailing on Top Band. It follows the modern trend towards small, packaged equipment and although its power rating is well below the legal maximum for the band, it is capable of giving an excellent performance.

THE original Top Band transmitter in use at G3CVO was the usual 6V6-6L6 combination mounted on a standard 19 in. rack panel. By modern standards it was somewhat large and occupied a great deal of valuable space. After some consideration it was decided that a suitable rig could be built on an 8 in. x 4 in. chassis which would fit conveniently into a cover of the R.F. 24 type of unit.

Many of the components in the old transmitter were too large physically for the new unit but some were pressed into service, as may be seen in the photograph. If they were replaced by smaller parts it would be possible to install a small power supply on the same chassis, instead of using an external power pack.

Circuit Arrangement

The circuit (Fig. 1) consists of v.f.o., p.a. and modulator stages.

The v.f.o. is a Z77 miniature valve which provides sufficient output over the entire band to drive a TT11 p.a. This makes the power output from the

transmitter slightly lower than the original but reduces the h.t. and l.t. consumption considerably, in addition to reducing the heat generated. It was not convenient to use plate- and screen modulation and clamp valve modulation (using one-half of a 6SN7) is therefore employed. The quality attained depends to a great extent on the aerial loading. The other half of the 6SN7 is wired up in such a way as to provide a substitute for a microphone battery. Removing the microphone jack breaks the heater circuit of the 6SN7 so that the screen voltage of the p.a. valve rises when c.w. is used. The keying jack is wired in series with both the oscillator and p.a. cathode circuits, and a "send-net" switch enables the v.f.o. to be tuned without radiating a signal. Should external modulation be available, an insulated jack could be wired across this switch so that modulation voltage could be fed to the plate and screen of the p.a. valve.

As both v.f.o. and p.a. tuning condensers are brought out to the front panel via extension rods, no room is left for the installation of a meter. However, a meter is not essential, and a flashlamp bulb coupled to the p.a. anode circuit—actually wired across the link winding—serves as an indication of resonance. The p.a. is tuned for maximum brilliance, and the aerial coupling increased until the lamp is at minimum illumination. For random lengths of wire, a pi-section coupler is probably the best but as it would call for the use of a rather large capacity condenser it might prove difficult to install in the small space available. With the aerial normally used at

* 29 Loftin Way, Chelmsford, Essex.

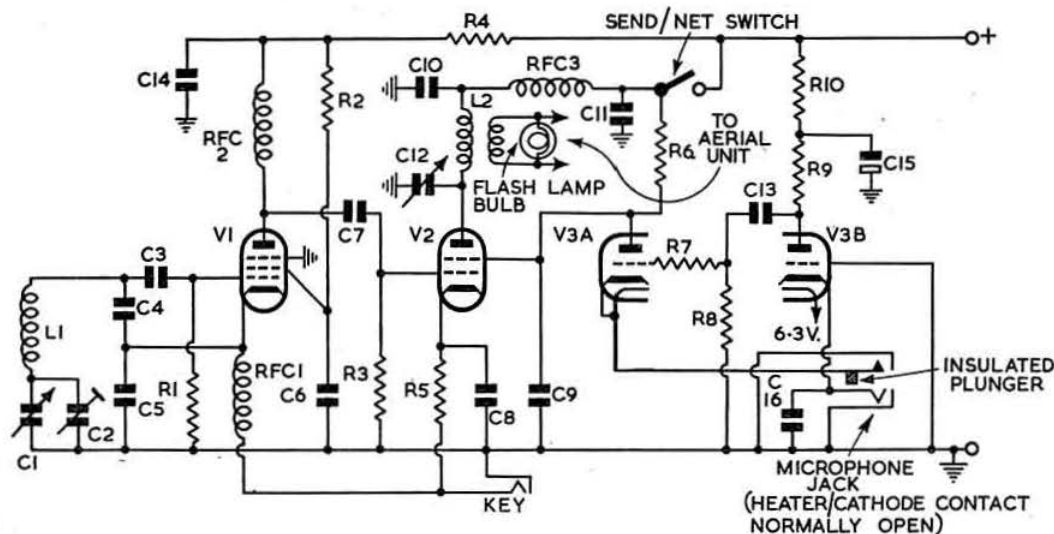


Fig. 1.—Circuit diagram of the miniature Top Band transmitter.

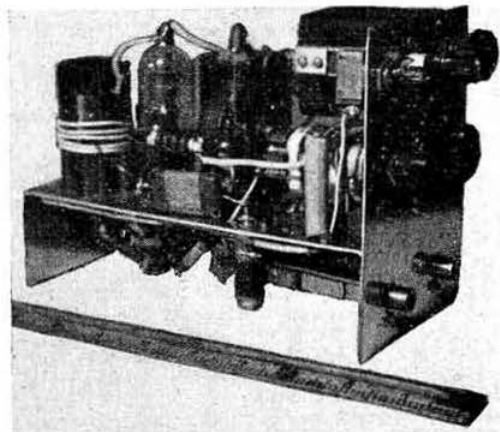
C1	100 μ F variable
C2	150 μ F pre-set
C3, 7	200 μ F
C4, 5, 9, 11, 14	0.001 μ F
C6, 8, 10	0.01 μ F
C12	160 μ F variable
C13	0.1 μ F
C15	16 μ F

L1	Medium wave broadcast coil
L2	50 t., 24 s.w.g. enam., close-wound on 1 1/2 in. former, 5 t link at earth end.
R1	50,000 ohms, 1/2 W
R2	47,000 ohms, 1/2 W
R3, 9, 10	20,000 ohms, 1/2 W

R4	15,000 ohms, 1 W
R5	200 ohms, 1/2 W
R6	27,000 ohms, 1 W
R7	39,000 ohms, 1/2 W
R8	470,000 ohms, 1/2 W
RFC1, 2, 3	Radio frequency chokes
V1	Z77 or EF91
V2	TT11
V3	6SN7

G3CVO, a series tuned circuit is necessary, and this can be conveniently link coupled to the p.a. coil. It is essential that the whole aerial coupling unit should be assembled in a screened box.

If desired, miniature valves could be used in the p.a. and modulator stages. Any miniature power pentode could be used in place of the TT11 and a 12AU7 substituted for the 6SN7. To make best use of these valves physically small resistors and condensers—consistent with suitable ratings—should be used.



The miniature transmitter showing (left to right) the p.a. coil, TT11 p.a. valve, p.a. tuning condenser and v.f.o. tuning condenser. The Z77 valve may be seen in front of the p.a. condenser, and the aerial tuning unit is housed in the screened box mounted on the front panel. Some idea of the size may be gained from the 12in. rule in the foreground.

Power Supply

The transmitter may be run from any small power supply, provided it has good regulation. The note is always T9 but the frequency may vary if the h.t. supply varies. If this should occur, a miniature stabiliser type QS70/20 across the oscillator h.t. supply will cure the trouble.

Before the unit is finally screwed into its case, the current taken by the p.a. should be measured, as the bulb indicator is no check on the power input. As the clamper valve produces a form of suppressed carrier, reception is improved by turning off the a.v.c. on the receiver.

"Waves Against Waves"

PHILIPS of Hilversum, have recently published a most fascinating little booklet entitled "Waves Against Waves," being an account of the telecommunications aspect of the disastrous floods in the Netherlands earlier this year.

Naturally, the booklet deals largely with the very important part which the Philips organisation played in supplying apparatus and to the performance thereof, but a considerable part of the text is devoted to an account of the work done by Dutch radio amateurs and to paying a glowing tribute to their efficiency and adaptability. The following quotations are of special interest:

"Everyone knows him, the radio amateur, the ham. The man who tinkers on the least provocation with all kinds of strange and intricate equipment. The fellow who jumps for joy when he has made a long-distance contact. They, the radio amateurs, are the pioneers of radio who, in times past, created radio broadcasting and short-wave

communication. What they have achieved during the calamity with their emergency network for the flooded areas is next to, if not, unbelievable. They set up this emergency network within a few short hours after regular telephone connections were broken, and re-established the essential links with the distress areas. They also organised the relief work in the first instance and, via their central station at The Hague, guided it into the right channels. For days on end they had no chance to wash, sleep or change their clothing but they were on the air 24 hours a day, often themselves victims of the floods."

The story is told of one man, a radio dealer, who actually constructed a transmitter on the spot from available components and got it on the air with a coil wound round a bottle.

In summing up the work done by amateurs and others, the writer comments: "All through history, calamities have fallen on the world and never will mankind be able to restrain nature. If this disaster had occurred a century earlier, the number of casualties would have been ten times as many. The best equipment in the world is no good when not in the right place. Telecommunication is indispensable. In spite of the fact that in a few days an emergency network was set up, hours were lost when seconds counted. A Country, a Government may not go to sleep, it must forever be on the alert, even when everything is quiet. Has not history taught us the lesson, Lest we forget?"



"SAY O.M.
I'VE FINISHED MY
ELIZABETHAN -
GOT TWO BITS
ON THE DIAL
FROM A
PREVIOUS MODEL"

G. TOOSE-EADY
1953

Cartoonist G. Toose-Eady pays tribute to Louis Varney, designer of the Elizabethan—the beard has now been removed!

An Efficient Multi-Band Aerial

By N. HALL (G3DRF)*

AS most amateurs are limited to a back garden (or, in the case of flat-dwellers, to a roof) for the erection of aerial systems, care must be taken to avoid unsightly fixtures. For this reason the following arrangements were evolved for use at G3DRF.

The system, illustrated in Fig. 1, comprises an ordinary dipole for 10-metre operation, with additional quarter-wave aerial lengths on either side, interrupted by switches S1 and S2. Any

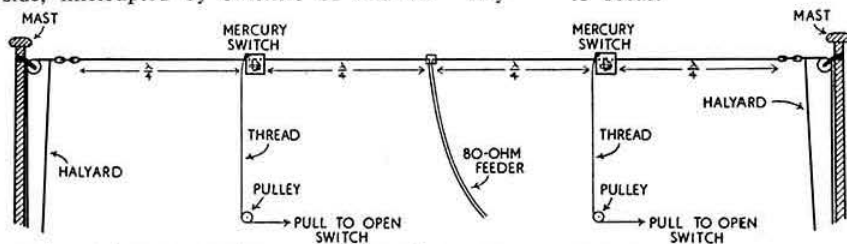


Fig. 1.
The multi-band aerial at G3DRF, showing switching arrangements.

number of extra sections can be used to suit requirements, each section being switched so that the overall length of the dipole can be quickly changed to match the band on which it is desired to operate.

In this way, the impedance at the dipole centre remains constant for all bands, thus simplifying transmitter output coupling and providing a low input impedance for the receiver. The feeder can consist of 72-ohm balanced twin, but in the case of the flat-dweller, the use of screened twin feeder would help to reduce local noise and man-made static.

Switching System

Mercury switches are used for connecting and disconnecting the additional dipole sections, various types being available as war surplus for a few shillings (e.g. a suitable switch can be obtained from Southern Radio Supply, Ltd., 11 Little Newport Street, London, W.C.2, for 5/6). The switches used at G3DRF were mounted on a

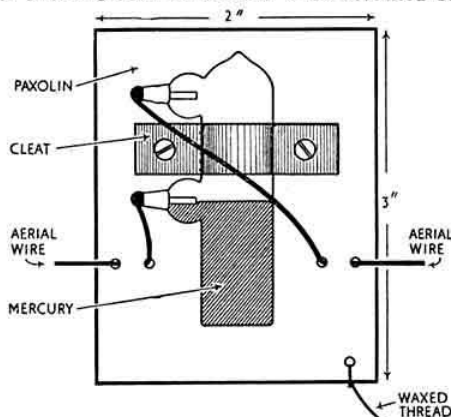


Fig. 2.
Diagram of mercury switch installed in aerial

small piece of paxolin and held by one brass clip (Fig. 2). These were placed at the quarter-wave junctions, pivoting with the point of balance about two-thirds of the way from the bottom—though this will vary according to the weight of

the particular switch in use. Ideally, the switch should be balanced so that it just stays in the "on" position by its own weight.

A strong thread is attached to the corner of each switch; when the thread is pulled, the switch is inverted, and the circuit is broken. As a precaution against weathering, the writer boiled the thread in paraffin wax, and it has been in use for more than two years.

Since it is not necessary to operate the switch while the system is radiating, the possibility of flashover does not arise. The switches are placed at points in the system where r.f. voltages are high, but provided the mercury switch contacts are not too close together, leakage is unlikely to occur.

Results

In the early stages of experiment with this aerial, the writer used 150 watts input, and the results obtained on 28 Mc/s were compared with those of a 3-element wide-spaced beam: the dipole was a few decibels down on the beam, but a good all-round performance was achieved. Later, using 25 watts on 14 Mc/s, good results were obtained. There is no evidence that the aerial is in any way superior to the normal dipole, but experiments indicate that it has a broader polar diagram on the frequency bands used.

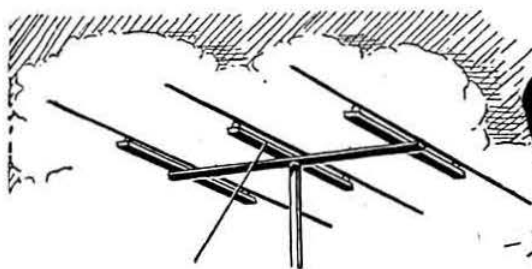
Home Constructed Communications Receivers

FROM time to time the Society receives requests for the design of a communications receiver which could be constructed by the average amateur not possessing more than the simplest of workshop facilities.

The problem has been discussed by the Technical Committee on several occasions but no satisfactory solution to the points set out below has so far been found. It is known that several members have constructed efficient receivers for their own use and they are invited to give brief details of their designs with particular reference as to how certain constructional problems have been overcome. At the same time, the views of those interested in building a home-constructed communications receiver would be welcome. Letters—which should be addressed to the Editor—should set-out the standard of performance and frequency coverage considered desirable and the anticipated cost.

The problems appear to be (a) the performance required; (b) the cost, bearing in mind that in a published design it is not practical to specify items of surplus equipment the availability of which cannot be guaranteed; and (c) the method of coil-changing, remembering that a signal generator is by no means a normal facility in an amateur station.

* 32 Cissbury Ring South, Woodside Park, London, N.12.



AROUND THE V.H.F.'s

By W. H. ALLEN, M.B.E. (G2UJ)*

420 Mc/s Record Again Held by U.S.A.

HB1IV works G and CW. GM/GI First Contact on 420 Mc/s

THE GW2ADZ/ON4UV 420 Mc/s world record of 362 miles was surpassed on the evening of July 26 by a contact between WIRFU and W4TLM over a 410 mile path. The gear used for this fine effort comprised a 4X-150A coaxial line tripler on 433 Mc/s feeding a 64-element array at WIRFU while W4TLM had a 2C39 final on 435.5 Mc/s working into a 72-element array 9 elements high and 4 wide. The receivers were both crystal controlled, the former station employing a coaxial line crystal mixer and the latter a 2C40 r.f. amplifier ahead of a crystal mixer. Signal strengths were S7 and S5 respectively.

It is worthy of note that WIRFU's signals were barely audible at a point 310 miles distant and in the direct path of the transmission. Despite the view expressed in the United States from time to time that valve mixers are superior to crystals, the latter were used at both stations.

Scotland-Northern Ireland 70 cm Contact.

GM6WL/P operated from a site near Drummore, Mull of Galloway, Wigtownshire, from September 2 to 15, on both 2 m and 70 cm. During unsuccessful tests with G13GQB (Newtownards, Co. Down) on September 7, GM6WL/P was received at S9 plus by G13FWF/P at Drumbo, 40 miles away. Two days later, at 1430 B.S.T., the first GM/GI 70 cm contact was made with that station, signals being S9+ both ways on 'phone and c.w.

G13GQB was worked on September 12 with reports of RST579 in each case. G13FWF/P carried out further receiving tests with GM6WL/P from near Banbridge, 500 ft. a.s.l. and 52 miles distant and from Keady, Armagh, 70 miles away and 700 ft. a.s.l. In both cases, very strong signals were reported.

The Scottish station used a six stage c.c. transmitter ending in a Mullard QQVO3-20 tripler driving a pair of CV53s in push-pull, giving 6 watts output for 10.5 watts input. H.T. was provided by 300 volts of dry batteries. The aerial was a 20-element colinear stack with reflectors. On the receiving side, a CV88 coaxial r.f. stage was followed by a push-pull CV253 crystal mixer, the oscillator being a 955 on 145.6 Mc/s with a harmonic selector cavity. A type 1196 receiver provided the 4.8 Mc/s i.f. and remaining stages.

HB1IV on Two

The Swiss station HB1IV, operating on 144.66 Mc/s from Mt. Pilatus at the south westerly end of Lake Lucerne from September 11 to 13, made his first contact with England when he worked G8OU (Ashted, Surrey) at 1630 B.S.T. on September 12. He raised G5MR (Hythe, Kent) at 1940 B.S.T. the same day, signals being RST589 and RS58 with periodic deep fading. G5MR's report was RST569 and the distance 428 miles. HB1IV also worked G3BNC, 3FIJ, 5YV, GW2ADZ and possibly a few others.

*32 Earls Road, Tunbridge Wells, Kent

Other Two Metre News

G6XX (Goole, Yorks.) is getting vastly improved results with a 12 element stack in place of a 4-element Yagi, helped along by an increase in power to 70 Watts. He has worked GM6WL (Glasgow), SM7BE and F8GH among 101 stations contacted since July 1. HB1IV was missed, despite repeated calls. G6XX is still looking for stations in the West Country and in South Wales. He was heard for the first time by G2UJ on September 7 at 2020 B.S.T. when signals were RS58/9 on 144.36 Mc/s. Another station having considerable success with DX is G5BD (Mablethorpe, Lincs.). His Ladder claim of 12-62-10 includes contacts with GM3DIQ, GM3ENJ and G13FJX. The latter, making his first G contact, was using 10 Watts to an indoor beam. OZ3WK, although not worked by G5BD, was heard to say that his p.a. was a single 6J6. His 'phone was RS56/7.

G2AHP (Perivale, Middx.) states that several stations may be heard on 2 m between 0700 and 0830 B.S.T. when conditions are often very good. G5YH is looking for contacts at this time.

G8VN (Rugby), who has 16 watts to an indoor 4-element Yagi, found August 31 a good evening. G4AU (London, S.E.) was worked and G2BMZ (Torquay, Devon), G2CZS and G6CH (Strood, Kent) heard. Conditions were again favourable on September 5 when contact was made with G2DDD (Littlehampton, Sussex). Stations heard included G2DVD, 3EGV, FAN, FJR, FMI, WS, 4SA, 5BD, MR, TZ/A, 6RH, XX and 8OU, all between 2300 and 0020 B.S.T. on the following morning. September 7 was also a good day but even better was the evening of September 13 when EI2W was heard at excellent strength, together with G2FJR, HDZ, 3DVK, FMI and 6VX. G5MR, despite his badly screened location, has been heard and called on several occasions. Both G4SA and 5YV are good and consistent signals with G5DS not far behind.

G3FIJ (Colchester, Essex), worked EI2W and heard G13FJX and G13GQB on September 7, the first time that Irish stations had been received. G3FIJ has a daily sked. with PE1PL immediately after that station's contact with G4HQ/A at 1315 G.M.T.

During the portable session at Drummore, mentioned earlier, GM6WL/P worked the following stations on 2 m: G2FZU, 3BLP, 3CCH, 3GHO, 5BM, 5YV, 6LI, 6NB, 6XX, G13FJX, 3GQB, 5AJ, GM3DIQ and EI2W. G2HCL, 3CGQ, 3WW, 6RH and G13AXD were heard but not worked.

During the period September 1 to 6 a slow rise in barometric pressure to a maximum of 30.65 ins., together with calm, warm weather, enabled G6LI (Ludborough, Lincs.) to make good contacts with the nearer continental stations, especially DL. On the 7th pressure was somewhat lower and the evening yielded QSOs with SM6ANR, OZ8JB (a new one) and G12BIL. F3LQ was heard calling "CQ 500 miles only." The next period of good

conditions covered the 10th to 12th when HB1IV was active. This station was only occasionally audible at G6LI, being best received during a QSO with G3FIJ.

The evening of September 8 yielded excellent signals from the west at G2UJ. G3AGA (Falmouth), 3FIH (Radstock, Som.), GW3EJM/A, GW8UH and EI2W were among the more powerful stations heard up to 2330 B.S.T. after which conditions deteriorated rapidly.

We are pleased to hear from old-timer Fred Miles, G5ML (Coventry) whose signals must be familiar to many since he has worked 262 stations in 8 countries during the 4½ years he has been active on the 2 m band. His 150 watt transmitter has a pair of Eimac 4-65A tetrodes in the final, modulated by an RCA speech amplifier driving class B TZ40s. The receiver employs 6J6s in both r.f. and mixer stages and p.p. 955s as oscillator, tuning being effected by an AR.88 covering 2 to 4 Mc/s. Two arrays are available; a 16-element stack 20 ft. high and two stacked skeleton slots with three reflectors at a height of 50 ft., 300 ohm feeder being used in both cases. Operation is normally from 1830 to 2000 B.S.T. on weekdays and on Sundays from 1045 to 1230 B.S.T.

B.R.S.18989 (Shirley, Birmingham) sends a list of 'phone stations heard on 2 m with an indoor aerial only 17 ft. above ground. These include G3FAN and 5TZ/A (Isle of Wight), 3BLP and 8OU bringing his total to 53 stations in 6 Regions.

With a CV6 super-regen receiver and a dipole **A1244** (Bingley, Yorks.) has heard, during the past two months, G2CFL, 3AZU, 4JJ/P, 5YV, 6BX, 6XM/P and 6XX.

Two Metre Field Day.

During this event, held on August 30, G3EKS, 'FIH and 'FKO operated portable 1,000 ft. a.s.l. on the Mendip Hills near Wells, Somerset, with 4 watts input and a four-section stacked array 16 ft. above ground. Up to a distance of 75 miles in all directions reports averaged S9 and between 75 and 150 miles, S5. No stations were worked beyond this range although F9CQ, portable, was called for an hour without success. High winds were experienced at the beginning of the event, but moderated later.

Operating from a site 650 ft. a.s.l. near Wrotham, Kent, G4IB/P was manned by G4FB, 4IB and 2UJ, assisted by other members of the West Kent Amateur Radio Society. Low cloud, heavy rain and high winds at the commencement of the event seemed to promise little in the way of good conditions, but within a few minutes of opening watch signals were exchanged with G4JJ/P near Barnsley, Yorks. His signals, audible throughout the day, served as a useful check on conditions which seemed to change little with the greatly improved local weather. Results were not spectacular but portables and others were audible all day, at well over the 100 mile mark in a northerly direction and the nearer stations were considerably stronger than at G2UJ only a few miles to the south but considerably lower in altitude. Reception to the westward was, however, markedly inferior and practically nothing was heard from that direction. The two French stations active, F8MX and F9CQ, both of which were worked by G2PU (Cambridge) and undoubtedly by many others, were never very strong.

Two Metre Converters.

A criticism often heard from non-v.h.f. operators is that 2 m receivers are too complex, expensive and difficult to build and adjust. In many cases, where a converter of good performance is concerned, these observations are only too true and with this in mind the development of a

really simple unit has been undertaken by the writer assisted by G3ENI. The design employs only three easily obtainable valves, one of which is an i.f. amplifier, requires few components and yet has a noise factor better than 5 db. It is hoped to show an example at the forthcoming Amateur Radio Exhibition and a full description will be published in the BULLETIN at an early date.

Night Owls.

Is TVI really a problem on 2 m or is the lack of activity in the early evening a sign of the addiction of 2 m operators to TV viewing?

G6LI in calling for more use of the band during daylight hours when conditions are often excellent points out that as amateurs manage to operate on the lower frequency bands at all hours, why not on the v.h.f.s? That good contacts can be made during daylight, given the activity, is amply proved during contests; the way the midland and northern stations were received in the South during the recent 2 m Field Day being a case in point. So, before winter conditions again set in, let us make better use of the time available, abolish the seeming boycott of 2 m save between 2230 and the early hours of the morning and have less of this "night owl" business.

The 70 cm Band.

G2RD's 70 cm activity report for the month ending September 21 lists several new stations and includes G2DD, FKZ, FZL, HDU, HDY, HDZ, QY, RD, XC, 3BKQ, CU, ECA, FP, GDR, GZM, HBW, JMA, 4CG, RO, 5CD, DF, DS, DT, RD, TP, 6NF, YP, 8SK, VR and GW2ADZ.

G2DDD (Littlehampton, Sx.) was joined by G2DSP for the R.S.G.B. 420 Mc/s Tests. Only two stations were heard and both worked—G2DD (Stanmore, Mddx.) at 54 miles and G3FAN (Ryde, Lo.W.) 30 miles.

According to several reports the Tests produced quite a crop of signals on the band. G3FZL (London, S.E.) remarks upon this being the first occasion when he had worked GDX as a result of hearing or giving a CQ call. In the past, long distance contacts have always been the result of prior arrangement or a 2 m QSO. He worked G2H DU (Oakham, Rutland), 3APY (Kirkby-in-Ashfield, Notts.), 3BKQ (Blaby, Leics.) and GW2ADZ (Llanymynech, Mont.). G3GZM/P was heard at strengths up to S7 working G2FNW (Melton Mowbray, Leics.) on 'phone but repeated calls by 'FZL failed to raise him.

G3FIJ (Colchester, Essex) is running a 70 cm sked with PE1PL daily at 0830 G.M.T. and with PA0FC at 2130 G.M.T. on weekdays.

London U.H.F. Group.

At the September meeting, following discussions on the 420 Mc/s Tests and other matters of current interest, a talk on double tetrodes for v.h.f. and u.h.f. use was given by Mr. C. Touch, G3HDJ, of Mullard, Ltd. Special attention was paid to the design of the new QQVO3-20 which, like its larger stable companion the QQVO6-40, achieves its high efficiency by the use of a single cathode and screen grid assembly common to both sections of the valve and by built-in neutralising condensers. A convincing demonstration of the new valve in both frequency multiplier and p.a. service in an amateur-built 70 cm transmitter of extremely compact design aroused considerable interest.

* * *

Contributors are thanked for their many letters received this month. If you have anything of interest to report on 2 metres and down please send it to arrive by October 21 for inclusion in the November issue.

C. E. Newton, G2FKZ and

H. W. Parker, GW2ADZ

LICENSED for A.A. operation in 1938, G2FKZ first came on the air in 1946 and was active on the old 5 m band from July 1947. A firm believer in team work in solving Amateur Radio problems, Charlie Newton had been developing—in collaboration with other members of the South London U.H.F. Group—up-to-date equipment for 70 cm and when that band became available to amateurs in October 1948 he was active right from the start with a c.c. transmitter and receiver.

The accent has always been on developing equipment for both 2 m and 70 cm, and upon a correlation of v.h.f. conditions and weather. Some considerable progress has been made on these lines, largely through a long standing series of tests with H. W. Parker (GW2ADZ) on 70 cm of which details have been given in *Around the V.H.F.s* from time to time. Particular mention should be made of the investigations into the connection between conditions and vapour pressure changes which have enabled impending "openings" to be anticipated with considerable accuracy. In this work G2FKZ has been associated with H. F. Knott, G3CU,

G. M. C. Stone, G3FZL, and of course, GW2ADZ. Their work in this connection was recognised by the Society when in 1950 G2FKZ, 3CU and 3FZL received a joint certificate on the occasion of the R.S.G.B. 420 Mc/s Tests. In 1952 the Wortley Talbot Trophy was presented to G2FKZ for outstanding experimental work on 70 cm. In the same year, a further joint award, this time the Arthur Watts Trophy, was made to G2FKZ, 3FZL and GW2ADZ for their work in and combined report on the 1952 R.S.G.B. 420 Mc/s Tests.

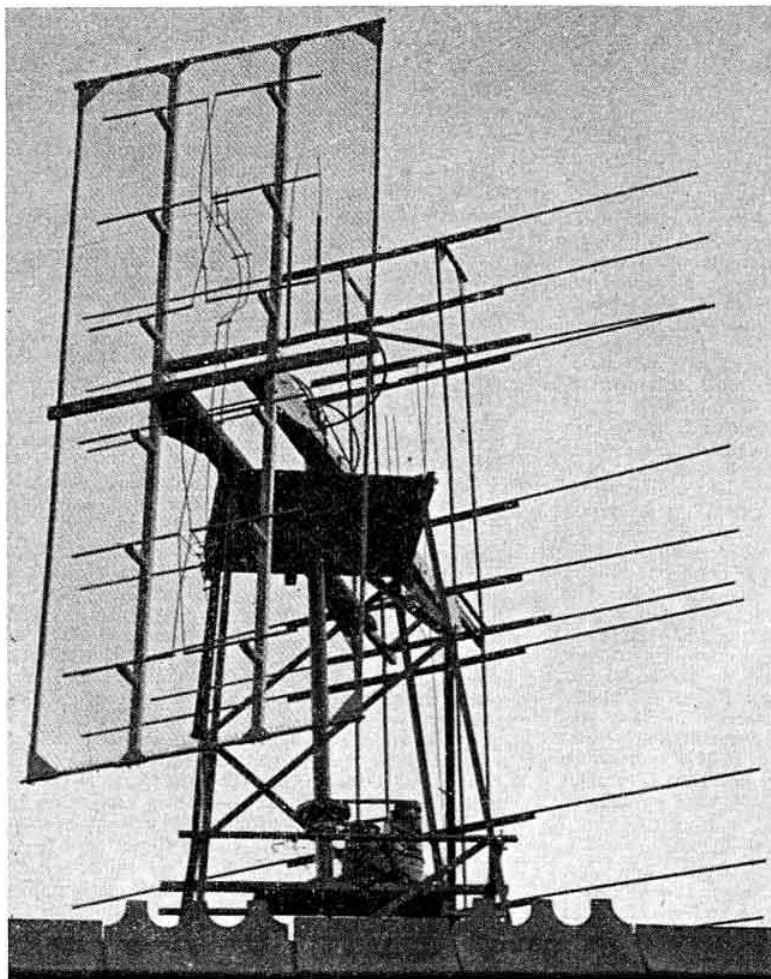
Newton's series of achievements mark well the progress of the amateur on the 70 cm band. In June 1949 he exchanged signals with G3BEX/P (Fairlight, Sussex) at 39 miles. Two months later, while working portable at Wantage, Berks., he heard G3FZL/A (nr. Hastings, Sussex) at 96 miles and G3BEX/P at 75 miles. In October 1951 he worked PA0PN.

The equipment at present in use includes a 120 watt c.w. and 'phone transmitter on 2 m employing an 829B, blower-cooled, with twin coaxial lines and on 70 cm a c.c. exciter driving a Mullard ME 1003 disc-seal triode which, for an input of 50 watts, gives 33 watts output. The receiver for this band is c.c. and incorporates the High-Q Break filter recently described in the BULLETIN. The first, tunable, i.f. covers 32 to 38 Mc/s and the second 1.6 Mc/s. On 2 m an "all 6J6" receiver is in use.

Both 2 m and 70 cm. aerials are mounted on a tower on the roof of the house 60ft. above the road and 260ft. a.s.l. The 70 cm array consists of 12 half-wave elements with a wire mesh reflector and matched to the feeder by two open wire stubs, a coaxial balun and a two-step tuner. A six-element stack with six sets of trigonial reflectors stub matched to the feeder via a 4 to 1 balun serves for the 2 m band.

* * *

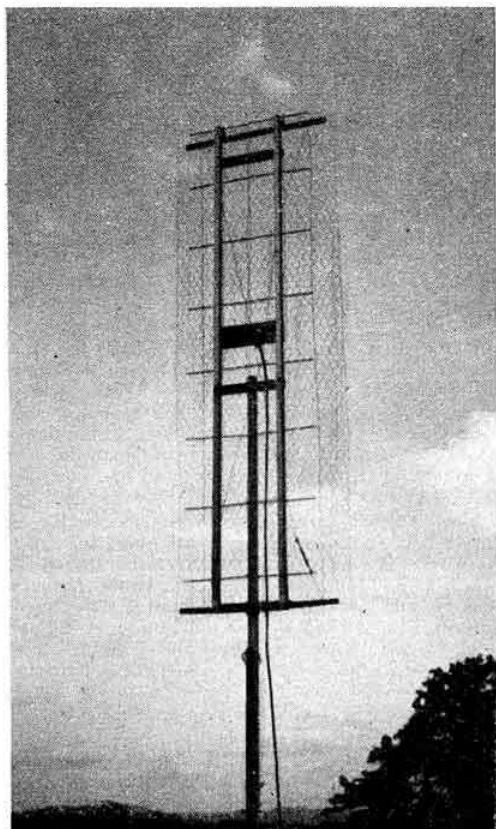
Bill Parker was first active from Oswestry, Shropshire, and as G2ADZ worked ON4FG at 362 miles and PA0PN at 320 miles on 2 m in November, 1948, which put him well to the fore in amateur achievement at that time. A move of a few miles to Llany-mynech in Montgomeryshire changed his prefix and confronted him with a site low and hemmed in by hills which would have daunted all but the most enthusiastic v.h.f. operator. Nevertheless, in May, 1950, he took the European 2 m record by working PA0HA (Hooge-sand) at 420 miles and made the first GW/ON and F contacts. His joint award of the Arthur Watts Trophy with



The 2 m and 70 cm aerial array at G2FKZ.

R.S.G.B. BULLETIN, October, 1953.

G2FKZ and G3FZL for his part in the 1952 R.S.G.B. 420 Mc/s Tests has already been mentioned. Prior to this his long association with G3EHY (Banwell, Som.) on both 2 m and 70 cm earned many a mention in the BULLETIN. At the present time he holds the European 70 cm record for a contact with ON4OU at 362 miles on both c.w. and 'phone.



The 70 cm array at GW2ADZ comprises sixteen radiators in pairs and fed at the centre, backed by a curtain reflector with quarter-wave spacing.

Like his colleague in so many tests on the v.h.f.'s one of Bill's main interests is the study of the connection between meteorological effects and v.h.f. conditions. As to equipment, this has remained much the same for the past three years although some experimental work is now being carried out to improve mixer efficiency on the 70 cm band. The 70 cm converter employs a CV102 crystal diode mixer, a v.f.o. on 142 Mc/s and an EF54 head amplifier at 8 Mc/s. Both oscillator and mixer circuits make use of cavities taken from a glide-path receiver. On the transmitting side an 18 Mc/s crystal oscillator/doubler drives two KT8C doublers, an 832 tripler, and 832 amplifier and an S.T.C. 3B/401J power doubler. With this transmitter a 15 watt house lamp may be lit well with 35 watts input. The 16-element double beam for 70 cm is pictured in this article.

LONDON U.H.F. GROUP

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, at 7.30 p.m. on November 5. All u.h.f. enthusiasts welcome.

"VHF QSY"

Following the official adoption of "The British Isles Two-Metre Zone Plan," members who wish to acquire crystals for their own zones, or have crystals for disposal on an exchange basis, are invited to send details for inclusion in this space.

Address requests to "VHF QSY," R.S.G.B. BULLETIN.

Crystals Offered

By G2CD, 7 Beddington Road, Seven Kings, Ilford, Essex. 8040, 8106.667, 8146.15 kc/s ($\frac{1}{2}$ in. spacing), and 8007.69 kc/s ($\frac{3}{4}$ in. spacing).

By G3FIP, 6 Chapel Road, Redhill, Surrey. 8092 kc/s ($\frac{1}{2}$ in. spacing, large pins).

By G6MN, 70 Bridge Street, Worksop. 8107 kc/s ($\frac{3}{4}$ in. spacing).

By G3HVP, 108 Brookfield, Glossop, Derbyshire. 6000 ($\frac{3}{4}$ in. spacing) and 8091 kc/s ($\frac{1}{2}$ in. spacing).

By G3CHW, 145 Ilchester Crescent, Bedminster Down, Bristol 3. 6020, 6021.10 and 8007.69 kc/s ($\frac{3}{4}$ in. spacing).

Crystals Wanted

By G2CD, as above, anything between 8047 and 8069 kc/s, $\frac{1}{2}$ in. or $\frac{3}{4}$ in. spacing.

By G3FIP, as above, anything between 8047.2 and 8069.5 kc/s.

By G6MN, as above, 8030 kc/s.

By G3HVP, as above, any 8 Mc/s crystal for use in Zones C and E, $\frac{1}{2}$ in. or $\frac{3}{4}$ in. spacing.

By G3CHW, as above, anything between 6052.09 and 6069 kc/s or 8069.45 and 8091.66 kc/s, FT243-type preferred.

Regional V.H.F. Ladder

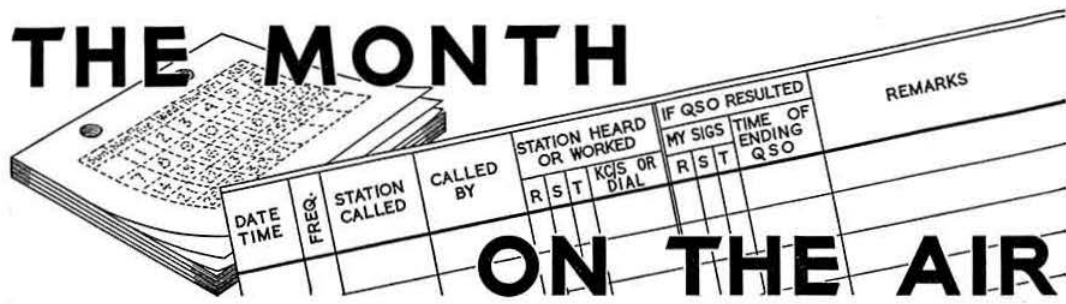
TWO METRE BAND

Psn.	Call & Location	Worked		
		Regions	Stations	Countries
1.	G5BD Mablethorpe, Lincs.	12	62	10
2.	G5ML Coventry, Warks.	11	75	3
3.	G6XX Goole, Yorks.	10	101	8
4.	G2DDD Littlehampton, Sussex.	10	81	5
5.	G6TA London, S.W.12.	10	55	2
6.	G3HBW Wembley, Middx.	10	40	2
7.	G6LI Ludborough, Lincs.	10	29	10
8.	G2AHP Perivale, Middx.	9	88	3
9.	G3CBO Denham, Bucks.	9	66	7
10.	G3FIJ Colchester, Essex.	8	52	7
11.	G3GOP Southampton, Hants.	8	49	2
12.	G5MR Hythe, Kent.	8	47	6
13.	G8VN Rugby, Warks.	7	44	1
14.	G3IUD Wilmslow, Ches.	7	24	2

TWO METRE ZONE MAP

Mounted on Stiff Card.
Price 3d. (By Post 5½d.)
From R.S.G.B. Headquarters.

THE MONTH



BY ARTHUR O. MILNE, G2MI*

ALTHOUGH the v.f.o. had been drifting badly, many European amateurs successfully contacted DI9AA on board the *Xarifa*—now on her way to the Caribbean after some weeks in the Azores. G2MI reported the severe drift to DL1KV, Vice-President of the D.A.R.C., who, with commendable speed, sent out a four-crystal driver unit by air-freight. Phone signals from DI9AA have been heard at excellent strength in England: transmissions are easily recognisable by a rather strong hum. Frequency 14190 kc/s.

Notes and News.

Using his 10 watt transmitter G3IRU has worked SV1SP and LB5NE (Narvik) on 7 Mc/s. Incidentally ZL stations have been very consistent on this band around 0600-0700 G.M.T. Some have also been heard on 3.5 Mc/s 'phone at about the same time. On September 3, G3IKA was in contact with G2AWF when, to his astonishment, he heard a W6 calling him at S9! The transmission, made on 3.5 Mc/s, emanated from W6OGO, who was in an American aircraft 30,000 ft. above London!

G3NT and G3HDQ have received cards from DL2PT for Top Band contacts. The name and address of the licensee is R. Barrett, 2nd Inf. Divn. Signals Regt., B.A.O.R. 4. G3CSP reminds us that although CR5SP does not understand English he does speak a little French. One of the operators at TA3AA says that they reply to all QSL cards, including those from listeners but the latter must state the call-sign of the station being worked at the time and give complete information. G3FHN reports an S7 QSO with FQ8AP whilst G5JL recently worked LB8YD (Jan Mayen Is.) on 7025 at 0515 G.M.T.

G3AAM, G3HLS and many others worked VU5AB during his visit to Car-Nicobar Island. QSLs should be sent via the R.S.G.B. 'AAM says KA0IJ was another good signal on September 15. VR4AE (14050) was logged at 1200 on the same day. KS6AB can be heard on c.w. at 0500 G.M.T. most mornings.

During his recent trip to Easter Island CE0AA managed to work 68 British stations, despite heavy QRM from W stations. Contacts will be QSL'd via the Bureau on a card-for-card basis.

B.R.S. Reports.

B.R.S.19771 (Worthing) has received cards from CR5SP, M1B, FP8AK, VP6SD, VS9AS, ZD1SW and DL2PT (1.8 Mc/s). He gives the address of MP4K as Mohd. Khan, Kuwait Broadcasting, Kuwait, and says he has heard HB9MX working UG6KAA on 'phone. On 14 Mc/s CR4AJ (1625), CR7CF (1750), FM7WN (2115) and ZL2BE are recent catches. B.R.S.19894 has the following and many others to his credit: AP2K, CR5AC, CR6CS,

CR6AQ, EA0AB, HR1AA, JY1US, UA9KCA, UI8KAA, UF6KAF. He agrees that the band has been very patchy but with some quite good openings. B.R.S.19864 (Ormskirk) also has a most comprehensive bag which includes YV5AB (2300), PJ2AI, OX3MC, TA3AB and OY2Z.

Who's Who.

MD5RM has returned to the U.K. and the station is now operated by MD5DD—a new call. '5RM used 15 watts input and a 30 ft. vertical aerial on 7, 14 and 21 Mc/s. All contacts have been QSL'd. G2RO says he worked hundreds of stations from VQ1RO where he had the use of some 200 ft. masts. He operated in Mauritius as VQ8AY.

Jim O'Hara of CN8EY—now back in the United States—may be heard operating from W4ODR. His address is "A" School, BK.S.S-32, N.A.T.T.C., Memphis, Tennessee. From January next he will work as K2BAS, from 7 Otis Place, Buffalo, N.Y. G3AUR is in the Middle East until 1956. Any "G3AUR" appearing before then will therefore be a pirate. 'AUR hopes to operate as a VQ4 on Top Band and 3.5 Mc/s. G3GPE/MP4BAD will shortly be active with a DL2 call.

CTICL reports that CR8AB has been inundated with QSL cards although he has not yet been on the air! In fact, both his transmitter and receiver are still in Portugal. From F9RS comes news that FN8AD is now VU2AX and that the prefix FN is no longer valid. FB8UU is quite genuine.

G3IAG, just back from a trip round the world, met a number of JAs and VEs in his travels. He spent some time in West Africa and operated from ZD2HAH. He met all the ZD amateurs and was in hospital in Takoradi where the doctor who attended him was ZD4BK.

The Yeovil Club

One of the most consistent contributors to this column has been Don McLean, B.R.S.7594, secretary of the Yeovil Amateur Radio Club. This month he has sent so good a report that we are giving the club a heading to itself. On 14 Mc/s conditions have been fairly good at times during the past month. Around 0700, a few KH and KL signals have been heard and the Africans came in very well around 1800. CR5NC (2206), CT2AF, FQ8BA (the Brazzaville Exhibition station operated by members of R.E.F.), KH6OR, KH6IJ, KL7ADR, AFR, 15RM (14120, 2037), HP1AP (2200), SV0WK (airborne over Turkey) and stations using the new Ceylon prefix (4S7) have all been heard. On 21 Mc/s conditions have been very patchy. The best have been CR6BX, FF8AP, GP, HC1MB, RE, HK4FV, HP1CC, KP4FAC, TA, UE, WI, KV4BD, KZ5CP, DG,

* 29 Kechill Gardens, Hayes, Bromley, Kent.

GD, WZ, LU3DD, OQ5HL, VP5SC, 6FR, MR, PV, WR. The only signal heard on 28 Mc/s was CX4CS. The Club station, G3CMH, has received a card from MIB bearing a San Marino stamp despite the rumours that he was a pirate. CMH has worked KV4AA, TI2TG, YO5LC on 21 Mc/s c.w. and CE3CZ, many KP4s and PYs, VQ4AA, BVF, EH, YI3WH, ZD4AE and Europeans on 21 Mc/s 'phone.

Activity in the Shetlands.

G3IXE is operating as GM3IXE/P in Shetland on 1901 kc/s from 2100 to 0900 G.M.T. daily until October 19. QSL cards should be sent via the R.S.G.B. QSL Bureau.

Austrian Amateurs to be Licensed Again

FROM Oe.V.S.V.—the National Society in Austria—comes the good news that Austrian amateurs are again to be licensed.

Oe.V.S.V. is at present engaged in working out new licensing regulations in collaboration with the Director-General of the Post and Telegraph Administration. It is anticipated that the first licences will be issued within a few months. In the meantime the Austrian P.T.T. is sending an appropriate note to I.T.U., Geneva, and will ask for the F.C.C. ban on U.S.A.-Austrian amateur contacts to be lifted.

Now that censorship in Vienna has been completely abolished, correspondence, including QSLs, intended for Austrian amateurs, may again be sent to the address of the Oe.V.S.V. Secretariat, Kierlingerstrasse 10, Klosterneuburg, Austria.

Members, generally, will rejoice with their colleagues in Austria in this successful outcome of the difficulties with which they have had to contend for so long.

News from Denmark

POUL ANDERSEN, OZ6PA and O. Havne-Eriksen, OZ3FL have been re-elected President and Hon. Treasurer respectively of the Danish National Society E.D.R. Borge Petersen, OZ2NU, who is the Traffic Manager and International Secretary, will act as Liaison Officer in connection with Region 1 Bureau affairs.

R.S.G.B.

Amateur Radio Call Book

Members who have been licensed since the 3rd Edition closed for press on September 30, 1953, are invited to send details without delay to the Call Book Editor

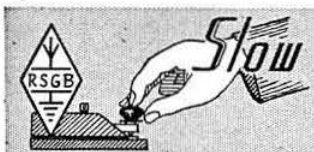
Mr. John Tyndall, G2QI,
174 The Drive,
Ilford, Essex

for inclusion in the Stop Press section. This section will close for press on October 20.

Region 1 Field Day

THE Bury Group, operating under the call G3BRS/P, were winners (for the second year running) of the Region 1 Field Day held last month. Their total score of 106 points was made in approximately 9 hours of operating time. Stockport (G3AUB/P) with 95 points in 9 hours and Wirral (G3FOO/P) with 81 points in 9 hours were placed second and third respectively. Most of the scoring was done on 3.5 Mc/s.

Altogether nine stations took part in the event which was much enjoyed by all competitors.



Slow Morse Practice Transmissions

The following slow Morse transmissions, sponsored by the Society, are intended to assist those who aspire to obtain an amateur transmitting licence. More volunteers are still required for parts of the British Isles not already covered, particularly in the London Area. Stations listed who find themselves unable to continue transmissions should immediately notify the organiser, Mr. C. H. L. Edwards, A.M.I.E.E. (G8TL), 10 Chepstow Crescent, Newbury Park, Ilford, Essex.

* Each station will operate in turn.

G.M.T.	Call	kc/s	Town
Sundays			
09.00	G3LP	1850	Cheltenham
09.30	G3BKE	1900	Newcastle-on-Tyne
10.00	G6MH	1990	Southend-on-Sea
10.30	G3GIO	1915	Guildford
	G3CYS	1990	Pontefract
	G3ESP		
10.30 *	G3HCX		
	G3HNC		
	G3IDT		
	G3US		
11.00	G2FXA	1900	Stockton-on-Tees
11.00	G3GZA	1837.5	Bristol
12.00	G15UR	1860	Belfast
14.00	G5AM	1900	Witnesham.
21.00	G2FIX	1812	Nr. Salisbury Ipswich
Monday			
19.00	G3NC	1825	Swindon
21.00	G3BLN	1900	Bournemouth
22.00	G3GIO	1915	Guildford
22.15	G2BRH	1900	Ilford
22.30	G8TL	1900	Ilford
Tuesdays			
18.30	G2FXA	1900	Stockton-on-Tees
19.00	G3IBL	1883	Derby

G.M.T.	Call	kc/s	Town
Tuesdays (cont.)			
21.00	G3EFA	1855	Southport
22.00	G3GIO	1915	Guildford
Wednesdays			
19.00	G3GZA	1837.5	Bristol
22.00	G3HYN	1850	Cambridge, Glos.
22.00	G3GIO	1915	Guildford
22.00	G2BND	1918	Dalston
Thursdays			
19.00	G3NC	1825	Swindon
20.00	G3FVH	1920	Hull, Yorks
21.30	G3ICX	1915	Sutton Coldfield
22.00	G3GIO	1915	Guildford
22.00	G3HFX	1910	Derby
22.30	G3OB	1803	Manchester
22.30	G3ADZ	1940	Southsea
23.00 *	G3LA	1915	Brentwood
	G4AK		
Fridays			
19.00	G3BLN	1900	Bournemouth
20.00	G3CSG	1870	Wirral
22.00	G3GIO	1915	Guildford
Saturdays			
13.00	G2FXA	1900	Stockton-on-Tees
22.00	G3GIO	1915	Guildford

MEMBERS USING THIS SERVICE ARE REQUESTED TO SEND LISTENER REPORTS TO THE STATIONS CONCERNED

CQ

SINGLE SIDEBAND



FOR what is probably the first time in history, a single sideband station was operated in public during the Letchworth Jubilee Fair held at the beginning of September. The station (GB3LJF) worked on 3.5 and 14 Mc/s with a power input of 90 watts peak. Numerous contacts were made on both bands including sixteen two-way using single sideband. On 14 Mc/s many transatlantic contacts were established earlier and finished later than with the companion amplitude modulated station.

3.5 Mc/s

DX signals on 3.7 Mc/s have been received at good strength recently and, according to G3COJ, summer long distance working is a possibility, for on several occasions U.S. stations have been received at signal levels of greater than S5 on 3805 kc/s. G3COJ has now moved to Slough

By H. F. KNOTT (G3CU)*

from where he hopes to be active soon. His present problem is the construction of a new driver unit covering all bands from 1.8 to 21.45 Mc/s, using a crystal filter at 420 kc/s. It is to end in a Class A 807, and have full voice control with no relays.

What may be considered as an outstanding achievement was a recent contact made by SM7HZ with the United States, the power input at the time being only 10 watts peak. G2FHL is compiling a list of active s.s.b. stations, and it is noted that a further nine stations have been heard or worked on the band in the last month. The stations are equally divided between those using phase-shift and the filter system. They include G3EGB (Bedford), G3DVM (Farnham), GD3ESV/A, G3GXS/P, G4IF, G5IX, PA0WO, DJ10J and DL4RH. G3ESV, who is now back in Wigan, will be off the air during a rebuild. His new transmitter is to include a half lattice filter and should be finished later this year. G3BQQ has completed his new amplifier, using an 803 with an input of 90 watts, while PA0KC has increased his power from 10 to 100 watts.

From South Africa comes news of the first two-way s.s.b. QSO in that country which took place at 1405 S.A.S.T. on July 5, 1953, between ZS6GA and ZS6WG, both on 7 Mc/s. Later in the evening of the same day contact was established on 3.5 Mc/s.

Of the unusually high percentage of Danish amateurs using the system, no less than fourteen employ the OZ7T-type p.s. exciter. This particular type of exciter has been met with rather mixed feelings in this country, owing to its unusual circuitry. The conventional audio and r.f. phase-shift is used, but in place of balanced modulators, a pair of grid modulated pentodes are used to generate the s.s.b. with carrier, after which the carrier is balanced out by introducing equal-and-opposite carrier through a third pentode.

DX Bands

The last few months have shown a considerable increase of activity on 14 Mc/s, with G2NX, G3ECH, G3GKA, G3IMW and DL6WL joining the regular stations on this band. W3ELP reports that KA4MC is searching for Europeans between noon and 1300 G.M.T. daily. Those looking further afield should watch for VR2AC (Fiji) and ZL2IA. With the arrival in Pakistan of GW3JET, complete with a suitably modified "S.S.B.Jr.," the possibility of a single sideband WAC now exists. He hopes to be active on 7 and 14 Mc/s at first and later on 3.7 Mc/s.

R.F. Phase-shift Networks

To obtain the necessary cancellation of the unwanted sideband in a phase-shift rig it is important that each of the balanced modulators be fed with audio and r.f., having a phase difference of 90°. Little has been said on the subject of r.f. phase-shift networks which, while they play an important part in the final result, are not so critical to adjust as are those in the audio chain. Various methods may be used to achieve the 90° phase difference, but the type of circuit used does depend somewhat on the balanced modulator configuration. The circuit shown in Fig. 1 is suitable for the b.m. with single ended input and push-pull anode circuit. The network is fed from a common source such as a v.f.o. or crystal oscillator. In the circuit depicted a cathode follower was brought into service, the output impedance being chosen to suit the network. Other values of impedance could conveniently be chosen to suit the operating frequency on which the network was required to work, bearing in mind the necessary adjustment and values of X_c and X_L . The method of alignment of the circuit adopted by G3ECH is to adjust the L and C values to have 0.707 of the applied voltage across them. Originally a simple crystal diode voltmeter, Fig. 2(a), was used, but this was found unsatisfactory as the diode is non-linear, so that using a linear calibrated meter gave the wrong answers. The difficulties were overcome by the

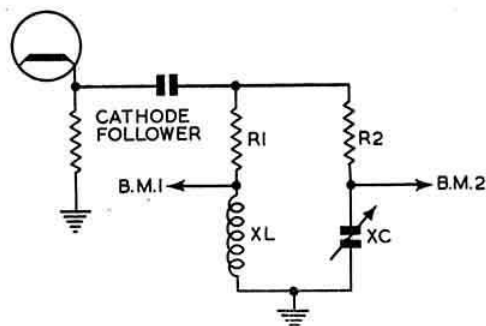


Fig. 1.—A typical r.f. 90° phase-shift network. R1, R2, 330 ohms; XC, XL, 330 ohms at the operating frequency.

* 5 Kevington Drive, St. Paul's Cray, Orpington, Kent.

arrangement shown in Fig. 2(b), by using a resistive network of the ratio 2.3:1 across the r.f. source (X and Y) and by measuring the voltage at V to determine changes of reading. If the meter sensitivity is lower than 20,000 ohms per volt, R1 should be reduced accordingly, the limit being the shunting effect upon the circuit under test.

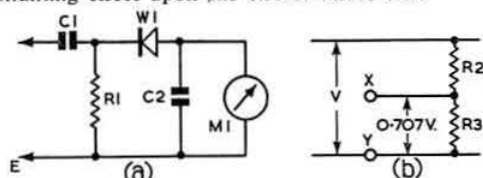


Fig. 2.—Crystal diode voltmeter and potentiometer network. C1, 0.01 μ F; C2, 0.002 μ F; M1, 1V f.s.d. (20,000 ohms); R1, 20,000 ohms; R2, 150 ohms; R3, 350 ohms; W1, germanium diode (BTH-GC1C or equivalent).

S.S.B. Conventionette

Plans for the Conventionette which is to be held on the last day of the Amateur Radio Exhibition are well in hand, and by now those who have indicated their intention of attending have been circulated. Those who wish to attend should write to G3CU immediately.

R.S.G.B. Exhibition

The writer hopes to be in daily attendance at the Single Sideband stand during the period of the Exhibition, where there will be the usual display of equipment. He will be pleased to answer any question on the subject.

Notes and news to be included in the December issue should reach the writer by not later than November 14, to allow time for preparation of the manuscript before the Exhibition.

IT'S TOPICAL.—(Continued).

A series of twenty film strips covering the two final years of the **Ordinary National Certificate Course in Electrical Engineering** has been produced for the Technical Publications Department of Mullard, Ltd., by Unicorn Head, Visual Aids, Ltd., who will also deal with the distribution of the strips. It is believed that the series is the first to cover a specific course of study.

Lord Derby, President of the Popular Television Association, recently stressed that his Association does not want *sponsored* television in the United Kingdom, but **wishes to break the present B.B.C. monopoly** by allowing other concerns to operate TV stations. The Association does not envisage a system where the advertiser is responsible for the programme, but, rather, a system analogous to the insertion of advertisements in newspapers and magazines. Lord Derby looked forward to the day when TV—"the greatest force for public enlightenment since the invention of printing"—would be free of domination by a single group of officials, however high-minded and well-intentioned. It was to be hoped that universities and similar bodies would be able to operate stations for the purposes of truly extra-mural instruction.

Old timer Miles Weeks, W6ZZ, has reported to QST that a contact with W7JU (Nevada) on July 9, 1953, completed his **21 Mc/s W.A.S.** Miles holds W.A.S. certificate No. 1 issued to him on January 8, 1936, when he held the call-sign W1WV.

Tony Barr, a **15-year-old member of Foxhills Secondary Modern School Radio Club**, Scunthorpe, has successfully passed the G.P.O. Morse Test. Although he is not the youngest person to do so, his achievement is nevertheless most creditable. The Club operates under the call-sign G3IHZ.

FREQUENCY modulation receivers were one of the highlights of the **Radio and Television Exhibition** held recently in Dusseldorf. There are already 98 f.m. and 8 TV stations in operation in the Federal Republic, and the industry is expanding rapidly as a result. During 1952, more than 400,000 receivers were exported in addition to the large number made for the home market.

An **experimental mobile v.h.f. radio extension** of the airport telephone system has recently been installed by the Ministry of Civil Aviation at London Airport. The equipment, which was made by G.E.C., enables mobile staff to communicate with traffic control and airline offices at ranges up to 10 miles. The transmitter-receiver installed in the vehicle operates on frequencies between 70 and 180 Mc/s. At the airport control centre, a matching unit connects a similar transmitter-receiver to the telephone exchange.

An International Communications Meeting—the **Columbus Festival**—is being held in Genoa this month to discuss marine, air, land and telecommunications under the chairmanship of international authorities.

Twenty-three firms represented the British Radio Industry at the Farnborough exhibition organised by the Society of British Aircraft Constructors. New radio equipment included aircraft h.f. and v.h.f. radio-telephone sets, navigational aids, airport installations, air-sea rescue beacons. Among the navigational aids was a Decca airfield approach **radar system working in the 3 cm. band**. Suppressed or buried aeriels utilising part of the **aircraft metal skin** is a new development in h.f. communications. An outstanding exhibit on the Salford Electrical Instrument stand was a **new precision frequency measuring equipment**, the range of which extends from 10 c/s to 10 Mc/s. The accuracy is claimed to be better than 1 c/s plus the error of the source of the standard frequency.

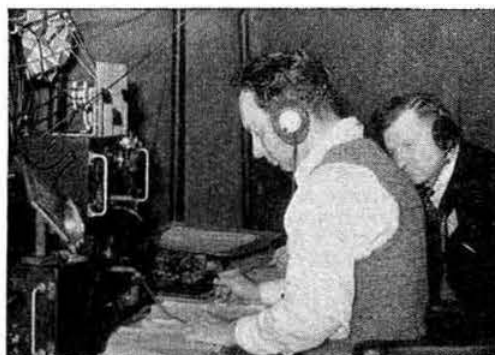
Television Trade Test transmissions are now radiated daily (except Sundays) at the following times: 1000-1200 (morning demonstration film and Test Card C), 1500-1508 (Test Card C), 1616-1654 (Test Card C) and 1945-1953 (Test Card C). The sound accompaniment is generally either a 900 c/s tone or recorded music.

A new radar sonde for collecting meteorological data from the upper atmosphere has been produced by Mullard Ltd. It employs a ground interrogating **transmitter working on 152 Mc/s** and an air-borne **responder on 2,850 Mc/s** which is carried aloft by a balloon. Ranges up to 100 miles with a ceiling of 100,000 ft. are attainable.

A large, almost square (70 ft. by 66 ft.) studio of radically new design has recently been brought into service at the Lime Grove Studios of the B.B.C. The separate sound and vision control rooms are built across one corner of the studio and raised above the studio floor level so that the producer and operating staff have a very clear view of the whole studio. Another addition to the Television Service's facilities is the new **Presentation Suite** which comprises a Central Control Room, Technical Quality Checking Room and Presentation Studio. The latter is a small room, 27 ft. by 20 ft., in which the announcers work. It has its own cameras and vision and sound control centre.

The General Electric Company has recently supplied **thirty special BRT400D communications receivers** to the B.B.C. Monitoring Service.

(Continued in previous column)



The Winners

In this picture, Roy Poeton, G3CTN (the C.R.) and Eric Gaukrodger, G6GU, are seen operating Bristol's "A" Station under the call-sign G6GU/P.

[Photo by The Western Daily Press and Bristol Mirror.]

THEY'VE done it again! With competition yearly growing more intense and skilful, with new rules and frequency groupings, only a brave—or foolhardy—amateur would have dared to forecast the results of the rain-splashed Coronation Year National Field Day of June 13-14. But from more than 100 entries, the City and County of Bristol R.S.G.B. Group—the 1952 winners—again emerge triumphant from the fray, to become the first group ever to win the N.F.D. Shield twice and, moreover, with the knowledge that they have set up this all-time record in two successive years!

From those who have yet to succeed in claiming the Shield once, let alone twice running, must come an awe-inspired gasp of admiration, followed by sincere congratulations to the West Countrymen who have proved that the maritime exploits of their townsfolk in the first Elizabethan era can be matched in the new reign by their ability to conquer the wildest radio waves.

How close the competition is becoming is shown, clearly, by the fact that although the Bristol score was slightly below their 1952 record, no less than five groups succeeded in making four-figure totals compared with only two in 1952. Well done Bristol, Coventry, Cheltenham, Guildford & Woking, and Southampton. Slough, also, would have been well in the running had not it been necessary to disqualify their "A" station under the second section of Rule 3.

Questions and Answers

In retrospect the 1953 event will probably pass into history as the battle of the statistics. For months, all the regular—and a number of new—

CORONATION YEAR

NATIONAL FIELD DAY 1953 RESULTS

N.F.D. TROPHY WINNERS:	BRISTOL (G6GU/P and G6GN/P)	1054 pts.
RUNNERS-UP:	COVENTRY (G5PP/P and G5SK/P)	1021 pts.
LEADING "A" STATION:	EAST MOLESEY (G6MB/P)	623 pts.
LEADING "B" STATION:	CROYDON (G4QK/P)	562 pts.
BEST 1.8 Mc/s:	STOURBRIDGE (G8GF/P)	337 pts.
BEST 3.5 Mc/s:	GUILDFORD and WOKING (G6BZ/P)	455 pts.
BEST 7 Mc/s:	BRISTOL (G6GN/P)	369 pts.
BEST 14 Mc/s:	SLOUGH (G6CJ/P)	174 pts.
SCOTTISH N.F.D. TROPHY:	GLASGOW (GM8MJ/P and GM3CSM/P)	773 pts.

Psn.	Town or Area	1-8	3-5	7	14	"A"	"B"	Total
1	Bristol	226	341	369	118	567*	487*	1054
2	Coventry	312	398	197	114	509†	512†	1021
3	Cheltenham	271	393	232	115	503†	508†	1011
4	Guildford & Woking	257	455	218	70	475†	525†	1000
4	Southampton	298	397	253	52	551†	449†	1000
6	East Molesey	219	404	308	61	623*	369*	992
7	Croydon	241	421	176	141	417†	562†	979
8	Chelmsford	276	410	244	32	520†	442†	962
9	Stourbridge	337	364	139	115	476†	479†	955
10	Cambridge	283	388	170	60	453†	448†	901
11	Weston-super-Mare	196	329	259	115	455†	444†	899
12	Hexham	240	394	174	88	414†	482†	896
13	Gloucester	216	361	248	67	577*	315*	892
14	Sheffield	219	382	218	65	437†	447†	884
15	Ealing	265	350	215	50	480†	400†	880
16	Hove	267	283	246	80	513†	363†	876
17	Southgate	248	370	214	32	462†	402†	864
18	Ilford	271	408	158	20	429†	428†	857
19	Pontefract	236	311	208	94	547*	302*	849
20	Sutton & Cheam	249	246	248	102	495*	350*	845
21	Hayes & Uxbridge	247	281	231	75	528*	306*	834
22	Edgware & Hendon	255	374	81	112	336†	486†	822
22	Oxford	194	413	215	—	409†	413†	822
22	Cardiff	153	266	255	148	419*	403*	822
25	Medway	136	323	340	16	459*	356*	815
26	Stroud	226	407	130	51	356†	458†	814
27	Brighton	210	266	219	103	476*	322*	798
28	Hull	241	324	177	48	418†	372†	790
29	Blackpool	169	378	189	47	358†	425†	783
30	Derby	232	329	221	—	561*	221*	782
31	Glasgow	183	224	265	101	407*	366*	773
32	Barnsley & Dist.	221	267	216	50	488*	266*	754
33	Chester	214	192	283	63	406†	346†	752
34	Aberdeen	131	248	357	14	488†	262†	750
35	Norwich	225	338	178	—	403†	338†	741
36	Boston	171	392	110	60	281†	452†	733
37	York	239	266	194	33	433†	299†	732
38	Falkirk	166	177	229	59	495†	236†	731
39	Gravesend	305	260	143	—	448†	260†	708
40	Reigate & Redhill	132	182	286	100	314*	386*	700
41	Grimsby & Cleethorpes	233	324	140	—	373†	324†	697
42	West Cumberland	168	353	141	34	309†	387†	696
43	East Ham	179	281	190	32	460*	222*	682
44	Brentwood	205	280	168	28	485*	196*	681
45	Darwen & Blackburn	231	284	154	—	515*	154*	669
46	Isle of Thanet	234	213	202	15	447*	217*	664
47	Cleckheaton	270	266	126	—	536*	126*	662
48	Coulsdon & Dist.	155	225	194	86	380*	280*	660
49	Lowestoft & Beccles	155	331	171	2	326†	333†	659
50	Norwood & Dist.	181	186	183	105	367*	288*	655
51	Bath	213	297	140	—	353†	297†	650
51	Maidstone, Tunbridge Wells & Tonbridge	172	232	219	27	404*	246*	650
53	Forfar	135	154	346	10	289*	356*	645
54	Loughborough	282	261	87	—	369†	261†	630
54	Portsmouth	28	344	208	50	372*	258*	630
56	Bury	201	296	132	—	497*	132*	629
57	Edinburgh	181	228	216	2	397†	230†	627
57	Wirral	171	325	112	19	283†	344†	627
59	Dunfermline	160	194	248	8	408†	202†	610
60	Middlesbrough	199	179	211	20	378*	231*	609
61	Scarborough	42	338	226	—	268†	338†	606
62	Baldock & Sheffield	187	187	183	39	374*	222*	596

* Used old frequency groupings (1.8/3.5 and 7/14).

† Used new frequency groupings (1.8/7 and 3.5/14).

Psn.	Town or Area	1-8	3-5	7	14	"A"	"B"	Total
63	N.W. Manchester	224	218	139	6	442*	145*	587
64	High Wycombe	189	193	110	87	382*	197*	579
65	Rugby	227	351	—	—	227†	351†	578
66	Bletchley	215	309	4	48	219†	357†	576
67	Newcastle-on-Tyne	129	269	130	47	259†	316†	575
68	South Birmingham	224	274	44	16	268†	290†	558
69	Eltham & Sidcup	143	184	183	20	327*	203*	530
70	Putney, Barnes & Richmond	179	232	48	59	227†	291†	518
71	Liverpool	129	128	255	—	257*	255*	512
72	Petersfield & Dist.	189	315	—	—	504*	—	504
73	Lincoln	266	230	—	—	266†	230†	496
74	Leicester	280	205	9	—	289†	205†	494
75	Dulwich & New Cross	175	318	—	—	493*	—	493
76	Slough	—	—	318	174	—	492*	492
77	Plymouth	—	303	184	—	303*	184*	487
78	Luton	249	155	72	—	321†	155†	476
79	Exeter	—	249	216	—	258*	216*	474
80	Harlow, Essex	198	137	138	—	335*	138*	473
81	Christchurch	151	238	15	66	389*	81*	470
82	Warrington & Dist.	247	215	—	—	462*	—	462
83	Welwyn Garden City	204	253	—	—	457*	—	457
84	Worthing	193	259	—	—	452*	—	452
85	Neath & Port Talbot	—	355	—	88	—	443†	443
86	Bromley & Beckenham	179	260	—	—	439*	—	439
87	Rotherham	34	245	150	—	279*	150*	429
88	Southend-on-Sea	189	179	52	—	368*	52*	420
89	Gt. Yarmouth	45	150	206	6	195*	212*	407
90	Southport & Formby	139	112	73	77	251*	150*	401
91	East Renfrewshire	—	194	185	—	194*	185*	379
92	Guernsey	131	Δ	234	Δ	365†	Δ	365
93	Barnet	175	181	—	—	356*	—	356
94	Peterborough	—	221	132	—	132†	221†	353
95	Torbay	203	—	136	—	339†	—	339
96	Nottingham	—	267	48	6	267*	54*	321
97	Enfield	196	—	103	—	299†	—	299
98	Preston	59	222	—	—	281*	—	281
99	Dorchester	44	235	—	—	279*	—	279
100	Walsall	151	—	125	—	276†	—	276
101	Workshop & Retford	—	—	237	32	—	269*	269
102	Romford	146	114	—	—	260*	—	260
103	Newark	—	257	—	—	—	257†	257
104	Spalding	28	213	—	—	241*	—	241
105	South Shields & Sunderland	—	226	—	10	226*	10*	236
106	Bradford	128	105	—	—	233*	—	233
107	Ashford, Kent	—	—	169	62	—	231*	231
108	Stockport	—	—	206	24	—	230*	230
109	Mansfield	223	—	—	—	223*	—	223
110	Woolwich	—	218	—	—	—	218†	218
111	Bexley, Erith & Dartford	83	130	—	—	213*	—	213
112	Acton, Brentford & Chiswick	—	196	—	—	196*	—	196
113	Dundee	—	—	152	—	—	152*	152
Late Logs (claimed scores)								
—	Kingston-on-Thames	101	216	119	11	317	130	447
—	Wrexham	241	105	58	21	346	79	425
—	Woolwich	92	—	163	—	255	—	255
—	Worthing	—	—	144	60	—	204	204

* Log received late or incorrectly completed.

Δ Slough "A" station disqualified under Rule 3.

Δ Guernsey "B" station disqualified for inaccuracies in the log.



The Winners

Victor Newport, G3CHW, and Ken Ottrey, G3ECS (on the right), operating G6GN/P, the Bristol "B" Station. The N.F.D. Trophy, won by the Group last year, is to the left of the picture.

[Photo by The Western Daily Press and Bristol Mirror.]

N.F.D. questions had been debated. Which combination of bands would produce the highest total of points? Concentrate on one band, or divide time equally between two? Man the stations with a few experienced but weary operators, or try many fresh ones in short shifts?

To answer some, at least, of these questions, the report this year is liberally laced with hard facts, and a plentitude of tables. To those few happy members for whom the prime purpose of N.F.D. is the chance of a carefree day in the country in good company—not to mention a "night out"—the Contests Committee tenders its apologies for finding less space than usual to recount the lighter aspects of the event.

First, the question that everyone has been asking. In practice, did the advantage lie with those who chose the new or the old frequency groupings? Both the winners and runners-up stuck to the old... but, on the other hand, the general impression is that the average score of stations using the new system tended to rise; and particularly was this true of groups where the h.f. station had previously been the weaker scoring link. Of the top twenty groups, fifteen used the new system. Perhaps the outstanding feature of the Bristol and Slough results was their ability to pile up a respectable score with a 7 and 14 Mc/s "B" station: a glance at the "B" station Honour Roll will show how exceptional this was. There can, in fact, be no final judgment on the groupings. Certainly, as forecast, the scores of the "A" and "B" stations have tended to even out, and many groups undoubtedly found the new system more pleasant and interesting to work.

"B" Station Honour Roll

1	CROYDON (G4QK/P)	562†
2	GUILDFORD & WOKING (G6BZ/P)	525†
3	COVENTRY (G5SK/P)	512†
4	CHELtenham (G5BM/P)	508†
5	SLOUGH (G6CJ/P)	492*
6	BRISTOL (G6GN/P)	487*
7	EDGWARE & HENDON (G2IM/P)	486†
8	HEXHAM (G5RI/P)	482†
9	STOURBRIDGE (G4MI/P)	479†
10	STROUD (G5HC/P)	458†
11	BOSTON (G6LH/P)	452†
12	SOUTHAMPTON (G5OB/P)	449†
13	CAMBRIDGE (G8PB/P)	448†
14	SHEFFIELD (G5TO/P)	447†
15	WESTON-SUPER-MARE (G8FC/P)	444†
16	NEATH & PORT TALBOT (GW2AVV/P)	443†
17	CHELMSFORD (G3ABB/P)	442†
18	ILFORD (G2QI/P)	428†
19	BLACKPOOL (G5ND/P)	425†
20	OXFORD (G5RP/P)	413†

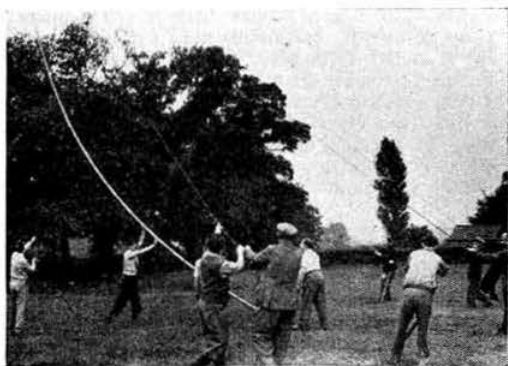
Facts and Figures

Bristol made some 380 contacts on all bands . . . 3.5 Mc/s proved easily the most prolific scoring band . . . There were more than 150 official, and unofficial, portable stations active on this band alone, including some 30 continentals . . . Strong contingents of ON4 and DL portables made a welcome addition to the regulars in HB and EI; to them our grateful thanks . . . Owing to doubts as to the status of certain F calls, all contacts with France have been considered as having been made with fixed stations . . . G6BZ/P made more than 160 contacts on 3.5 Mc/s.

On 7 and 14 Mc/s, the "plums" were VP9BC/P, VP9BG/P and VP9G/P who gave 12 points per contact to the surprisingly large number of stations who got through to Bermuda . . . VE1ZZ was another popular DX goal to aim at on "forty" along with a few Ws, PYs and KP4KD.

7 Mc/s is the standby of GM stations: and two out of the top three places on this band go north of the border. Glasgow carries off the Scottish N.F.D. Trophy. It is regretted that mention of this award was inadvertently omitted from the 1952 Report when it was won by the Berwick-on-Tweed group.

14 Mc/s is still in the doldrums and groups who knocked up 100 points or more on this band have every reason to feel pleased with their perform-



All Hands to the Ropes

Among those who helped to erect the masts at Derby Group's "B" Station were: G3IBL, G3FNK, G4CO, G2CVV, G3GQR, G3IFA, G3GSO, G3JRS and Messrs. Shimmin, Brown and Caudwell.

ance. ZC4IP and CN2BF—both operated by former N.F.D. enthusiasts (G8IP and G2CIW)—gave useful assistance to many contestants.

But it was DL2RO/P, at a Royal Signals Training School near Hamburg, who gains the award for being the overseas station contributing most points to British portables (160 contacts on all four bands). Major Drudge-Coates' station, with its Vee beam, would probably have worked many more portables on 1.8 Mc/s if the transmitter for this band had not been limited to the v.f.o. alone.

Station Equipment

This year, with so many stations finding a place of honour, the round-up on gear and operators must of necessity be brief, but here goes:

Bristol "A" Station.—VFO (6L6)—PA (807) acting as power doubler on 3.5 Mc/s. HRO receiver. Horizontal half wave aerials. 110-volt a.c. petrol generator. Operators G2IK, 2FYT, 3CTN and G6GU.

Bristol "B" Station.—VFO (6SK7/6F6/6F6)—FD (6V6)—FD (6J5, 14 Mc/s only)—PA (807). Horizontal half-wave dipoles, plus a vertical dipole on 14 Mc/s. *Hammarlund Super-Pro* (SP400X). Operators G3RQ, 3CHW, 3ECS and 6GN.

Coventry "A" Station.—(1.7/7). VFO (6J5)—EF51—6V6—807. BC342N receiver. 250 ft. long wire, and half-wave dipole on 7 Mc/s. Petrol electric generator. Operators G3DXF, 3HVU, 5PP, 5SK and 6TD.

Coventry "B" Station.—(3.5/14). VFO (6J6)—Z77—EL91—807 (miniature). BC454 into BC453 with crystal controlled converter on 14 Mc/s. Half-wave dipoles and 264 ft. long wire. Petrol electric generator. Operators G2DK, 2DAG, 3ABA and 4NB.

East Molesey "A" Station.—(1.7/3.5). VFO (CV136)—PA (CV428). HRO with Q5-er. 264-ft. centre fed aerial with tuned feeders. 12-volt rotary generator, output 250 volts. Operators G2NH, 3HTC, 4FC, 5LC and 6GB.

Croydon "B" Station.—(3.5/14). ECO (EF42)—BA/FD (EF42)—BA/FD (EF42)—PA (one half of 815, other half used for neutralising). HRO receiver. Aerial, three 138 ft. wires, spaced 120 degrees, used separately. Vibropack for receiver. 250-volt rotary generator for transmitter. Operators G3BFP, 3BLP, 3BZL, 4QK, 6LX and 6NF.

After the 1950 event an analysis was made of 100 different entries to see which receivers were most favoured for N.F.D. work. The same process has been repeated this year, and, for those who like to study the trend of popularity, here are the 1953 figures together with the corresponding 1950 figures in parenthesis: HRO 41 (46); AR88 12 (13); BC348 9 (6); *Eddystone* 640 7 (7); R107 6 (—); BC342 4 (6); CR100 4 (—); *Eddystone* 750 (3) (—); 13 (17) miscellaneous commercial and service receivers not more than two of any one type; and 1 (—) home constructed receiver. Although advocates of home construction will find little to encourage them in this list, they can draw some slight satisfaction from the fair sprinkling of comments such as "modified" or "used with converter" appearing beside a number of the commercial and Service-type receivers.

To those cynics who annually raise their eyebrows at the lorry loads of gear that wend their way into the countryside during N.F.D., there is little that can be said. Such safari have become an integral part of N.F.D. and only the etymolo-



The Norwood and District station was located on the old Crystal Palace site, soon to house the B.B.C. Television Service. In this picture—taken during the visit of the Headquarters party—can be seen G2RX, G6IO, G2VB, Mrs. G6CL, G8TL, G2BRH, G2LW, G6CL, VP6FO, G5DJ, and Miss Gadsden.

gists among us now recall that the original meaning of the word "portable" was "that can be carried about." But at least lifting car batteries and petrol electric sets is good exercise . . . whilst keeping small and recalcitrant p.e. sets working for 24 hours is an art in itself which brings a

lot of new words—apart from technical terms such as "flooded carburettors" and "de-coke"—into the amateur vocabulary. In practice, logs show that a.c. generators, rotary converters, vibrator packs, and charging sets all enjoy roughly equal popularity.



(1) The Cleckheaton "B" Station was operated from Heckmondwike under the call-sign G3FQH/P. (2) A view of the operating position at G2VB/P, Norwood and District Group's "B" Station. (3) G3HBI operating G3IIR/P, the Norwood "A" Station; A. Shiels (Associate Member) is doing the logging. (4) G6VX and G3E1Y stopping "backlash" on the petrol electric charger with the aid of a nail file . . . plus earth for the finer lapping! (5) G3YZ takes a turn at operating G3CGD/P, the Cheltenham "A" Station. (6) G8SI at the controls of G8KU/P, one of the Scarborough stations. (7) GM3EOJ and GM4CX were operating GM2CAS/P, the Aberdeen "B" Station when this picture was taken.

[Photos 2 & 3 by E. Yeomanson.]

Top Ten

1.8 Mc/s		3.5 Mc/s	
Stourbridge	337	Guildford & Woking	455
Coventry	312	Croydon	421
Gravesend	305	Oxford	413
Southampton	298	Chelmsford	410
Cambridge	283	Ilford	408
Loughborough	282	Stroud	407
Leicester	280	East Molesey	404
Chelmsford	276	Coventry	398
Cheltenham	271	Southampton	397
Ilford	271	Hexham	394
7 Mc/s		14 Mc/s	
Bristol	369	Slough	174
Aberdeen	357	Cardiff	148
Forfar	346	Croydon	141
Medway	340	Bristol	118
Slough	318	Stourbridge	115
East Molesey	308	Weston-s-Mare	115
Reigate & Redhill	286	Cheltenham	115
Chester	283	Coventry	114
Glasgow	265	Edgware & Hendon	112
Weston-s-Mare	259	Norwood & Dist.	105

Committee Binding!

Every year the Contests Committee feels obliged to deliver a broadside against the number of errors—both operating and clerical—that creep into the logs (far exceeding those of other contests), and against those Groups who submit logs without carefully reading the rules. Such tirades never seem to do very much good—probably the members concerned feel that these remarks are not to be taken too seriously but merely reflect the dispepsia brought on by a surfeit of logs (have you ever tried carrying 400 logs, let alone checking them?). But one day certain Groups may wake up to the fact that points which have to be disallowed can affect their final position as much as a technical breakdown.

So if, this year, your published score is less than that claimed, why not try taking care in future that (1) all callsigns are correctly read—and logged; (2) acknowledgement of reports have actually been received before putting out another CQ; (3) you really are in contact with the station concerned, and not just copying the report he is sending to another station; (4) your own callsign is sent distinctly, with the gaps in the right places. Obvious you think? Maybe, but between them, these four items are responsible for the loss of hundreds of points each year.

A few Groups may receive a surprise of another type: their final scores are higher than those claimed. This is almost always due to faulty interpretation of the scoring system, and provides more work for the Committee. When claiming, remember the words of the advertisement: Not

too much . . . like the optimists who decided DL2RO/P was worth 12 points; not too little . . . like those who rated HB1 stations (this prefix is used only by portable stations) at 2 points a time; but just right . . . and earn the gratitude of the judges!

Several matters that came to the attention of the Committee in the course of the checking emphasise once again the unfortunate necessity for vigilance. The Committee also noted with regret that one Group took, what is regarded as, an unethical advantage of the change in Rules that permitted contacts with local stations. The Group in question made some thirty contacts with its own members, using portable callsigns with a single transmitter in a nearby car. All such contacts but one on each band have been disallowed.

The Wirral Group, among others, draws attention to the indiscriminate and incorrect use

Field Day Winners, 1947-52

1947		1948	
(1) Southgate	583	(1) Edgware & Hendon	774
(2) Coventry	545	(2) Southgate	693
(A) Worthing	275	(A) Slough	423
(B) Southgate	339	(B) Edgware & Hendon	441
1949		1950	
(1) East Molesey	914	(1) Cheltenham	847
(2) Coventry	850	(2) Cambridge	818
(A) Slough	469	(A) Coventry	522
(B) East Molesey	486	(B) West Cornwall	431
1951		1952	
(1) Falkirk	931	(1) Bristol	1123
(2) Slough	894	(2) East Molesey	1032
(A) Chelmsford	556	(A) Bletchley	627
(B) Falkirk	503	(B) Slough	511

of "BK" as a time-saving dodge to avoid sending callsigns in full, by stations not, in fact, equipped to work break-in.

Chirp was present in a fair number of cases, though seldom reported. Otherwise notes were generally good, even if they tended to deteriorate towards the end of the contest.

We are indebted to the Coventry Group for the best story of the year: *Scene*. N.F.D. tent, A operating, B keeping log and listening. *Dialogue*. B.—"Which signal are we working?" A.—"The one with the T8 note." B.—"O.K., I can hear him. What report did you give him?" A.—"RST569."

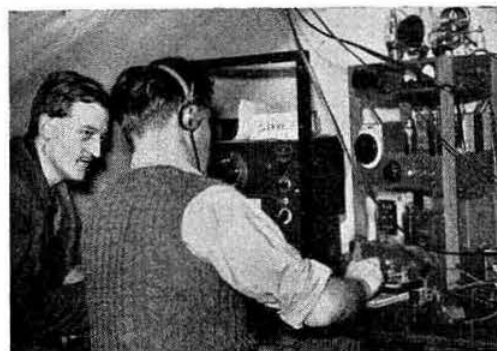
And so the curtain falls on another successful N.F.D. with its attendant surprises, unexpected victories, disappointments, breakdowns and improvisations. With one final bow, the assembled company of harassed T.R.s, weary operators, indefatigable cooks, log-keepers and general duties types—not to mention the usual extras in the form of small boys—hauls down its dripping tents, and departs . . . until the next gala performance in 1954.

Incomplete Logs

The following logs were not completed in accordance with the rules in that no incoming operators' code groups were recorded: Peterborough 1.8 Mc/s (claimed score 48 points); Sunderland 7 Mc/s (claimed score 146 points); Worksop 1.8 Mc/s (claimed score 119 points) and 3.5 Mc/s (claimed score 132 points).

Check Logs

Check logs are gratefully acknowledged from the following stations: G2AO/P, 2QY/P, 2XG/P, 2XX/P, 2AOL, 2AYQ/P, 3NT/P, 3ABM/P, 3FRN/P, 3HCY/P, 3HEV, 3HJG, DL2RO/P, F9BB, 9DW, OZ2NU, PA0ZL, VO6N and ZC4IP.



G3IFA and G3CQR operating C5RW/P, Derby Group "B" Station.

National Radio Show

A Review of Outstanding Features

TELEVISION again dominated the National Radio Show held at Earl's Court, London, early in September. Although no spectacular advances appear to have been made, a number of interesting developments were to be seen. Receivers employing 17 in. tubes are becoming very popular although one or two manufacturers are still making sets with 9 in. screens. The largest direct-view screen was that on the new Pye 27 in. receiver. The same firm prominently featured a most convincing demonstration of their automatic picture control and displayed their industrial television equipment. A noteworthy feature on the Bush stand was a 2-band model for the European market. *Brimar* demonstrated the benefits of aluminised tubes while a similar exhibit on the *Ekevision* stand showed the advantages of "spot wobble" on a single screen. One of this Company's receivers was shown operating from two 12-volt car batteries via a converter. Projection-type receivers now provide pictures up to 6 ft. wide; a cinema-size 21 ft. wide screen—the largest in Europe—was to be seen in the B.B.C.'s Television Studio. A wide range of television aerials was exhibited by a number of manufacturers.

Sound Receivers

Radio receivers in a great variety of cabinets were on view but there appeared to be little deviation from the "4 valves plus rectifier" design. Of particular note, however, were the magnificent equipments shown by *Dynatron*. The battery-and-mains portable was featured by a number of firms, two—*Cossor* and *Decca*—showing sets equipped with ferromagnetic core aeralis instead of the more conventional type. A set, which incorporates an arrangement for revitalising the batteries from the mains, was exhibited by *Philips*.

Audio Equipment

The increasing interest in home recording was underlined by the number of tape recorders on show. Interest in high fidelity, too, is increasing and a particularly fine demonstration was staged by *G.E.C.* The reproduction obtained from this Company's new metal-coned loudspeaker was of a very high order. Quality loudspeakers were also demonstrated by *Bakers Selhurst Radio*, while a modestly priced loudspeaker, capable of quality reproduction, was shown by *Whiteley Electrical*. High quality pickups were featured by *Cosmocord* (the new *Acos* "Hi-G" range) and by *Classical Electrical* who are developing a radial tracking arm designed to overcome distortion due to tracking errors.

There were a number of stands devoted to the interests of the home constructor, *Mullards* providing an information bureau for answering technical questions. A wide range of technical literature was exhibited on the stands occupied by *George Newnes, Ltd.* and *Iliffe (Wireless World)*.

The Services

The Service stands attracted much attention. Among the items on the Regular Army stand were the electronic brain of a gun site, an electronic stabiliser for tank guns, a wireless set working while submerged in water, the "Golden Arrow" high power radio station and a model of the Korean battlefield. Amateur Radio was represented by the Army Apprentices' School Club,

Arborfield. The Royal Air Force exhibited an electrically controlled flying model "Hunter" fighter while a group of R.A.F. apprentices from the Radio School, Locking, were to be seen working on the construction of components, coil winding, and the assembly and testing of receivers. The R.A.F. Amateur Radio Society also provided a comprehensive display.

Radio Control

The International Radio-Controlled Models Society demonstrated a scale model Churchill tank and a model DUKW. In order to minimise TVI, control was via a 465 Mc/s radio link.

The "Career in Electronics" stand organised by a number of training establishments presented working models and experiments similar to those carried out by students.

The R.I.C. Studio and Control Rooms were another popular exhibit, one of the novelties on show being the Clavioline—an electronic musical instrument.

B.B.C. Exhibits

In addition to the radio and TV programmes presented in the special Earl's Court studio, the B.B.C. exhibited a working model which explained, in simple language, why a signal from a distant station fades. Films from the Television Film Unit's Library showed how the TV Newsreel is prepared. The Engineering Training Department demonstrated methods of investigating some of the many problems encountered in the engineering field.

Although not a technical exhibition, there was plenty to satisfy those whose interests lie in that direction.

All-Transistor Transmitter

TO Douglas Walters (G5CV) goes credit for having produced what is probably the first all-transistor transmitter to be built by a British radio amateur. In its present form, the transmitter, which is crystal controlled on 3608 kc/s, employs three point-contact type transistors and is housed in a cast aluminium case small enough to slip into a jacket pocket. There are no external knobs or controls apart from the press-to-talk switch on the microphone. The same switch is used for sending c.w. The power of 15 milliwatts is derived from a single 22½ volt deaf aid battery.

In recent tests, clear speech was received on an *Eddystone* S640 at a range of half a mile. Operating portable, in pouring rain, and using a 3 ft. whip aerial, G6BZ (Guildford) received c.w. signals at a measured distance of three-quarters of a mile. Following a test, using a non-resonant aerial 15 ft. above ground, a listener heard two stations discussing G5CV's signals but unfortunately the call-signs were not noted. The minimum distance, however, must have been six miles.

Reports on the reception of signals from G5CV/P, all of which will be from the transmitter described, should be sent to Mr. Walters at "Greenfield," The Drive, Godalming, Surrey.

British Institution of Radio Engineers

A SYMPOSIUM of papers on "Vibration Methods of Testing Electronic Components and Equipment" will be read at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1, on November 11 at 6.30 p.m.

Licence News

The 420-460 Mc/s Band

THE following is the text of Information Circular No. 91/1953 issued recently by the Ministry of Civil Aviation:

"In order to provide more band-space to meet the increasing needs of low power civil Land Mobile Services (Business Radio), it is proposed to allow, subject to no interference being caused to the aeronautical service, limited use for this purpose of the band 420-460 Mc/s. This band is available for radio altimeters, but it has always been understood that such services would be transferred to the bands 1600-1700 Mc/s, and 4200-4400 Mc/s when suitable equipment became available.

"The use of the band by Business Radio services has been examined technically, and it appears that there is little risk of harmful interference to the limited operational use made of radio altimeters, if Business Radio assignments are confined to the bands 420-442 Mc/s and 446-460 Mc/s which are swept only by the low-reading frequency-modulated radio altimeters. In this connection, it should be noted that Amateur Television has operated in the band for some years without any interference.

"So that the views of users may be taken into consideration before reaching a final decision, it is requested that any comments on this proposal should be made, prior to 19th September, 1953."

As soon as the Society's attention was drawn to the Circular a letter was addressed to the Ministry of Civil Aviation pointing out that United Kingdom radio amateurs have been using the band 420-460 Mc/s for the past four years in accordance with the agreement reached at the Atlantic City I.T.U. Conference (1947). The Society also pointed out that, in addition to the Amateur Television use commented upon in the Circular, at least 100 U.K. amateurs regularly use the band for normal communication purposes. The Society also drew attention to the fact that in accordance with the terms of the Atlantic City Radio Regulations the band 420-460 Mc/s may only be allocated in Region I (Europe and Africa) to the Aero-radio Navigational Service and the Amateur Service. The Society expressed the opinion that if any part of the band is used by the Land Mobile Service (Business Radio), such use would be in contravention of the Atlantic City Convention, of which the United Kingdom is signatory.

In reply the Ministry of Civil Aviation assured the Society that the constitutional position relative to the band 420-460 Mc/s is fully appreciated by both themselves and the G.P.O. The Ministry stated they were confident the G.P.O. would pay full regard to amateur rights in the band before taking any firm steps regarding the entry of Business Radio services.

It was explained that the purpose of the Circular was to ascertain the views of civil users of radio altimeters, in order that the M.C.A. would be in a position to inform the G.P.O. whether, from a purely civil aviation point of view, the Ministry would be willing to allow Business Radio services to operate between 420 and 460 Mc/s and on what terms.

To date no information has reached the Society from the G.P.O. regarding the future of the 420-460 Mc/s band.

The 3635-3685 kc/s Band

MEMBERS with long memories will recollect that at the Cairo I.T.U. Conference (1938) it was decided that, in the European Region, the band of frequencies between 3635 and 3685 kc/s should not be open to public correspondence. The effect of that decision—which had not been implemented at the outbreak of the war in September, 1939—was to split the 3.5 Mc/s band into two sections, viz (i) 3500-3635 kc/s, (ii) 3685-3950 kc/s.

According to the Cairo Radio Regulations the whole band was to be shared by the Amateur, Fixed and Mobile Services. In point of fact the pre-war amateur allocation was from 3505 kc/s to 3730 kc/s (with no gap between 3635 kc/s and 3685 kc/s).

When licences were reissued after the war the G.P.O. decided to permit U.K. amateurs to operate between 3500 kc/s and 3635 kc/s and between 3685 kc/s and 3800 kc/s, a total of 250 kc/s, compared with the pre-war allocation of 225 kc/s.

At the Atlantic City I.T.U. Conference (1947) it was decided that the band 3500-3800 kc/s should be assigned in Region I (Europe and Africa) to the Amateur, Fixed and Mobile (other than Aeronautical Mobile) Services, on a shared basis.

Three years ago, when it became apparent that the United Kingdom and other administrations were beginning to implement the terms of the Atlantic City Radio Regulations, in so far as they affected frequency allocations below 4 Mc/s, the Society asked the G.P.O. to allow U.K. amateurs to use the full 300 kc/s band width. The G.P.O. were unable to accede to the Society's request. Since then the Society has continued—so far without success—to press for the release of the whole band to U.K. amateurs.

No adequate reasons have ever been put forward by the G.P.O. for withholding permission to operate in the "gap," other than a hint that the frequencies concerned are used by Service stations. The G.P.O. have made no comment on the Society's statement that the United Kingdom is the only important administration in Region I which withholds from its amateurs permission to use the band 3635-3685 kc/s.

The Society has repeatedly pointed out to the G.P.O. that those additional 50 kc/s are urgently needed because of the heavy congestion in the 3.5 Mc/s band—a condition which has been aggravated by the fact that many amateurs, who prefer to use 7 Mc/s, are unable to do so because of the continued presence of "intruders" in that band, which makes operating extremely difficult for many hours each day.

It is hoped that the information given herein will show members that the Society has made every effort to obtain the release of the frequencies between 3635 kc/s and 3685 kc/s. Its efforts will be continued.

Morse Tests for the Amateur Licence

BECAUSE of the lack of qualified Morse telegraphists, due to modern usage of teleprinters, it has become increasingly difficult for the G.P.O. to arrange Morse tests at local post offices.

The G.P.O. has decided therefore that, as from January 1st, 1954, Morse examinations will be conducted on request at (a) G.P.O. Headquarters, London, E.C.1; (b) any Post Office Coast Radio

Station; (c) any Radio Surveyor's Office.

In addition to the above, and in order to meet the needs of applicants situated at some distance from any of the above places, examinations will be held twice a year (in January and September) at Head Post Offices in Birmingham, Cambridge, Derby, Leeds and Manchester, provided sufficient candidates are forthcoming.

Applications for examination will be made, as at present, to:

Overseas Telecommunications Department,
Radio Branch, Headquarters Building,
General Post Office,
London, E.C.1.

in the first instance. Arrangements will then be made with the candidates for the actual examination, and for the collection of the fee which, from January 1st, 1954, will be increased to 7s. 6d.

Radio Surveyor's Offices are located at Belfast, Cardiff, Falmouth, Glasgow, Hull, Leith, Liverpool, London, E.C.3, Newcastle-on-Tyne, and Southampton.

The Post Office Radio Stations concerned are Burnham, Cullercoats, Humber, Land's End, Niton, North Foreland, Oban, Port Patrick, Seaford, Stonehaven and Wick.

The Society has suggested to the G.P.O. that it would be a comparatively simple matter for arrangements to be made for the Morse examination to be taken at Technical Institutes and Colleges at about the same time that candidates sit for the Radio Amateurs' Examination. The Society has also pointed out that in cities or towns where no competent G.P.O. official is available to conduct the Morse test the services of qualified radio amateurs could no doubt be enlisted. In such cases a local G.P.O. official would act as invigilator.

For a variety of reasons—chief of which is the desire to ensure a uniform and permanent standard—the G.P.O. cannot adopt the Society's suggestion. It is understood, however, that arrangements will be made, as occasion demands, to conduct tests at coast stations during weekends.

London Members' Luncheon Club

A NUMBER of official delegates in London for the C.C.I.R. VIth Plenary Assembly were warmly welcomed at the September meeting of the Club. The visitors included Commander Gerald Gross (HB9IA), Assistant Secretary I.T.U. Geneva; H. E. Dinger (W3KH), Naval Research Laboratories, Washington, D.C.; George Turner (W3AP), Chief of the Field Engineering and Monitoring Bureau, F.C.C.; Dr. Walter Dieminger (DL6DS, ex-D4UAB), Head of the Federal German Republic Ionospheric Bureau; Alfred Schaedlich (DL1XJ), Delegation Secretary; Albert Guidman (HB9DB) and Harry Latt (HB9GA), both of the Swiss P.T.T. Also present were Steve Fox (W2ALZ) and his father. The visitors were introduced by the General Secretary (G6CL), who was himself an observer at the C.C.I.R. Reunion.

During the after proceedings Messrs. Gross, Turner, Dieminger and Latt spoke briefly on matters of mutual interest.

The Chair was taken by Stanley Vanstone, G2AYC, who had the support of Council Members Reg. Hammans (G2IG), Arthur Milne (G2MI) and Bill Winsford (G4DC). The attendance (37) was the highest for some months.

The Club will meet again on Friday, October 23rd, the day of the Special General Meeting. Reservations should be made by post-card or by telephone to R.S.G.B. Headquarters.

The Radio Amateurs' Examination

THE Question Paper set for the Radio Amateurs' Examination held on May 1, 1953 (the results of which were published on page 111 of the September issue of the R.S.G.B. BULLETIN), was as follows:

EIGHT questions in all are to be attempted, as under:

ALL four in Part 1 (which carry higher marks) and four others from Part 2.

Part 1

1. State what requirements have to be met under the non-interference conditions of the Postmaster-General's licence to establish an Amateur Wireless Station, and say why these conditions are necessary. (15 marks.)

2. The d.c. feed to the last stage (triode) of a transmitter is 250 volts, 40 milliamperes. It is found that the r.m.s. value of the radio-frequency current flowing in a load resistance of 500 ohms is 0.1 ampere.

Calculate (a) the power input, (b) the power output, (c) the efficiency of the stage, (d) the anode dissipation. (15 marks.)

3. With the aid of a diagram describe each of the following, indicating suitable values for the components:

(a) a radio-frequency filter for eliminating interference caused by sparking at the contacts of a transmitter key.

(b) a filter for insertion in the key leads to prevent key thumps.

(c) a mains filter for the power supply to a transmitter. (15 marks.)

4. (a) Describe by means of a circuit diagram one method of modulating a radio-frequency amplifier.

(b) Draw a diagram showing the modulation envelope of an amplitude modulated wave:

(i) modulated with a sine wave to approximately 50%.

(ii) modulated with a sine wave to approximately 100%.

(iii) modulated with a sine wave to over 100%. (15 marks.)

Part 2

5. Why is an aerial feeder often used in a transmitting aerial system? Indicate by diagrams two types of feeders and describe the methods of matching. (10 marks.)

6. Describe briefly the operation of a straight receiver for c.w. reception. (10 marks.)

7. Describe a simple variable-frequency oscillator, and explain how frequency stability is achieved. (10 marks.)

8. With reference to wave propagation, (a) What is meant by skip distance?

(b) What are the main differences in propagation between the 14 Mc/s and 144 Mc/s bands? (10 marks.)

9. Calculate the reactance offered at frequencies of 50 c/s and 50 kc/s respectively of:

(a) an inductance of 5 henrys. (10 marks.)

(b) a capacitance of 2 microfarads. (10 marks.)

10. What effects result from varying the coupling between two tuned circuits of a radio-frequency amplifier stage? Illustrate your answer by selectivity curves. (10 marks.)

Examiners' Comments: Questions 1, 4 and 8 were well done by practically all candidates. Questions 5, 6 and 7 were fairly well done by most candidates. Question 2 was well done by practically all the candidates with the exception of about 15% who failed to answer part (d). Question 3, parts (a) and (c) were satisfactorily answered by practically all candidates, but in answering part (b) about 20% suggested an r.f. inductor instead of an a.f. inductor in the keying leads to reduce key thumps. Question 9, part (a), was satisfactorily answered by nearly all candidates, but in part (b) about 15% inserted the decimal point incorrectly or, having started, were unable to complete the calculation. In answering Question 10, about 12% of the candidates were confused about the effect of varying the coupling between two tuned circuits and stated incorrectly that tight coupling resulted in high selectivity.

R.A.E. Courses

INSTRUCTIONAL classes in preparation for the Morse Test and the Radio Amateurs' Examination are being held at Bowes Junior School, Bowes Road, London, N.11 (nearest tube stations: Bounds Green and Arncliffe Grove) on Tuesday evenings from 7.30 p.m. to 10 p.m. The fee for the course is 5/-. Students receive duplicated lecture notes. Interested members should contact Mr. E. G. Styles (B.R.S.15648), 12 Shrewsbury Road, Bounds Green, N.11, or attend at the School on the evening in question.

Around the Shows

Hartlepool Coronation Show

WAY back in the dark days before last Christmas, the local Corporation invited the Hartlepool Amateur Radio Club to stage an exhibit in the forthcoming Coronation Show. The Show was to be the town's first adventure into the unknown sphere of "Show Business" and no magnificence was to be spared to make it an outstanding success. The experiment was intended to display the activities of all the organisations in the town in addition to the usual features of such affairs. The results were, in fact, so gratifying that the exhibition has already been fixed—at least in the general opinion of the inhabitants—as an annual event henceforth.

After consideration, the Club leapt at the opportunity of holding its own Field Day and light-heartedly accepted the invitation to do its part in the great local effort. The decision—in light of what we now know—was undoubtedly influenced by the old adage "Distance (of time) lends enchantment." Regrettably, it must be recorded that, with the procrastination prevalent in so many organisations at the present time, when everyone leaves everything to everyone else, the weeks slipped by until the members suddenly awoke to the realisation that the Great Event was exactly a fortnight ahead. Whilst it would not be exactly true to say that there was panic, it was most certainly decided that something must be done. The wheels of dormant initiative were oiled and set in motion.

Individual members began to make exhibits of interest: selections of QSL cards were mounted in glass cases; labelled components and unusual valves were mounted on display stands. G3CEP generously offered the use of his *Panda* transmitter. Communications receivers and numerous pieces of



A view of GB4WH, the exhibition station operated by members of the Hartlepool Amateur Radio Club, at the local Coronation Show on July 15, 1953. Those in the picture include G3CIL, G3CHJ, G3HJP and G2AIX.
(Photo by courtesy of the Northern Daily Mail.)

home-constructed apparatus, including a 1926 crystal-valve reflex set, were also made available. Meanwhile, a special licence had been granted and the call-sign assigned (GB4WH) ensured plenty of interest from other stations, if only on the grounds of suspected piracy!

The day of the Show was blessed with sunshine and the Mayor of West Hartlepool (Councillor J. O. F. Hewlett, O.B.E., J.P.) performed the opening ceremony. The local press had given the radio exhibit much advance publicity, stating that the Mayor would, after the opening ceremony, send a message of greeting via the Amateur Radio station. In a somewhat naïve headline, *Poona* had been suggested as a likely target for the signal,



"Cruising down the River on a Sunday afternoon."

More than one hundred members of the Kingston, Sutton and Cheam and Thames Valley Societies, with their relatives and friends, recently spent a delightful day on the Thames. The journey from Kingston to Windsor and back was made in perfect weather. This picture, taken at Staines, shows some of the party enjoying the afternoon sunshine. R.S.G.B. President (Leslie Cooper, G5LC, who is also President of T.V.A.R.T.S.), is in the centre of the picture with dark glasses. The Presidents of the Kingston and Sutton and Cheam Societies (Messrs. Faulkner and Vanstone, G2AYC) were also present, as were the General Secretary and Miss May Gadsden from R.S.G.B. Headquarters.

but, alas! this proved a trifle ambitious and the best that could be done at that time of day was York on 3.5 Mc/s!

The difficulties encountered were not due entirely to the conditions of the bands. An electrically driven potter's wheel was operating in the next tent while another nearby marquee contained all the working-model displays. A miniature railway giving rides to children was at the rear and model boats plied on the lake only 50 yards away. To complete the confusion, the Sea Scouts—a fine body of boys—constantly marched round the arena blowing their bugles and beating their drums. The last straw was the discovery that the transmissions from the amateur station were coming through the public address loudspeakers installed around the park almost as strongly as the official announcer's voice! Nevertheless the effort was an unqualified success. Many European stations were worked during the day and the radio tent proved to be one of the most popular exhibits, being packed with spectators the whole time. The station was on the air for about seven hours; special QSL cards are being produced to mark the occasion.

It has been suggested that, should the event be repeated, the location of the radio exhibit should be at least three fields away from likely interference and that the miniature railway should be used to carry spectators to and fro!

South Shields Flower Show

MEMBERS of the South Shields and District Amateur Radio Society operated an Amateur Radio station under the call-sign G3ELP/A at the Fifth Annual Flower Show organised by the South Shields Corporation from August 28 to 30, 1953.

The transmitter was made up from a number of units loaned by G3ELP, G3GBF and G8AO. The receivers used were an RCA AR.77, Eddystone S640 and National HRO. Numerous contacts on 3.5 and 14 Mc/s were made with stations in the U.K., France, Germany, Holland, Rumania and French Tunisia. Special QSL cards have been sent to confirm all contacts. It was a matter of great satisfaction to all concerned that no interference was caused to TV receivers in adjoining marquees.



Ken Clegg operating the transmitter which proved a great attraction for "boys of all ages" at the recent Accrington (Lancs.) Hobbies Exhibition, opened by Arthur Askev. The transmitter operated on 1.8, 3.5 and 14 Mc/s under the call-sign G2PB and had many contacts. Erection of the aerial presented some problems, but workmen on a nearby railway bridge came to the rescue by attaching the wire to the top of the bridge!

[Photo by Rudeni, Blackburn.]

A message recorded by the Mayor of South Shields (Councillor A. E. Compertz, J.P.), was used to open the official proceedings at the Show. In addition, a 60-minute programme entitled "Welcome to South Shields" was recorded by members of the Club. Recorded greetings to the Amateur Radio exhibit were sent by Philip Slesor, of the B.B.C.

Those who assisted in the enterprise included G3ATA, G3ELP, G3GBF, G3HIF, G6VG, G8AO, K. Skethaway (A1180), W. E. Wyatt, W. Henderson, W. Guthrie, G. Ball and M. E. Glenwright.



Some of the people who helped to run the Amateur Radio exhibit at the South Shields Flower Show. Front (from left to right): G3ELP, Treasurer; G6VG, T.R. for South Shields; K. Skethaway, A1180, Chairman; G8AO, President, and G3ATA, Secretary. Standing: G3GBF, G3HIF and W. E. Wyatt.

Dagenham Town Show

AMATEUR Television was again a prominent feature of the Dagenham Town Show held on August 29 and 30, 1953. The exhibit occupied a 40 ft. stand across the end of the Leisure and Welfare marquee, where a studio, the principal source of pictures, was arranged. In addition to the studio camera, there was a standby camera and a transparency scanner. An electronic mixing unit was used for switching video signals, the composite output being distributed on a 45 Mc/s carrier, to three standard 17 in. television receivers. A "pre-view" monitor enabled any picture to be checked before "transmission." Lighting was provided by a single 1.5 kW spotlight, which proved adequate for most purposes.

The audio system comprised an amplifier with one gramophone and two microphone inputs. A minimum staff of six was required to operate the equipment, all being linked to the programme controller by a party line telephone system. The equipment was built by G3AKJ and members of the Dagenham Group of the British Amateur Television Club. The telestill scanner was loaned by G2BCB and the 45 Mc/s distribution unit by B.R.S. 17906.

Persistent rain on the Saturday proved a great handicap, but Sunday was fine and warm and a long queue awaited the start of each "programme."

Visitors to the stand included G3CVO (Hon. Secretary, B.A.T.C.), G3GBO, G3ABB, G3BLV and other B.A.T.C. members.

The exhibit was awarded a first-class diploma as the best in the marquee.

A continuous supply of refreshments and occasional help as "relief staff" was provided by the wives of a number of members.

Ripon Exhibition

AMATEUR Radio was demonstrated by Arthur Yates (G3LB) at the recent "Battle of Britain" exhibition in Ripon. In addition to showing the public an amateur station actually in operation, G3LB secured some excellent publicity for the Amateur Movement in the *Ripon Gazette*.

I.A.R.U. News

THE June, 1953 issue of The Calendar of the International Amateur Radio Union reports briefly on the work done by radio amateurs in the Netherlands and in Great Britain during the disastrous floods of last January. About 40 Netherlands amateurs took an active part during the emergency while another 100 stood by on emergency frequencies to provide aid when needed. Frequencies between 3675 and 3725 kc/s were used. At the end of the emergency the Director of the P.T.T. closed down the net with a message commending the amateurs for their magnificent service and suggesting the possibility of establishing a permanent emergency organisation under the auspices of the P.T.T.

From July 27, 1951, up to the end of June 1953, 59 endorsements for 3.5 Mc/s W.A.C. had been issued. Only three U.K. stations (G8JR, G5JU and G8VB) had qualified, the latter on 'phone.

Once again Union Headquarters urges all I.A.R.U. Societies to use proper procedure in the forwarding of QSL cards to other countries. Attention is drawn to Miscellaneous Rule 3(b) of the Union which states that "Each Member Society shall cease all forwarding of QSL cards to non-Member Societies in countries where there exists a Member Society officially recognised by the Union." It appears that certain Clubs and individuals have circulated letters to the effect that they are now handling QSL cards formerly handled by I.A.R.U. Societies. Checks by Union Headquarters have proved the information to be false.

Korea has been added to the list of countries which prohibit international Amateur Radio communication. Japan, Netherlands Antilles and Lebanon, formerly on the I.T.U. banned list, now permit their amateurs to communicate with amateurs in other countries.

In I.A.R.U. matters many national Societies claim to represent the interests of amateurs in colonies and protectorates. It has been a long-established policy for Union Headquarters to inform the "parent" society of any desire by a "subordinate" society to join I.A.R.U. When a membership application is received, Headquarters checks the latest questionnaire to determine if the applicant is claimed to be under the jurisdiction of another Society. If this is found to be so, correspondence follows until it is determined whether the "parent" society approves the application. The Portuguese Society (R.E.P.) now proposes that an applicant for I.A.R.U. membership should be referred by Headquarters to the "parent" society. If endorsed the application would then be sent to Headquarters for formal presentation in the Calendar.

The Council of the R.S.G.B. has voted against this proposal on the ground that if any society can show that it represents a substantial majority of amateurs in a territory of reasonable importance an application for membership of I.A.R.U. should be granted. The Council feels that it would be unwise to allow any "parent" society to possess what would amount to powers of veto over any such application.

The Council considers that the present arrangements are entirely satisfactory.

Universal Avomitor

It is regretted that the price of the Universal Avomitor was incorrectly quoted in the advertisement of Automatic Coil Winder and Electrical Equipment Co., Ltd., in the September issue of the R.S.G.B. BULLETIN. The correct price of this instrument is £10 10s.

LONDON MEETINGS

Programme, 1953-4

- October 22, 1953: Extraordinary General Meeting.
November 20, 1953: Messrs. H. de L. Banting, D. N. Corfield, D.L.C.(Hons.), A.M.I.E.E., and E. A. Dedman.
"THE TELEVISION SOCIETY'S NEW TV STATION."
December 18, 1953: Annual General Meeting, followed by Extraordinary General Meeting.
January 29, 1954: Mr. F. H. Brittain, D.F.H. (Research Laboratories, the General Electric Co., Ltd.)
"ART AND SCIENCE IN SOUND REPRODUCTION."
February 26, 1954: Mr. S. A. Lacey (Research Department, Murphy Radio, Ltd.)
"PRACTICAL ASPECTS OF TAPE RECORDING."
March 26, 1954: Mr. G. P. THWAITES, B.Sc. (Eng.), A.M.I.E.E., A.M.Brit.I.R.E.
"'TRUSTWORTHY' VALVES AND THEIR MANUFACTURE."

Society News

London Lecture Meeting

MR. R. J. COAKLEY, ZL2RC (late Principal of the Radio Division, G.P.O., Auckland, New Zealand) was the speaker at the Meeting held on Friday, September 25, 1953, at the Institution of Electrical Engineers, London. The chair was taken by Mr. A. O. Milne, G2MI (Acting Vice-President) who had the support of Past President F. Charman, G6CJ and Council Member F. Hicks-Arnold, G6MB. The President (Mr. Leslie Cooper, G5LC) was unavoidably absent owing to indisposition. Following an interesting discourse on Amateur Radio, broadcasting and commercial radio in New Zealand, the speaker displayed a number of excellent colour films and slides.

A vote of thanks to the lecturer was proposed by Mr. R. C. Simmonds, G2ZI.

There was an attendance of about 50.

Affiliated Societies

THE following are additions to the list of Affiliated Societies published in the July, 1953, issue of the Bulletin:—

Brighton and District Radio Club, c/o R. T. Parsons, 14 Carlyle Avenue, Brighton, Sussex.

Nottingham and District Short Wave Club, c/o N. D. Littlewood, 129 Standhill Rd., Nottingham.

The following are amended particulars:—

Bournemouth Radio and Television Society, c/o John Ashford, 119 Petersfield Road, Boscombe East, Bournemouth.

City and Guilds College Radio Society, c/o D. L. Saunders, City and Guilds College, Exhibition Road, South Kensington, S.W.7.

Region 12

THE Council has acceded to the request of the Region 12 Representative (Mr. John Douglas) for the counties of Moray and Nairn to be added to the Aberdeen, Banff and Kincardineshire Group.

The responsible C.R. is Mr. B. McK. Davidson, GM3AIZ.

Tests and Contests

Second Top Band Contest, 1953

THE Rules for the Second Top Band Contest, 1953 are the same as for the first event held in January except for the introduction of a rising serial number instead of a Region number (Rule 9) and the award of a uniform one point for contacts within the British Isles (Rule 11).

Rules

- The contest is open to all fully paid-up members of the Society resident in G, GC, GD, GI, GM and GW.
- The contest will run from 2100 G.M.T. on Saturday, November 7, to 0800 G.M.T. on Sunday, November 8, 1953.
- Entries will only be accepted if submitted on foolscap or quarto paper and set out in the form below:—

Second Top Band Contest, November 7-8, 1953

Name Call Sign
 Address Claimed Score
 Transmitter
 Aerial System
 Receiver

Contact No.	Time G.M.T.	Call Sign of station worked	My Report On His Signals	His Report On My Signals	Serial No.	Claimed Score	Leave Blank
1		G2	599	599	051		
2		G3	599	599	052		

Declaration: I declare that my station was operated strictly in accordance with the rules and spirit of the Contest and I agree that the ruling of the Council of the R.S.G.B. shall be final in all cases of dispute.

Signed

- Details at the top of the entry form must be completely filled in and the declaration signed, otherwise the entry will be disqualified.
- Entries should be addressed to the Hon. Secretary, Contests Committee, R.S.G.B., New Ruskin House, Little Russell Street, London, W.C.1, and should bear a postmark not later than Monday, November 10, 1953.
- Proof of contact may be required.
- The contest is confined to two-way telegraphy contacts only.
- Only the entrant will be permitted to operate his apparatus during the contest.
- An exchange of RST reports and a self-assigned three-figure number starting between 001 and 100, and increasing by one with each successive contact will be required before points may be claimed. All reports must be acknowledged with "R".
- Only one contact with a specific station during the contest will count for points.
- The system of scoring will be as follows:
 - Contacts with stations in the British Isles (G, GC, GD, GI, GM and GW) score one point each.
 - Contacts with European stations other than G, GC, GD, GI, GM and GW score 3 points each.
 - Contacts with stations outside Europe score 6 points each.
- The power input to the final stage of the transmitter or to any preceding stage must not exceed 10 watts.
- Stations can be disqualified for unethical operating procedure reported by a monitoring station.
- An award will be made to the station in the British Isles with the highest total score. Certificates of merit will be awarded to the stations placed second and third.

National Field Day, 1954

THE results of, and comments on, the 1953 National Field Day do not justify any changes in the rules for the 1954 event with the exception of Rule 17 which no longer permits contacts between a competing station and stations in its own town or area to count for points. The remaining amendments to the rules constitute a mere "tidying-up."

Rules

- The event will commence at 1800 B.S.T. (1700 G.M.T.) on Saturday, June 12, 1954 and conclude at 1800 B.S.T. (1700 G.M.T.) on Sunday, June 13, 1954.
- Only properly constituted R.S.G.B. Town or Area Groups within the British Isles, which, for the purposes of

the event, comprise the prefix zones G, GC, GD, GI, GM and GW, may enter for the contest.

3. Operators of portable stations competing in the event must each hold a G.P.O. Amateur Transmitting Licence and must be fully paid-up Corporate Members of the Society at the time of the Contest.

4. Each competing Group will be permitted to place two stations ("A" and "B") into operation. "A" stations may operate on 1.7 and 3.5 Mc/s or 1.7 and 7 Mc/s and "B" stations on 7 and 14 Mc/s or 3.5 and 14 Mc/s, provided that no "A" station shall work on the same band as its associated "B" station. Both stations may operate from the same site or from different sites, provided they are located within the agreed limits of the area covered by their Regional Representative. It will be permissible for two or more towns or areas within a single region to amalgamate for the purpose of the event.

5. Each station must be licensed to use a different call sign. Club and other collectively held call signs are not permitted.

6. Applications for N.F.D. permits may be made only by properly appointed T.R.s and A.R.s as the case may be. Such applications, which must be sent to Headquarters, shall be set out in the following manner:—

National Field Day, 1954

On behalf of the members in (Town or Area), I submit this application for permission to operate portable stations for the duration of the above event, as follows:—

"A" Station Call Sign /P Licensee

Frequencies

Site

"B" Station Call Sign /P Licensee

Frequencies

Site

(If applicable) I desire to combine with
 (Town or Area) for the purpose of scoring.

Signed (T.R. or A.R.)

Call Sign Address

This application is necessary both to obtain the permission of the G.P.O. and also to enter the event. Frequencies chosen may not be varied after application has been submitted. Application forms will be sent to T.R.s and A.R.s by Headquarters.

7. Applications, duly signed, addressed to Hon. Secretary, R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.1, must be postmarked not later than March 31, 1954. In no circumstances will late applications be accepted.

8. Stations must be operated from tents.

9. No apparatus may be erected on the site prior to 1300 B.S.T. on June 12, 1954. This rule includes aerials and aerial fittings as well as tented accommodation.

10. Any aerials may be used up to a total of three per station (including the receiving aerial) subject to the following limitations:—

(a) All aerials and feeders must be constructed from wire of total cross-sectional area not greater than that of 14 s.w.g.

(b) No part of the aerials shall exceed a height of 45 feet above ground level.

11. Equipment at any "A" or "B" station must not exceed two transmitters and one receiver. Reserve equipment may be kept available, but not connected.

12. The total d.c. input to the anode circuit of the valve or valves energising the aerial, or to any previous stage of the transmitter, shall not exceed 5 watts.

13. Power for any part of the station shall not be derived from supply mains.

14. The event is restricted to the use of c.w. (A1) only.

15. An exchange of reports must be made and acknowledged before points may be claimed. In the case of portable to portable contacts between stations located in the British Isles (G, GC, GD, GI, GM and GW), this report must include the first three letters of the operator's surname, e.g. RST 579 JON (station being operated by W. Jones), and such letters, both incoming and outgoing, together with signal reports, must be entered on the log sheets. Proof of contacts may be required.

16. Contacts with ships, or unlicensed stations located in countries where licences are obtainable, will not count for points. The decision as to whether a station is to be classed as unlicensed will rest with the Contests Committee.

17. Only one contact with a specific station may be made on each band during the contest. Contacts made by a competing group with stations within its own town or area will not be permitted to count for points.

18. Points will be scored on the following basis:—
 A.—Between competing stations and fixed stations:—

	Points
(a) Within the British Isles	1
(b) In the rest of Europe (including Eire)	2
(c) Outside Europe	3
(d) In the British Empire	6

B.—Between competing stations and portable stations:—

	Points
(a) Within the British Isles	3
(b) In the rest of Europe (including Eire)	4
(c) Outside Europe	6
(d) In the British Empire	12

19. An entry will be valid only if signed by the properly appointed T.R. or A.R., who will be solely responsible for the conduct of the event in his Town or Area.

20. Each station's entry shall consist of extracts from the station log, a separate extract being submitted for each band worked. Forms for this purpose will be supplied from Headquarters. Entries must reach the Hon. Secretary, R.S.G.B. Contests Committee, New Ruskin House, Little Russell Street, London, W.C.1, postmarked not later than June 28, 1954. In no circumstances will late entries be accepted.

21. In addition to the National Field Day Trophy and miniature replica which will be awarded to the Group obtaining the highest combined score, miniature replicas will be awarded to the Groups with the leading "A" and "B" station scores. Should the winning group also lead with the highest "A" or "B" station score, it will only be eligible for one replica: the other would not then be awarded. A certificate will be awarded to each of the following: (a) The leading Group on each band. (b) The chief operator of the British Empire or foreign portable station whose check log shows that he contributed the most points to competitors.

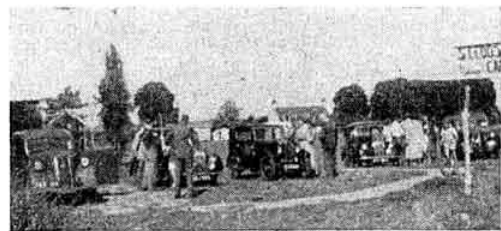
22. The N.F.D. Trophy will be held by the winning Group for one year and will be handed to the T.R. or A.R., who will be held responsible for its custody during the year.

23. The Scottish N.F.D. Trophy (together with miniature) will be awarded to the Scottish Town or Area Group scoring the highest number of points.

Southend D/F Qualifying Event

THE last qualifying event in the 1953 D/F programme took place on Sunday, September 6th, 1953. The assembly point was St. Cedd's caravan site near to St. Peter's on the Wall, the oldest Saxon Church in Great Britain, founded by St. Cedd in A.D. 654 and built on the old Roman fort of Orthona.

There were six starters, four of whom had previously qualified. The latter availed themselves of the opportunity to put in some practice for the final.



The start of the Southend D/F Qualifying Event.

Advantage was taken of the winding course of the rivers Crouch and Roach and although the actual distance, as the crow flies, was less than 10 miles, the nearest route by road was 35 miles. As a consequence nearly two hours elapsed before the hidden transmitter was located. First home was R. K. Seabrook (Southend), who arrived at 1556 B.S.T., followed by A. J. Hallett (Romford) at 1612 B.S.T. and R. Drury (Romford) ten minutes later. The final transmission, made at 1630 BST, found the rest of the field on the wrong side of the River Roach.

The Chairman of the Southend Society (J. L. Goss) joined the party for tea at Rochford, another historical town with an association dating back to the days of King Canute.

The official umpires (W. H. Matthews, G2CD, and C. J. Greenaway, G2LC), as well as the competitors, expressed themselves satisfied with the arrangements and the results. A few constructional observations were volunteered for the consideration of the Contests Committee.



Contestants and their friends at the Southend Qualifying Event.

The organisers thank all who helped to make the event a success, including the "Men of Kent" who kept off the chosen frequency during the afternoon.

D/F National Final

The leaders in the above event—held on September 27—were as follows:

1. A. E. Glozier (G3CRR), Romford.
2. A. Hallett (G3CQ), Romford.
3. P. N. Prior (B.R.S. 19746), B.T.H., Rugby.

A full report will be published next month.

VK-ZL Contest, 1953

THE second leg (Telephony only) of the 1953 VK-ZL Contest, organised this year by the Wireless Institute of Australia, will take place from 0001 G.M.T. on October 17 to 1200 G.M.T. on October 18. Entries, which should be addressed to the Contests Committee, Box 1734, G.P.O., Sydney, Australia, must arrive not later than January 31, 1954. (It is regretted that details of this contest did not reach us in time to give publicity to the telegraphy section.—Ed.).

World-Wide DX Contest, 1953

THE two sections of the World-Wide DX Contest (formerly the CQ Contest) will take place on the following dates: Phone Section—from 0200 G.M.T., October 24 to 0200 G.M.T., October 25. Telegraphy Section—from 0200 G.M.T. October 31 to 0200 G.M.T. November 2. Entries, post marked not later than December 15, 1953, should be addressed to the International DX Club, P.O. Box 100, Buchanan, Michigan, U.S.A.



N.F.D. Moans.—No 1.

R.S.G.B. BULLETIN, October, 1953.

Council Proceedings

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Incorporated Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, August 11, 1953, at 2.30 p.m.

Present.—The Acting Vice-President (Mr. A. O. Milne in the Chair), Messrs. I. D. Auchterlonie, H. A. Bartlett, C. H. L. Edwards, F. Hicks-Arnold, J. H. Hum, L. E. Newnham, R. Walker, P. W. Winsford and John Clarricoats (General Secretary).

Apologies for Absence

Apologies for absence were submitted on behalf of the President (Mr. Leslie Cooper), Messrs. F. Charman, D. A. Findlay and R. H. Hammans.

Commercial Stations working in the 7 Mc/s Band

The Secretary reported upon correspondence which had been exchanged with the G.P.O. regarding the operation of commercial stations in the exclusively-amateur portion of the 7 Mc/s band. The Society had repeated its request for a strong protest to be lodged with the International Telecommunications Union at Geneva.

Membership

Resolved (a) to elect 43 Corporate Members and 4 Associates, (b) to grant Corporate Membership to 2 Associates who had applied for transfer, (c) to grant Life Membership to Mr. A. B. Whaitman.

Applications for Affiliation

Resolved to grant affiliation to the Lothians Radio Society.

Official Regional Meetings

Council delegates were appointed to attend the O.R.M.s in Edinburgh and Aberdeen.

Meeting between Representatives of the Council and London Region

The President and General Secretary were appointed to meet the representatives of the London Region on September 4, 1953.

Regional Representation 1954-5

The Council resolved to exercise its right to nominate Corporate Members for the office of Regional Representatives in the forthcoming elections. (A list of Corporate Members nominated to serve in the appropriate Regions appeared in the September issue of the BULLETIN.—Ed.).

It was reported that Messrs J. N. Walker (Region 3), W. H. Matthews (Region 7) and W. Baker (Region 13) did not wish to accept nomination. (Later Mr. S. Foster informed the Council that he was unable to accept nomination for the office of Northern Ireland Regional Representative (Region 15). It was agreed to make no nomination in respect to Regions 3 (in the event of Mr. V. M. Desmond, G5VM, declining to accept nomination), 4 and 13.

Resolved to thank the retiring Regional Representatives for their past valued services to the Society.

Amateur Radio Exhibition

It was agreed (a) to arrange a complimentary luncheon after the opening ceremony on November 25, (b) to provide space for a display of amateur-built equipment, (c) to adopt the same scale of hire charges and layout as last year, (d) not to operate an Amateur Radio station at the Exhibition, (e) to invite the British Amateur Television Club to participate, free of charge, (f) to invite the B.B.C. to televise some aspect of the Exhibition.

R.S.G.B. Year Book

Consideration was given to a suggestion made by Mr. J. P. Hawker, G3VA, that the Society should publish—and issue free to Corporate Members—a Year Book embodying, *inter alia*, a call book section, reference material, historical notes, licence details, etc., etc.

Resolved to instruct the Secretary to look into the question of producing a Year Book on the lines suggested and if the cost is not excessive to meet the expenditure from Reserves.

It was agreed that, in the event of it being decided to proceed with the project, the first edition shall be ready for the 1954 Amateur Radio Exhibition.

I.A.R.U. Calendar No. 46

A copy of the above Calendar was tabled (a précis of information contained in the Calendar appears in this issue of the BULLETIN.—Ed.).

Cash Account

Resolved to receive and adopt the Cash Account for the month of July, 1953 as submitted by the General Secretary.

Lausanne I.A.R.U. Conference

The Secretary reported that the Technical Committee of the Society had made a preliminary study of the Report but had decided, in view of the fact that Mr. Hammans and several other Members were absent from the meeting, to defer full consideration of the Recommendations until the next meeting. The Committee had, however, authorised the Secretary to inform the Council that, as far as could be seen at present, the Recommendations are acceptable *in toto*.

It was agreed to await the final views of the Technical Committee before considering a motion to adopt (or otherwise) the Recommendations contained in the Report.

The meeting terminated at 5.25 p.m.

Résumé of the Proceedings at a Special Meeting of the Council held on Tuesday, August 11, 1953, at 6.30 p.m.

Present.—The President (Mr. Leslie Cooper in the Chair), Messrs. I. D. Auchterlonie, H. A. Bartlett, C. H. L. Edwards, D. A. Findlay, F. Hicks-Arnold, R. H. Hammans, J. H.

Hum, A. O. Milne, L. E. Newnham, R. Walker, P. W. Winsford and John Clarricoats (General Secretary).

Apology for absence

An apology for absence was submitted on behalf of Mr. F. Charman.

Purpose of Meeting

The Secretary explained that the meeting had been called on the instructions of the Council to discuss matters relating to the revised Articles of Association and to consider a report from the Honorary Treasurer dealing with the financial position of the Society.

Articles of Association

Consideration was given to a report prepared by the Secretary which outlined the various proposals put forward by the Board of Trade. As the result of a detailed examination of the Articles the Secretary was instructed to raise certain points with the Society's legal advisers.

Report of Honorary Treasurer

Consideration was given to a report prepared by the Honorary Treasurer dealing with the Society's financial position as at June 30, 1953, and the anticipated expenditure for the year to June 30, 1954, and subsequently.

After a lengthy discussion it was moved and seconded that the annual subscription to be paid by Corporate Members for the current year shall be £1 7s. 6d.

It was moved as an amendment and seconded that the annual subscription to be paid by Corporate Members for the current year shall be £1 5s. In announcing this rate the President to indicate that the Council will make every effort to run the Society at that figure but if unsuccessful a motion to again increase the rates will be submitted to the membership next year.

The amendment was lost by 8 votes to 3. (Messrs. Hicks-Arnold, Milne and Walker voted in favour).

The original motion was then put to the meeting and carried by 10 votes to 1. It was thereupon

Resolved that, in event of the Special Resolution being passed at the Special General Meeting on October 23, 1953, the subscription to be paid by Corporate Members for the current year shall be £1 7s. 6d.

Publicity

Messrs. Findlay and Hum agreed to prepare publicity material for publication in the September issue of the BULLETIN. It was agreed that copies of the publicity material should be circulated to the Members of the Council for their comments.

The meeting terminated at 9.55 p.m.

NOMINATIONS FOR COUNCIL 1954

IN accordance with the Articles of Association the following Corporate Members have been nominated by the retiring Council to serve on the 1954 Council:—

Officers:

President: Mr. A. O. Milne, G2MI.
Acting Vice-President: Mr. H. A. Bartlett, G5QA.
Hon. Treasurer: Mr. D. A. Findlay, G3BZG.
Hon. Secretary: Mr. C. H. L. Edwards, G8TL.
Hon. Editor: Mr. J. H. Hum, G5UM.

Members:

Mr. I. D. Auchterlonie, G6OM.
Mr. R. H. Hammans, G2IG.
Mr. F. J. Hicks-Arnold, G6MB.
*Mr. F. G. Lambeth, G2AIW.
Mr. L. E. Newnham, G6NZ.
*Mr. F. A. Russell, G3BHS.
Mr. R. Walker, G6QI.

*New Nominations as per Article 43.

Not later than October 31st next, any ten Corporate Members (but not more than ten) may nominate any other duly qualified Member, by delivering their nominations in writing to the Secretary, Inc. Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, together with the written consent of such Member to accept office if elected, but each such nominator shall be debarred from nominating any other Member for this election.

Forthcoming Events

REGION 1

- Barrow.**—November 13, 8 p.m., official visit by R.R., Castle House, Walney Island, Barrow-in-Furness.
- Bury.**—November 12, 7.30 p.m., Y.M.C.A., The Rock, Bury.
- Chester (C. & D.A.R.S.).**—Tuesdays, 7.30 p.m., Tarran Hut, Y.M.C.A., Chester. November 10, official visit by R.R.
- Crosby.**—Tuesdays, 8 p.m., over Gordon's Sweetshop, St. John's Rd., Waterloo. October 20, official visit by R.R.
- Darwen & Blackburn.**—October 23, 7.30 p.m., Y.M.C.A., Limbrick, Blackburn.
- Isle of Man (I.O.M.A.R.S.).**—November 4, Broadway House, Douglas.
- Liverpool (M.R.S.).**—Alternate Saturdays, 3 p.m., Larkhill Mansion House, West Derby, Liverpool.
- Manchester (M. & D.R.S.).**—November 2, 7.30 p.m., Brunswick Hotel, Piccadilly, Manchester.
- Rochdale (R.R.T.S.).**—Fridays, 7.45 p.m., 1 Law Street, Sudden.
- South Manchester (S.M.R.C.).**—Fridays, 7.30 p.m., Ladybarn House, Mauldeth Road, Manchester 14.
- Southport.**—October 22, 8 p.m., official visit by R.R., Y.M.C.A., off Eastbank Street, Southport.
- Stockport (S.R.S.).**—October 28, November 11, 8 p.m., A.T.C. Headquarters, St. Petergate, Stockport.
- Warrington (W. & D.R.S.).**—October 20, November 3, 7.30 p.m., King's Head Hotel, Winwick Street, Warrington.
- West Cumberland.**—November 5, 7 p.m., Kell's Community Centre, Whitehaven.
- Westmorland.**—November 15, official visit by R.R. Details from A.R., G3HMR, 6 Hodge Howe, Windermere.
- Wirral.**—October 21, November 4, 18, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

- Barnsley.**—October 16, 30, November 13, 7.30 p.m., King George Hotel, Peel Street.
- Bradford.**—October 17, November 1, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
- Catterick.**—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.
- Darlington.**—Thursdays, 7.30 p.m., 129 Woodlands Road.
- Doncaster.**—November 11, 7.30 p.m., Black Bull, Market Place.
- Gateshead.**—Mondays, 7.30 p.m., Mechanics Institute, 7 Whitehall Road.
- Hull.**—October 27, November 10, 7.30 p.m., Rampant Horse, Paisley Street.
- Middlesbrough.**—Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Faversham Street.
- Newcastle (N.E.A.T.S.).**—November 3, 7.30 p.m., Barras Bridge Hotel, Sandyford Road.
- Pontefract.**—October 15, 29, November 12, 8 p.m., Fox Inn, Knottingley Road.
- Rotherham.**—Wednesdays, 7 p.m., "Cutlers Arms," Westgate.
- Scarborough.**—Thursdays, 7.30 p.m., B.R. Rifle Club, West Parade Road.
- Sheffield.**—October 28, 8 p.m., "Dog and Partridge," Tripp Lane; November 11, 8 p.m., Albreda Works, Lydgate Lane.
- Slaithwaite.**—Fridays, 7.30 p.m., 3 Dartmouth Street.
- Spenborough.**—October 21, November 4, 7.30 p.m., Temperance Hall, Cleckheaton.
- York.**—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

- Birmingham (South).**—November 6, 7.15 p.m., Stirchley Institute (Room 7).
- Coventry.**—October 23, 7.30 p.m., Priory High School, Wheatley Street.
- Kenilworth, Warwick & Leamington.**—November 19, 7.30 p.m., Dalehouse Lane.
- Malvern.**—November 2, 8 p.m., "Foley Arms."
- Stourbridge (S. & D.R.S.).**—November 3, 8 p.m., King Edward's School.
- Wrekin (W.A.R.S.).**—Mondays, 8 p.m., Wrekin Service Club, Roseway, Wellington.

REGION 4

- Alvaston.**—Tuesdays, Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, nr. Derby.
- Chesterfield.**—Tuesdays, 7.30 p.m., Bradbury Hall, Chatsworth Road.
- Derby (D. & D.A.R.S.).**—October 21, 28, November 4, 11, 7.30 p.m., Derby College of Arts and Crafts (sub-basement), Green Lane.
- Leicester (L.R.S.).**—October 26, November 9, 7.30 p.m., Hollybush Hotel, Belgrave Gate.
- Lincoln (L.S.W.C.).**—October 28, November 11, 7.30 p.m., Technical College, Cathedral Street.
- Loughborough.**—October 21, 7.30 p.m., Great Central Hotel.
- Mansfield (M. & D.A.R.S.).**—November 1, 3 p.m., "Denman's Head Hotel," Market Place, Sutton-in-Ashfield.
- Newark.**—October 25, November 8, 7 p.m., Northgate House, Northgate.

- Northampton.**—Fridays, 7 p.m., November 6, 6 p.m., Club Room, 8 Duke Street.
- Nottingham.**—October 16, November 20, 7.30 p.m., Sherwood Community Centre, opposite Woodthorpe Drive, Sherwood.
- Peterborough.**—November 4, 7.30 p.m., "New Inn," New England, Peterborough.
- Workshop.**—November 2, 7 p.m., "King Edward Hotel."

REGION 5

- Chelmsford.**—November 3, 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.
- Ipswich.**—October 28, November 11, 7.30 p.m., T.A. Drill Hall, Woodbridge Road, Ipswich.
- Lowestoft & Beccles (L. & B.A.R.C.).**—October 28, November 11, 7.30 p.m., Y.M.C.A., Lowestoft.

REGION 6

- Cheltenham.**—November 5, 8 p.m., 128 Prestbury Road.
- Gloucester (G.R.C.).**—Thursdays, 7.30 p.m., The Cedars, 83 Huaclecote Road.
- Oxford (O. & D.A.R.S.).**—Alternate Wednesdays, 7.30 p.m., The Club Room, Magdalen Arms, "Illey Road."
- Portsmouth.**—Tuesdays, 7.30 p.m., Signals Club Room Royal Marine Barracks, Eastney.
- Southampton.**—November 7, 7.30 p.m., 1 Prospect Place.
- Stroud.**—Wednesdays, 7.30 p.m., Subscription Rooms.

REGION 7

- Acton, Brentford, Chiswick.**—Tuesdays, 7.30 p.m., A.E.U. Rooms, High Street, Chiswick.
- Barnes, Putney, Richmond.**—November 10, 7.30 p.m., 337 Upper Richmond Road, East Sheen.
- Barnet.**—November 13, 7.30 p.m., Elizabeth Allan School, Wood Street, "Tape Recording"—lecture-demonstration by G6HU.
- Bexleyheath (N.K.R.S.).**—October 22, November 12, 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
- Bromley (N.W.K.A.R.S.).**—November 6, 8 p.m., Shortlands Tavern, Station Road, Shortlands.
- Croydon (S.R.C.C.).**—November 10, 7.30 p.m., "The Blacksmiths' Arms," South End, Croydon.
- Dorking.**—Tuesdays, 7.30 p.m., 5 London Road, Dorking.
- Dulwich & New Cross.**—November 3, 7.45 p.m., "The Walmer Castle," Peckham Road, S.E.5.
- Ealing.**—Sundays, 11 a.m., A.B.C. Restaurant, Ealing Broadway.
- East Ham.**—October 20, November 3, 17, 8 p.m., 57 Leigh Road.
- East London.**—October 25, 2.30 p.m., Lambourne Room, Town Hall, Ilford. "5 Ack R Trophy Entries," Dr. A. H. Koster (G3ECA).
- East Molesey.**—November 4, 8 p.m., Carnarvon Castle Hotel, Hampton Court.
- Enfield.**—November 15, 3 p.m., George Spicer School, Southbury Road.
- Finsbury Park.**—October 20, November 17, 7.30 p.m., 164 Albion Road, N.16.
- Guildford & Woking.**—October 25, November 22, 3 p.m., Royal Arms Hotel, North Street, Guildford.
- Hendon & Edgware (E.D.R.S.).**—Wednesdays, 8 p.m., 22 Goodwins Avenue, Mill Hill.
- Hoddesdon.**—November 5, 8 p.m., "Salisbury Arms."
- Holloway (G.R.S.).**—October 16 ("Negative Feedback"), 23 ("Amplifier Design"), November 6 ("To start you talking," Basil Wardman, G5GQ), 7.30 p.m., Grafton School, Eburne Road, N.7.
- Ilford.**—Thursdays, 8 p.m., G2BRH, 579 High Road, Ilford.
- Kingston (K. & D.A.R.S.).**—October 21, November 4, 7.45 p.m., Penrhyn House, Penrhyn Road.
- Kensington & Shepherds Bush.**—November 10, 8 p.m., 38 Royal Crescent, W.11.
- Lewisham (R.A.R.C.).**—Wednesdays, 8 p.m., Durham Hill School, Downham.
- Norwood.**—October 17, November 21, 7.30 p.m., Windermere House, Westow Road, Crystal Palace.
- Slough.**—October 15, November 19, 7.45 p.m., Labour Hall, Chandos Street.
- Southgate & Finchley.**—November 12, 7.30 p.m., Arnos School, Wilmer Way, N.11.
- Sutton & Cheam (S. & C.R.S.).**—October 20, November 17, "The Harrow," Cheam Village.
- Uxbridge.**—November 6, 7.30 p.m., "The Vine," Hillingdon.
- Watford (W.A.R.S.).**—October 20, November 3, 7.30 p.m., "Cookery Nook," The Parade.
- Welwyn Garden City.**—November 3, 8 p.m., Council Offices. Open Meeting with Region 5 Groups and Clubs. "One Minute Quiz," Southgate v. Enfield.

REGION 8

- Brighton.**—T.R. at home, Wednesdays, 7.30 p.m., 27 Warren Avenue, Woodingdean. (B.D.R.C.).—Tuesdays, 7.30 p.m., "Eagle Arms," Gloucester Road.
- Chatham (M.A.R.T.S.).**—Details from the Hon. Secretary, 14 Connaught Road, Chatham.
- Isle of Thanet (I.O.T.R.S.).**—Fridays, 7.30 p.m., George Hotel, Hawley Street, Margate.
- Maidstone (M.K.A.R.S.).**—Fridays, 7.30 p.m., Elms School, London Road.

(Continued on page 183.)

Regional and Club News

BARNET.—Twenty-six members attended the first meeting of the re-formed Barnet Group at the Elizabeth Allan School on September 11, when C. H. L. Edwards (G8TL) lectured on Portable Equipment. At the meeting to be held on November 13, at 7.30 p.m., J. E. Hunter (G6HU) will describe and demonstrate his tape recording apparatus. Area Representative: A. D. Cliff (B.R.S. 19421), 39 Oakleigh Park North, Whetstone, N.20.

BARNLEY AMATEUR RADIO SOCIETY.—To celebrate the 40th anniversary of the founding of the Society, a special activity week on all bands from 1.8 to 14 Mc/s is now in full swing. Many contacts, both with U.K. and DX stations, have been made and will be confirmed by a special anniversary QSL card.

BRISTOL.—Herb, Bartlett (G5QA), Regional Representative and Council Member, was guest of honour at the September meeting. More than fifty members were present to hear the latest Society news. Later in the evening D. V. Newport (G3CHW) continued his talk on "Instruments and their Amateur Applications." At the November meeting G3CHW will discuss the alignment of communications receivers, using a wobulator and oscilloscope. Hon. Secretary: D. F. Davies (G3RQ), 51 Theresa Avenue, Bristol 7.

CHELTHAM.—At a recent meeting the design and construction of 2-metre beams was discussed, and a 2-metre receiver, embodying many new techniques, demonstrated by G6VX. Town Representative: J. J. Yeend (G3CGD), 30 St. Luke's Road, Cheltenham.

CHESTER & DISTRICT AMATEUR RADIO SOCIETY.—During the Autumn-Winter session R.A.E. lectures will be given on the first and third Tuesdays in each month. Morse classes will be held every Tuesday (7 p.m. slow, 7.30 p.m. fast). Hon. Secretary: A. N. Richardson (B.R.S. 19678), 23 St. Mary's Road, Dodelston, near Chester.

EDINBURGH AMATEUR RADIO CLUB.—Meetings will be held at 16 Bothwell Street (downstairs), Easter Road, on October 21 ("Power Packs"), November 4 (Junk Sale) and November 18 (R.S.G.B. Recorded Lecture). The Club station (GM3HAM) is active on alternate Tuesdays. Hon. Secretary: D. Black, 16 Edina Place, Edinburgh.

GRAFTON RADIO SOCIETY.—At the A.G.M. the following officers were elected: President: J. H. Clarke (G2AAN); Chairman and Vice-President: L. Kippen (G8PL); Vice-Presidents: P. Beresford (G3AFC), J. Reading (G3RX), W. H. C. Jennings (G2AHH), B. Randall (GW3ALE) and C. T. Bird. Committee Member: L. Bacon (G2DUP); Hon. Secretary and Treasurer: A. W. H. Wonnell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

ISLE OF MAN AMATEUR RADIO SOCIETY.—Meetings during the Autumn and Winter session will be held at Broadway House, Broadway, Douglas, and full details may be obtained from the Hon. Secretary: R. S. Trickey (GD3DRB), "Aigburth," Sunningdale Drive, Onchan.

LANCASTER & DISTRICT AMATEUR RADIO SOCIETY.—Recent activities have included a film show, attended also by members of the Barrow Amateur Radio Society, and a junk sale. At the November meeting G3BAP will talk on "Two Metre Equipment." A dinner and social is planned for December. Hon. Secretary: A. O. Ellefsen, 10 Seymour Avenue, Heysham, Lancs.

LEICESTER RADIO SOCIETY.—A complete programme of forthcoming activities has now been arranged. Visitors will be warmly welcomed at the Club Room, Holly Bush Hotel, Belgrave Gate, at 7.30 p.m. on the second and fourth Mondays in each month. Hon. Secretary: N. Wibberley, 21 Pauline Avenue, Belgrave, Leicester.

NORWOOD.—At the September meeting Lt. D. Deacon (G3BCM) lectured on Direction Finding. On October 17, E. Yeomanson (G3IIR) and D. Smith will describe how to build an amateur receiver around the CR100 coil unit.

MIDLAND AMATEUR RADIO SOCIETY.—At the Annual General Meeting Garnett Lapworth (G6DL) was elected President. A cordial invitation is extended to all those interested to attend meetings at the Imperial Hotel, Birmingham, on the third Tuesday in each month. Hon. Secretary: D. Hann, 144 Hill Village Road, Four Oaks, Sutton Coldfield.

SLADE RADIO SOCIETY.—Forthcoming events are as follows: October 18 (Midnight double-D/F Contest), October 30 ("Projection Television"), October 31 (Annual Dinner at the Market Hotel, Erdington), November 13 ("Cold Cathode Tubes"). Hon. Secretary: C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.

SOUTH MANCHESTER RADIO CLUB.—At the meeting on October 23 the Mullard film strip on Cathode Ray Tubes will be shown. G. Kenyon (G3HMF) will demonstrate his Tape Recorder on November 6. Meetings are held every Friday at Ladybarn House, Mauldeth Road, Fallowfield. Hon. Secretary: M. Barnsley (G3HJM), 17 Cross Street, Bradford, Manchester 11.

SOUTH SHIELDS & DISTRICT AMATEUR RADIO CLUB.—Meetings are held at 8 p.m. on Fridays at Trinity House Social Centre, 134 Laygate Lane, South Shields. Hon. Secretary: W. Dennell (G3ATA), 12 South Frederick Street, South Shields.

STOURBRIDGE & DISTRICT AMATEUR RADIO SOCIETY.—H. Little (G2NV), whose interest in wireless started in 1908, recently gave a talk on his reminiscences. G2NV's early equipment was similar to that recently described in the BULLETIN. Hon. Secretary: F. W. Meredith (B.R.S. 19666), Shire Oak, Gibbings Road, Wollaston, Stourbridge, Worcs.

STOCKPORT RADIO SOCIETY.—The Society took part in the Region 1 Field Day last month under the call G3AUB/P. Members attended the Bucket and Spade Party at St. Annes on September 20. Meetings at A.T.C. Headquarters, St. Petersgate, Stockport, are fixed for October 28 and November 11. Hon. Secretary: G. R. Phillips (G3FYE), 7 Germans Buildings, Buxton Road, Stockport.

SURREY RADIO CONTACT CLUB.—An illustrated talk on the Metropolitan Police Wireless System will be given by Mr. Andrews (Engineer, M.P.W.S.) at the "Blacksmiths Arms," South End, Croydon, on November 11 at 7.30 p.m. Visitors will be very welcome. Hon. Secretary: S. A. Morley (G3FWR), 22 Old Farleigh Road, Selsdon, South Croydon.

TORBAY AMATEUR RADIO SOCIETY.—The C.R. for Devon, Tom Smith (G3EFY), was a welcome visitor at the September meeting. Two members passed the recent R.A.E. The next meeting is at the Y.M.C.A., Torquay, on October 17 at 7.30 p.m. Hon. Secretary: L. H. Webber (G3GDW), 43 Lime Tree Walk, Newton Abbott.

Representation

The following are additions and amendments to the list of Representatives published in the February, 1952, issue:

County Representatives

Region 5—Essex

C. L. Fenton (G3ABB), 40 Fourth Avenue, Chelmsford.

Region 9—Dorset

C. E. Biggs (G2TZ), Winterborne Abbas, Dorchester.

Town Representatives

Region 1—Lancashire East

Darwen-Blackburn

D. Townley (G3GHZ), 52 Queen's Road, Accrington.

Region 2—Yorkshire East

Hull. R. C. Parnaby (G2DPA), 32 Cartwright Lane, Beverley.

Yorkshire West

Pontefract. D. I. Thompson (G3IDT), "Strathmore," A2 Baghill Lane.

Region 5—Essex

Chelmsford. P. J. Naish (G3EIX), 39 Yarwood Road.

Vacancies

Mr. A. Miller (B.R.S. 6731) has resigned as Representative for the town of Dundee.

Members of the Group concerned have decided that the vacancy created by the resignation of the T.R. for Southgate, London, N., shall not be filled until January 1, 1954.

Note. — All present Regional and Town Representatives go out of office on December 31, 1953, unless they have been re-nominated without opposition.

FORTHCOMING EVENTS.—(Continued from page 182.)

REGION 9

Bristol.—October 16, November 20, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol 1.

Exeter.—November 6, 7 p.m., Y.M.C.A., St. David's Hill.

North Devon.—November 5, 7.30 p.m., Rose of Torridge Cafe, The Quay, Bideford.

Penzance.—November 5, Railway Hotel.

Plymouth.—October 17, November 21, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Jude's.

Torquay.—October 17, November 21, 7.30 p.m., Y.M.C.A., Castle Road.

West Cornwall (W.C.R.C.).—November 5, 19, "Fifteen Balls," Penryn, near Falmouth.

Weston-super-Mare.—November 3, 7.30 p.m., Y.M.C.A.

Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 10

Cardiff.—November 9, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff.

REGION 13

Dunfermline.—Mondays and Thursdays, 7.30 p.m., behind 34 Viewfield Terrace, Dunfermline.

Edinburgh (L.R.S.).—October 22, November 5, 7.30 p.m., 25 Charlotte Square, Edinburgh.

REGION 14

Falkirk.—October 30, November 13, 7.30 p.m., Temperance Cafe, High Street, Falkirk.

Prestwick.—October 18, 7 p.m., Royal Hotel.



Agin 'Em All!

DEAR SIR,—On reading the letters published in the September issue, I have come to the conclusion that I don't seem to be able to agree with anybody!

G6LO relates the number of amateurs to the millions of BC and TV owners. I suggest that if we relate our united strength to the number who suffer interference from us, we shall arrive at a fair balance of power. And if it were widely known that the screaming noise on a BC set is usually caused by a TV set, I think the balance of public opinion would not be against us.

I do not agree with J.H. in his notes on G2JG's letter, about drawing unwelcome attention. It is not difficult to cut down the harmonics, and we ought to be only too pleased to show that TVs are in some cases affected by a transmission so far away from their rightful frequency as our fundamentals.

I do not agree with G6LB that we can never convince the G.P.O. of our case. I suggest that if we can get a ruling—in our favour—on one type of TVI—viz., that where a high-pass filter supplied gratis, is a complete cure, but is either openly rejected or surreptitiously removed—many "Hams" would soon be back on the air during TV hours. The circumstances apply to me and doubtless to many others. I find that my unshielded transmitter with a home-made "Harmonitrap" and a GSRV low-pass filter leaves all but two local TVs—not the two nearest to me—completely free of interference.

Since the more modern of the TV sets near me are unaffected by my fundamental, obviously someone in the industry has done the intelligent thing, and I am willing to ascribe this to action by the R.S.G.B., or at least, in part.

I think it is time we paraded TVI in front of the public, persuaded those nearby and unaffected TVs to come in on our side, and shouted aloud that if the TV set next door is unfiltered and unaffected, what is wrong with the one five doors down which suffers TVI. We shall never shoot the rabbit by shutting our eyes and pretending it isn't there. I suggest we should drag TVI into the local newspapers and invite all and sundry to approach us and see for themselves that other people's sets are undisturbed. I think that public commonsense will not blame us when they see the difference between one TV and another. And would not this encourage the manufacturers of the affected sets to do something in the way of selectivity? One particular make of TV is singularly unaffected in my locality, and not an expensive model at that.

The only alternative to G6LB's lead lined cabinet is a "Dallas Plan." I feel sure that the G.P.O., like Heaven, would help those who help themselves. And I certainly can't agree that the "Top Band" is the only place for a successful QSO. I think it is the worst of the lot!

As for G8JD's letter, I would suggest that much of the "lid" operating is there because we know from experience that the station under the "pile up" just doesn't mean it when he sends "CL," "Ten down," "QLM," etc. Ten to one he'll send "SK" and carry on with the same station, moaning about the QRM from stations calling him.

Unless we turn this moaning into positive action, how many of us will be able to show a record like G2HA in the years to come?

Yours faithfully,

H. S. CHADWICK (G8ON).

Workson, Notts.

Beating the Bogy

DEAR SIR,—The letter from G2JG in the September issue is self-contradictory. He tells us that it is practically impossible to effect a complete QSO in the evenings and at weekends due to the number of stations on the bands. A few lines further on it is stated that TVI keeps us off the air. May I respectfully suggest that both these propositions are bunkum.

I find it quite possible to secure excellent c.w. contacts on 3.5 Mc/s at the weekends even with an input of 0.5 watt to a power doubler, a single-valve receiver and a mediocre 60 ft. aerial.

An input of 20 watts on 3.5, 7 and 14 Mc/s c.w. gives me all the contacts I want. The only anti-TVI precaution is a low pass filter in the link to the aerial tuning unit. No complaints of TVI have been received despite numerous receivers in the vicinity, some still receiving pictures from Sutton Coldfield. It is my firm conviction that most of the people who are silent during TV hours have either assumed they are causing TVI without really finding out, or just cannot be bothered to put their equipment in order.

The loss of 85 kc/s of "Top Band" was no hardship; the stations using that portion could be counted on the fingers of one hand. Most of the broadcasting stations moved into the 7 Mc/s band during the war and it would be wishful thinking to expect them to move out. The Atlantic City allocation merely confirmed the position. True we have lost 50 kc/s of the 14 Mc/s band, but 21 Mc/s with its unpredictable behaviour should have attracted the more adventurous DX men.

Entirely new frequency allocations my foot—we're not even using those we have in an efficient manner. The 28 Mc/s band is dead from the DX point of view, but it could be used for ground wave inter-G working and relieve the congestion on the lower frequencies.

On page 109 of the September BULLETIN, G3ECA shows that 420 Mc/s equipment can be simpler than "Top Band" gear, thereby squashing most of the objections to going u.h.f.

Just think of it, G2JG O.M., no TVI, no QRM, and if there's no one else on the band you're no worse off than you say you are now.

Yours faithfully,

JOHN E. HODGKINS (G3EJF).

Tottington, near Bury, Lancs.

The State of Amateur Radio

DEAR SIR,—My impression is that most of the complaints regarding the state of Amateur Radio arise from those who held licences in the far off days of TEST and TEN Watts.

Surely, Amateur Radio has always been faced with almost insuperable difficulties and has overcome them to reach higher standards and greater popularity.

Let the moaners take up the challenge of the times and by their constructive attitude set an example to the "young squirts," who are tomorrow's "old timers."

Yours faithfully,

W. J. RIDLEY (G2AJF).

Chelmsford, Essex.

V.E.R.O.N. Code Proficiency Runs

DEAR SIR,—May I draw your attention to the excellent Code Proficiency runs made by the official V.E.R.O.N. station PA0AA on 3505 kc/s at 11.15 G.M.T. the last Sunday in each month?

During the transmission on August 30 an appeal was made to stations to keep the frequency clear but three well known G stations kept on 3505 kc/s throughout the whole of the transmission. They were powerful signals here and spoilt the entire run.

Since there is no other means of qualifying for a Code Proficiency award of this nature (the A.R.R.L. code transmissions are not at a convenient time for most people) could we not show a little more consideration and appreciation of the efforts of V.E.R.O.N. and keep off the frequency?

Yours faithfully,

E. H. TROWELL, (G2HKU).

Sheerness, Kent.

De-Humidifier Details Wanted

DEAR SIR,—During the last war, I had occasion to use a de-humidifier issued by the Canadian Army as part of the equipment of their Type 53 transmitter. It consisted of a typical blueflame paraffin heater fitted inside what was a system of conical, chromium-plated vanes, and at the base of which was a container, which collected 1½ to 2 gallons of water daily, from a room measuring some 8 x 10 ft. It, of course, also served as a heating installation for the operator, in addition to drying the air.

I have tried several times to find such equipment on our markets without success, and I should be pleased if you would publish this inquiry in the hope that some of your readers may know where to obtain such an equipment, or even that the more qualified amongst them, may offer some design considerations for modifying an existing blueflame heater to give this service.

I feel sure that such a de-humidifier would be welcomed by the hundreds of amateurs who, having outdoor "shacks," are experiencing dampness troubles in the winter season, and I would respectfully suggest that a constructional article on such a modification, if forthcoming, would be of general interest.

Yours faithfully,

HERBERT THORPE (G3CGH).

36 Redburn Road, Northenden, Manchester.

P.S.—The Valor Co. (Esso Petroleum) inform me that they do not manufacture one so, although the equipment closely resembled their products, it was undoubtedly of Canadian origin.

New Members

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- G3BWC H. C. BOSTOCK, 1 Grange Road, Hayes, Middlesex.
 G3CUZ L. KEATES, 54 Nab Hill Avenue, Leek, Staffs.
 G3GMS C. P. THAYNE, 186 Town Lane, Bebington, Wirral, Cheshire.
 G3HDP K. W. BARBER, 1 Charterhouse Road, Coventry, Warwickshire.
 G3ILA F. H. HUGHES, Northdean, Meopham, Gravesend, Kent.
 G3ILN *H. L. RAMSDEN, 57 Wakefield Road, Ossett, Yorkshire.
 G3IQT E. S. SAMBERTON, 91 Hotblack Road, Norwich, Norfolk.
 G3IWC *W. F. COX, 415 Barking Road, Plaistow, London, E.13.
 G3IXY D. GABBITAS, 3 Laura Place, Bath, Somerset.
 G3IYQ L. A. CHINERY, 180 Hermon Hill, South Woodford, London, E.18.
 G3IYT S. R. WALKER, 34 Humberstone Road, Grimsby, Lincs.
 G3IZJ M. J. FAULKNER, Grange Hotel, Hawley Lane, Farnborough, Hants.
 G3IZY R. A. PARSONSON, Long Gardens, Brook Lane, Galleywood End, Chelmsford, Essex.
 G3JAF *A. H. TRIGELL, Lynwood, Everton Road, Hordle, Lymington, Hants.
 G3JAL R. C. TAYLOR, 67 Colliers Water Lane, Thornton Heath, Surrey.
 G3JAZ B. M. POOLE, "Beaumont" Broadway, The Avenue, Harfield, Stoke-on-Trent.
 G3JBC *J. W. COX, 170 Queen's Drive, Nottingham.
 G3JBS A. W. SHEPPARD, 11 Barfields, Loughton, Essex.
 G3JFW F. S. WHITE, "Sejenane," 30 Whyburn Lane, Hucknall, Nottingham.
 G6NB *D. N. BILTCLEFFE, Windmill Cottage, Brill, Bucks.
 GM3IUZ W. E. STEPHEN, 109 Den Walk, Methel, Fife, Scotland.
 GM3IYY A. BROWN, 9 Seaforth Road, Stornoway, Isle-of-Lewis, Scotland.
 * * *
 G3TU J. LOMAX, 135 Marlborough Road, Accrington, Lancs.
 G3HFP T. WORTON, 16 Hall Street, St. Helens, Lancs.
 G3IHX N. J. BOND, "Fairhill," 159 Warwick Road, Coventry, Warwick.
 G3IKF *A. B. CHADBURN, Cassacawn, Blisland, Bodmin, Cornwall.
 G3INE R. CONWAY, 132 School Lane, Shard End, Castle Bromwich, Birmingham.
 G3IQM R. I. SILLS, 29 Edingley Square, Sherwood, Nottingham.
 G3IRO H. W. ROUD, 29 Vicarage Lane, Ilford, Essex.
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 G3JBW M. H. GROSS, 61 Kimberley Road, Southsea, Hants.
 G3JNB V. E. BRAND, 137 Surbiton Hill Park, Surbiton, Surrey.
 G3JNR N. J. RICHARDS, Fishmongers Arms, Cley, Holt, Norfolk.
 G3JRA *J. R. ACWORTH, 64 College Road, Bromley, Kent.
 G5NB C. A. HARNWELL, 17 Chestnut Avenue, H.M.S. Flowerdown, Winchester, Hants.
 G8RX G. M. THOMPSON, 76 Ringstead Crescent, Crosspool, Sheffield, 10.
 GM3JCC J. C. CUNNINGHAM, 45 Marshall Street, Larkhall, Lanarkshire.
 * * *
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 G2CNW F. ROBATHAN, 56 Rectory Park Road, Sheldon, Birmingham, 26.
 G2DLX *A. J. MITCHELL, 167 Southbury Road, Enfield, Middx.
 G2DZH N. H. TALBOT, 105 Westwood Lane, Welling, Kent.
 G3CVI *B. H. THWAITES, 48 Southend Road, Great Baddow, Chelmsford, Essex.
 G3DOP *J. J. R. MCDOONELL, "Roma," Woodland Rd., Binley, Coventry, Warwick.
 G3GFT G. F. OLDFIELD, 135 Lytham Road, Blackpool, Lancs.
 G3GPD *J. AUSTIN, Northside Farm, Laxton, Nr. Howden, E. Yorks.
 G3HRU G. T. SENIOR, 7 Benton Park Drive, Yeadon, Yorkshire.

- G3ICZ W. J. CLOWES, 70 George St., Hanley, Stoke-on-Trent, Staffs.
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 G3JAY A. C. RICHARDS, 26 Clent Road, Handsworth, Birmingham, 21.
 G3JCT B. WORMALD, Field House, Acaster Malbis, York.
 G3JCZ W. RYMER, 15 Broadway, Northstead, Scarborough, Yorkshire.
 G3JDB F. R. BURNHAM, 80 St. Margarets Grove, Twickenham, Middx.
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 G3JRT J. R. TICKLE, "Dillondene," York Road, Formby, Lancs.
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 * * *
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 DL2TW R. V. KERSEY, No. 72 Signals Unit, c/o R.A.F. Wahn, 2nd T.A.F., B.A.O.R. 19.
 DL3PK L. FROHN, (13b), Ungerstr. 157, Munchen 23, Fed. German Republic.
 MD5RM D. A. MCBRIGHT, Sigs. Section, 40 Commando, M.E.L.F. 29.
 MP4BBL G. A. GAYTON, Mail Box 780, The Bahrain Petroleum Co., Ltd., Awali, Bahrain Island, Persian Gulf.
 W1NOA N. A. ROSA, 5 Hundley Court, Stamford, Connecticut, U.S.A.
 ZS1MQ M. H. K. SMITH, P.O. Box 3508, Cape Town, South Africa.
 * * *
 4S7MA R. F. M. ANDREE, The Moorings, 20 Cotta Rd., Rajagiriya, Colombo, Ceylon.
 AP5TM CAPT. T. M. MCLUSKIE, R. Signals, G.H.Q. Signal Regt., Rawalpindi, Pakistan.
 DL2UM A. J. RUSSELL, No. 889 Signals Unit, c/o R.A.F. Wahn, 2nd T.A.F., B.A.O.R. 19.
 HB9GA H. A. LATZ, Waldeckstrasse 30, Ostermundigen (Berne), Switzerland.
 W3CGS H. STARK, 7761 Park View Road, Upper Darby, Pa., U.S.A.
 W4DZH H. N. PERRY, 9317 Marlowe Avenue, Norfolk 3, Virginia, U.S.A.
 W4PDZ G. E. VAN VOORHIS, 10340 Keswick, Sun Valley, California, U.S.A.
 W6CJI M. F. POOL, 5625 Panama Avenue, Richmond 8, California, U.S.A.

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 18729 *R. HOASON, 6 Terrace Place, off Brunswick Street, Stockport, Cheshire.
 14979 *C. F. S. OBERBECK, Ward 10, Block B, Stracathro Hospital, By Brechin, Angus.
 17558 *H. C. DE VROOME, 8 Brantwood Gardens, Enfield, Middx.
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 20005 D. A. NIXON, 8 Suffolk Street, Kingsholme, Gloucester.
 20006 M. H. G. TALBOYS, 40 Uley Road, Dursley, Glos.
 20007 D. L. WALKER, 41 Broadway, Exeter, Devon.

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- 20020 H. TONKS, 131 Warstock Road, Kings Heath, Birmingham 14.
- 20021 F. HUNT, 33 Bradley Road, Upper Stratton, Swindon, Wilts.
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- 20024 C. G. SWAFFIELD, "The Broadway," Belchers Lane, Bordesley Green, Birmingham 9, Warwicks.
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- 20026 J. W. SOUTH, 22 Washington Avenue, Bournemouth, Hants.
- 20027 J. P. WALKER, 9 Church Street, Exmouth, Devon.
- 20028 T. A. JARMAN, 31 Green Street, Royston, Herts.
- 20029 M. J. MATTHEWS, 94 Victoria Avenue, Dartmouth, South Devon.
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- 20032 D. R. BILSTON, The Terrace, High Street, Cavendish, nr. Sudbury, Suffolk.
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- 20036 H. W. E. PRODDER, 41 Capel Road, East Barnet, Herts.
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- 20038 K. E. NASH, 8 Longstone Road, Eastbourne, Sussex.
- 20039 E. G. MUNDAY, 183 Newport Road, New Bradwell, Wolverton, Bucks.
- 20040 R. M. LANE, 10 Effingham Road, Hornsey, London, N.8.
- 20041 R. P. THORPE, 11 Eleanor St., Docks, Cardiff, Glam.
- 20042 Lieut./Cmdr. (A) F. A. C. Behenna, R.N.V.R., Royal Thames Yacht Club, London, S.W.1.
- 20043 R. G. SWALLOW, 74 St. Augustine Road, Southsea, Hants.
- 20044 W. D. SELLARS, 22 Elm Park Road, Winchmore Hill, London, N.21.
- 20045 †D. G. SAINSBURY, West Down, South Molton, Devon.
- 20046 J. SHORT, 12 Aldersbrook Avenue, Enfield, Middx.

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- 841 2/Lt. M. HANSEN, R. Sigs., Officers Mess, H.Q. Hamburg District, B.A.O.R. 3.
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- 847 4106237 A/C ROPER, Billet D2, 4 Sqn., 109 M.U., R.A.F. Abayad, M.E.A.F. 15.
- 848 P. D. NICHOLLS, 29 St. Albert Street, Gzira, Malta, G.C.

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- 237 K. R. SUKION, 37 Belle Vue Road, Salisbury, Wilts.
- 238 R. A. E. FRONIOUS, Brentwood Hall, Warley Hospital, Brentwood, Essex.

* Denotes transfer from Associate Grade.

† Denotes re-elected.

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- D. CAMPBELL, 190 Balmoral Road, Watford, Herts.
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- H. J. HART, 8 Keston Road, Thornton Heath, Surrey.
- W. M. LEE, Dolcoed, Merthymawr Road, Bridgend, Glam.
- J. E. RILEY, 180 Norman Place Road, Coundon, Coventry.
- Inspector S. SINGH, c/o District Police Headquarters, Raub, Pahang, Malaya.
- B. C. SMITH, 9 St. Margaret's Road, Westgate-on-Sea, Kent.
- J. B. VEITCH, 16 Gloucester Avenue, Fulwell, Sunderland, Co. Durham.
- L. WAITE, 39 Hanham Street, Ballston Spa, New York, U.S.A.

- B. J. COLE, 544 Southend Road, Elm Park, Hornchurch, Essex.
- K. LANCASTER, "Coed-Bel," Lubbock Road, Chislehurst, Kent.
- E. E. PAYNE, 3 Old Harrow Road, St. Leonards-on-Sea, Sussex.
- C. H. PRATT, 38 Grange Road, Ilford, Essex.

- R. ANTHONY, 85 Windmill Street, Whittlesey, nr. Peterborough, Northants.
- J. CAGG, 79 Beeston Fields Drive, Bramcote, Notts.
- M. DRANSFIELD, 39 Cliff End, Purley, Surrey.
- G. A. FORREST, 17 Princes Avenue, Kingsbury, London, N.W.9.
- A. J. FRENCH, The Holt, Pinner Hill, Pinner, Middx.
- J. D. HAGUE, 29 Chesham Avenue, Castleton, Rochdale, Lancs.
- S. R. MATTHEWS, White Wings, Les Camps Road, St. Martins, Guernsey.
- F. MORRIS, 40 Hexham Road, W. Norwood, London, S.E.27.
- R. C. PLATTEN, Chevron House, Hurstpierpoint College, Hassocks, Sussex.
- A. B. SYLVESTER, Jr., 48 Norton Road, Wembley, Middx.
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- C. R. UNDERWOOD, 9 Old Station Hill, Chislehurst, Kent.
- G. H. WAGLAND, 95 Fryent Grove, Hendon, London, N.W.9.
- E. A. A. WARWICK, c/o 1A Paradise Place, Stoke, Devonport, Plymouth.
- T. R. WHITTAKER, 528 Church Road, Smithills, Bolton, Lancs.
- L. G. WILLIS, 238 Rush Green Road, Romford, Essex.

Correction

In the list of New Members published in the August, 1953, issue of the BULLETIN, the names of the members holding the call signs G3IPG and G3IZA were transposed. G3IPG should have been shown as G. Phipps, The Haven, St. John's Avenue, Harlow, Essex, and G3IZA as D. S. Allison, 71 Hubert Grove, Stockwell, London, S.W.9.

Can You Help?

● Lt.-Cdr. R. H. N. Johnston, R.N. (G2ZP), 180 Maidstone Road Chatham, Kent, who requires the octal base connections for the crystal used in the U.S. Navy LM10 Frequency Meter? He has the connections for BC221 octal crystals but believes them to be different for the LM10. Which of the two connections for the crystal should be earthed?

Silent Key

In recording with very real regret the sudden death of Fred Bell, G4OD, of West Hartlepool, County Durham, at the early age of 43 years, we are sure that the loss will be deeply felt by all who knew him.

His interest in Amateur Radio dated back to his schooldays—the era of the crystal set and bright emitter valve. His friendly voice was a feature of the 'phone bands for many years. Even the war did not break the consuming passion of his hobby as he served with a Signals Unit of the Army both at home and overseas.

It can veritably be said that Fred lived for radio and literally died in radio—his death actually occurred at a meeting of the Radio Club he himself founded—and the Amateur Radio movement cannot but be poorer for his passing.

He leaves a widow, one son and two daughters, to whom our sincere sympathy is extended in their sorrow.

L.F.

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15 V (50c)	M.I. 2 1/2"	Flush	-	12/6
20 V	M.C. 2"	Square	-	7/6
150 V	M.C. 2 1/2"	Flush	-	12/6
2,500 V	M.C. 2 1/2"	Square	-	22/6
3,000 V	M.C. 2 1/2"	Square	-	25/-
4,000 V	M.C. 2 1/2"	Square	-	25/-
3,500 V	M.C. 3 1/2"	Projection	-	31/-
300 V (50c)	A.C. Projection 5"	Dial	-	50/-

AMP-METERS

1 A	T/C	2 1/2"	Projection	7/6
3 A	T/C	2"	Square	7/6
6 A	T/C	2 1/2"	Flush	10/-
20 A	M.I. (50c)	2 1/2"	Flush Mtg.	12/6
15 A	M.I. (50c)	2 1/2"	Projection	21/-

MILLIAMMETERS

500 μA	M.C. 2"	Round	-	15/-
1 mA	M.C. 2"	Square	-	12/6
1 mA	M.C. 2 1/2"	Flush	-	22/6
1 mA	M.C. 2 1/2"	Desk type	-	27/6
5 mA	M.C. 2 1/2"	Square	-	7/6
10 mA	M.C. 2 1/2"	Flush	-	12/6
30 mA	M.C. 2 1/2"	Round	-	7/6
30 mA	M.C. 2 1/2"	Flush	-	12/6
50 mA	M.C. 2 1/2"	Square	-	7/6
200 mA	M.C. 2 1/2"	Flush	-	12/6
500 mA	M.C. 2 1/2"	Flush	-	12/6
G.E.C.	1 mA	Meter Rect.	-	11/6

CATHODE RAY TUBES

VCR97.	Guaranteed full TV picture (carr. 2/-)	-	£2	0	0
MU-Metal Screens	for above	-	-	10	0
VCR517.	Guaranteed full TV picture with mu-metal shield	-	£2	0	0
6in. Enlarger Lens	for above	-	-	17	6
VCR139A (ACR10).	For TV or 'scope, brand new and boxed	-	£1	15	0
3BPI.	For TV or 'scope (carr. 1/6)	-	£1	5	0

S.T.C. RECTIFIERS E.H.T.

K3/25, 650 V, 1 mA	-	4	7	
K3/40, 1,000 V, 1 mA	-	6	0	
K3/100, 8,500 V, 1 mA	-	14	8	
K3/200, 10,000 V, 1 mA	-	£1	6	0

V.C.R. 517C BLUE & WHITE 6 1/2 in. TUBE. This tube replaces the VCR97 and VCR517 without alteration and gives a full blue and white picture. Brand new in original crates, 35/-, carriage free.

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Output 250 V, 60 mA, weight 5lb, suitable for car radio or electric razor, 22/6, Post free.

INDICATOR UNIT TYPE SLC5

This Unit is ideal for conversion for a "Scope" Unit or basis for Midget Television. It contains C/R Tube type ACR10 (VCR193A) complete with holder and cradle, also earthing clip, 1-VR66, 2-VR65, 24 μF, 550 V wkg. condenser, potentiometers and a varied assortment of resistors and condensers. Packed in wooden transit cases. The C/R Tube will be tested before despatch. Dimensions 8 1/2 in. x 6 1/2 in. x 11 1/2 in. 45/-

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INDICATOR UNIT TYPE 182A

Unit contains VCR517 Cathode Ray 6in. tube, complete with Mu-metal screen, 3 EF50, 4 SP61 and 15U4C valves, 9 wire-wound volume controls and quantity of resistors and condensers. Suitable either for basis of television (full picture guaranteed) or Oscilloscope. Offered Brand New (less relay) in original packing case at 79/6, plus 5/- carriage.

WANTED

723 A/B and CV129 Klystron Valves. RL18, NR88. Crystals. Any quantity.

25/73 TR1196 RECEIVER

This unit is complete with 6 valves, 2 EF36, 2 EF39, 1 EK32, 1 EBC33 and 465 kc/s I.F.T.s. in new condition. Circuit and conversion data supplied. 25/-.

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1G6	-	6/6	3V4	-	8/-
IR5	-	8/-	354	-	8/-
1S4	-	8/-	5Z3	-	8/6
1S5	-	8/-	5U4	-	8/6
1T4	-	8/-	5Z4	-	8/6
1A7GT	-	10/-	6A7C	-	8/6
1C5	-	8/-	6AC7	-	6/6
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6K8C, 6K7C, 6Q7C, 25A6C, 25Z5 (or 25Z6C)	-	-	-	37/6	..
12K8CT, 12K7CT, 12Q7CT, 35Z4CT, 35L6CT (or 50L6CT)	-	-	-	37/6	..
12SA7CT, 12SK7GT, 12SQ7GT, 35Z4CT, 35L6CT or 50L6GT	-	-	-	37/6	..
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PX25, KT33C, KT66, CU50	-	-	-	12/6	Ea.

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6G6G	-	6/6	EBC33	-	8/6
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6SQ7GT	-	8/6	KT2	-	5/-
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- All valves have B8A bases.

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Inputs of 100/115 V and 220/250 V are catered for, and current consumption is approximately 0.275 A. The receiver operates equally well from d.c. mains or a.c. (25/60 c/s) mains.

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2BA	5/6	5/-	1BA	2/-	2BA 1/10
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5BA	4/-	3/9	5BA	1/6	6BA 1/6
6BA	4/-	3/6	8BA	1/6	
7BA	4/6				
8BA	4/6	4/-			

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Brass Terminals, with nuts, heavy type, NP, 6d. each; 5/6 dozen.

Crub Screws: Assorted, 1/6; 6BA, 1/3; 4BA, 1/4; 2BA, 1/6 per 3 dozen.

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BRASS			STEEL		
1/8" CH NP	1/6	1/8" RH NP	1/5	1/8" CH NP	1/-
1/4" " NP	1/7	1/4" " " "	1/6	1/4" RH SC	1/-
1/2" " " "	1/7	1/2" " " "	1/7	1/2" CS CP	1/-
3/8" " " "	1/9	3/8" " " "	1/9	3/8" RH SC	1/2
1/2" " " "	1/10	1/2" " " "	1/11	1/2" CS CP	1/1
5/8" " " "	1/11	5/8" " " "	2/-	5/8" " " "	1/2
3/4" " " "	2/-	3/4" " " "	SC 2/1	3/4" RH SC	1/2
1" " " "	SC 1/11	1" " " "	NP 2/3	1" CS CP	1/4
1 1/8" " " "	NP 2/1	1 1/8" " " "	CS SC 1/4	1 1/8" " " "	1/5
1 1/4" " " "	2/3	1 1/4" " " "	NP 1/6	1 1/4" RH SC	1/5
1 1/2" " " "	2/6	1 1/2" " " "	1/7	1 1/2" CS CP	1/7
1 3/4" Inst/H	1/9	1 3/4" " " "	1/8	1 3/4" CH	1/9
2" NP	1/9	2" " " "	1/9	2" " " "	2/6
2 1/2" CS	2/-	2 1/2" " " "	1/10	2 1/2" H/H	2/9

BRASS			STEEL		
1/8" CHNP	2/-	1/8" RHNP	1/10	1/8" CS CP	1/2
1/4" " "	2/1	1/4" " " "	2/3	1/4" " " "	1/3
1/2" " "	2/1	1/2" " " "	2/9	1/2" RH	1/4
3/8" " "	2/2	3/8" " " "	3/-	3/8" SC	1/2
1/2" " "	2/6	1/2" CS	1/8	1/2" " " "	1/4
5/8" " "	3/3	5/8" " " "	2/-	5/8" CS CP	1/4
3/4" Hex/H	2/6	3/4" " " "	2/3	3/4" RH SC	1/6
1" " "	3/6	1" " " "	1/10	1" CP	1/9

BRASS			STEEL		
1/8" RHNP	2/10	1/8" CHNP	4/6	1/8" H/HSC	1/9
1/4" " "	3/-	1/4" " SC	3/-	1/4" Lge RH	2/-
1/2" " "	3/3	1/2" " " "	5/-	1/2" RH SC	2/-
3/8" " "	3/3	3/8" RH	4/9	3/8" CH	2/6
1/2" " "	NP 4/3	1/2" CS NP	4/-	1 1/2" RH CP	2/9
7/8" Hx/HSC	10/-	7/8" " SC	4/9	1" CS	2/-

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10/6; 6 A. 14/6. Half-wave h.t. RM1, 125 V 60 mA.
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250 V 275 mA. 15/6.

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6J7G	9/6	CV1582	7/-	PEN46	10/6
6K7G	8/6	D1	2/6	S130	7/-
6K8G	12/6	DA41	10/-	SP41	3/6
6L6G	11/6	DH77	10/-	SP61	5/-
6N7G	10/6	E1148 (CV6)	5/-	SU2150 A	6/6
6N7GT	9/6	E1192	7/6	V872	6/6
6N7GT	11/6	E1320	10/6	V960	4/-
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VOLTMETERS. 0/300 a.c., moving iron, 3½" Surface type,
25/-; 0/300 d.c., 2" Flush, moving coil, 10/6; 0/40, 10/6;
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SIGNAL GENERATORS. TS210, for Television Frequency,
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EXCHANGE AND MART SECTION

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AMATEUR clearance.—Genuine bargains, all subject to inspection and buyer to collect in each instance. (a) T.1131 ex-R.A.F. transmitter very f.b. re-conditioned job fitted new valves throughout; in process conversion to ten metres; about 5 cwt. excellent gear, £40. (b) Canadian C.43 transmitter 300/600 watts, c.w., I.C.W. and 'phone, two 813's in P.A. new and unused; no power unit, £30. (c) R.1132 ex-R.A.F. receiver complete with Power Unit, £7 10s. (d) Wilcox-Gay C.O.-Doubler Unit as new, £2 10s. Near offers carefully considered. Must clear.—G2DS, 39 Knoll Road, Bexley, Kent. (Bexley Heath 754). (655)

ANY offers?—Bulletins, July '48-June '52; QST Jan. '47-Dec. '52; Short Wave Magazine April '46-Feb. '53; complete clean. Valves: TZ40/DA41 (12); TT11 (8); CV53, 807, EC91 (5), 811 (3), 832, T20, 3B401J, 6AC7, 6H6, 12A6 (2).—ANDERSON, 56 Latimer Gardens, Pinner, Middx. (690)

AR.77E Manual wanted urgently, hire or purchase.—L. E. TAYLOR, 34 Devonshire Road, Ilford, Essex. (686)

ASB.8, complete, brand new, £6 10s., including carriage. UM2 Mod. transformer, 1000 V 150 mA transformer, 230/250 a.c. 4μFD. 2000 V d.c. (4), FW4/500 (2), PT 15 and other items: details on request, S.A.E. please.—G3ENH, 74 Hawkesley Mill Lane, Northfield, Birmingham, 31. (669)

ATAPE recording to disc same day service by late B.B.C. engineers. Details free.—NORTH WALES RECORDING SERVICE, Brynau Road, Llandudno. (688)

B.2 transmitter and receiver including 4 coils, key and circuit. Unused condition. No power pack. £8 or offer.—Box 649, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (649)

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CLOSING down sale.—10 and 20 metre 150 W transmitter, p.p. 813s, 3 power packs with p.p. 866 1,250 V on 6 ft. Eddystone rack, £25. Modulator, p.p. Mullard MZ05/60, 75 W. Crystal microphone, 3 power packs, with p.p. 866, 750 V. UM4 Woden modulation transformer on 6 ft. Eddystone rack, £25. Nearly all Woden transformers in the above. R.C.A. AR.88D, £55. BC.221 with power pack, £20. AVO Model 7, £10. "Practical Wireless" amplifier with 2 motors and pick-ups, and Voigt speaker, £20. 10-metre beam and 20-metre aerial rotating motor, direction indicator on map of world, from 230 V, £10. 650-0-650 Woden transformer, new, £2. All first-class condition. Buyer collects.—Box 675, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, E.C.4. (675)

COLLECTOR still wants "Bulletins," May and October, 1934. "QST" before November, 1923. "CQ" 1945/46, 102 odd pre-war "Practical Wireless," Most "Radio," "R/9," "Amateur Radio," "Break-In" and "Popular Wireless" from No. 27. Early "Call Books," amateur handbooks, etc.—G3IDG, 95 Ramsden Road, London, S.W.12. (668)

CR.100 chassis, cabinet, dial drive, condenser, coil pack, all I.F.s including crystal, £7 10s. 1155 N unmodified, good working order, £12 o.n.o.—Seven Kings 4461. (665)

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FOR SALE.—All new, some boxed. Two 813s, one with base; 2 832s, boxed; 2 TZ40s, one in sealed packet; 2 TZ40s with bases; 2 PT15s, one boxed; 2 5Z3s with bases; 2 CV242 photo cells, boxed; 2 CV1400 Barretters; 2 CV52 UHF triode; 6 6D6s, some boxed; 6 41s; 2 6C6s; 1 826; 1 874; 1 1-in. CRT, G.E.C. E4103/B/4 with base; 1 Spartan R.F. meter 0 to 10 amps; 1 General Electric DB meter, boxed; 1 SET B.2 transmitting coils; 1 U.S.A. made Hydrometer with thermometer correction, boxed; 2 Weston Electric d.c. current relays model 534, range in milliamperes, low 4 mA, High 8 mA. All above for sale £20 lot, or reasonable offers separated.—Phone or write: G3GTH, 90 Hillfield Road, N.W.6. HAM 6418. (652)

FOR SALE.—BC.348L in excellent condition, fitted "S" meter, etc., complete with ext. power pack, £16. Valves 830B, 35T, TZ40 at 30/- each. Ray 715B plus base, 17/6. RCA 8019 at 15/- each.—SYKES, 287 Poplar Grove, Great Horton, Bradford. (657)

FOR SALE.—B.P.L. "Super Ranger" test meter, 20,000 ohms per volt in locked case; condition as new, cost £24, selling £12.—HOWARD, 42 Roman Grove, Portchester, Hants. (693)

FOR SALE.—Eddystone 659 with baffle-mounted speaker recently overhauled and aligned by makers; £45 or near offer.—STONES, 76 Swann Lane, Cheadle Hulme, Cheshire. (687)

FOR SALE.—1355 less valves, 15/-. 62A indicator, less tube, 45/-. No. 18 receiver, complete, 10/-. Two 813s, tested O.K., 30/- each. "Wireless Worlds," clean, 1949-50-52, 10/- year. 1951, January, March to June, November, 1/- each.—GIBBINS, 106 Windermere Road, Reading. (680)

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H.R.O. complete 5 coils, 4 Mc/s to 30 Mc/s, power pack and loudspeaker in superb condition. The whole mounted in oak kneehole operating desk, finished dove grey. Photograph available. The lot complete, £45. Will sell separately.—Offers: B.R.S.19935, 24 Cattle Market, Sandwich, Kent. (651)

H.T.9 Hallicrafters transmitter in first class condition with coils for 20-40 and 80 and also Hallicrafters HT 18 VFO/NBFM to work with above. Manuals for both units included. This outfit can be seen and tested on the air. Price £120 or near offer.—BECKETT, Manor Farm, Brimington, Nr. Chesterfield. (645)

MARCONI B.36 receiver, 9 valves, 2 R.F., 3 I.F., 1-20 Mc/s, meter, converted a.c./d.c. operation, £12.—Box 692, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, E.C.4. (692)

METALWORK.—All types cabinets, chassis, racks, etc., to your own specifications.—PHILPOT'S METAL WORKS, LTD. (G4BI), Chapman Street, Loughborough. (99)

MODULATION equipment. Woden U.M.3, D.T.2, Pr. TZ.40 and Fil. trans. Pr. 886 and Fil. trans. 1500 V. Mains trans. Woden 20H. 350 mA choke. Two 19in. chassis and panels with meters, £12. Magnavox 66, 50/-, Invicta 9in. T.V., £15. Valves: 2X 829B, 815, 2X 805, 2X TZ40, 2X 866, 2X GU50, 723A/B. All unused. Offers. R.C.A. wire recorder. Mechanism less amplifier. Offers.—G3CJP, 45 Warren Road, Bantstead, Surrey. (667)

OFFERS for 60 issues of BULLETIN, years 1948 to 1952, clean. Cash or servicing gear preferred.—B.R.S. 16688, 254 Burgess Road, East Ham, E.6. (664)

OFFERS for: 616s, PT15s, 803, DET19s, NT39, VS68. 1000-0-1000/250 mA transformer choke and condensers. HRO spares, plug-in coils, 175-400 kc/s, 100-200 kc/s, crystal i.f. transformers, four ganged condenser, ditto converted to two gang. BC.610 spares. 110 V a.c. relays, plug-in exciter unit 12-18 Mc/s, throat mike, Morse key, headphones, tank tuning condensers, various crystals. Books: "Short Wave Communication," Ladner & Stoner; "Radio Designers Handbook," Langford Smith; BC.610 Instruction Book, also AR.88. S.A.E. please.—JAMES CROSSWELL, Pentrecourt, Llandysul, South Wales. (662)

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P.U. 1,000 V 200 mA (2 x 866), £4. P.A./aerial tuner (150 W to 803), all coils for 3.5, 7 and 14 Mc/s. Grid and plate meters, £4. Exciter (v.f.o. or crystal), 6V6, 6N6, 807, 5 meters, Labgear turret 3.5-28 Mc/s, £4 10s. Speech amp, modulator, 6J7-6J5-6V6-2 x 807-Woden UM3-120 W, including P.U. for speech amplifier, £8. Each of above on steel chassis with black crackle 19 in. panel. Professional job. All carriage forward from Glasgow. Rothermel torpedo crystal microphone with desk stand, perfect, £2 2s.—ELDER, 37 St. George's Road, Streteford, Manchester. (681)

QSLs and log book (P.M.G. approved). Samples free. State whether G or B.R.S.—ATKINSON BROS., Printers, Elland. (772)

R.1155N and R.1155A. Both have internal power packs and sensitive "S" meters, £9 each.—G3HJD, 5 Clifton Mansions, Weston-super-Mare. (650)

(Continued on page 192)

EXCHANGE & MART SECTION

(Continued from page 191)

SALE.—CR.100, good condition, no case, £16. Canadian No. 19 set, Mark III, new condition, 12/24 volt power supplies, £12. New boxed 2 Packard Bell pre-amplifiers, complete valves, £1 each. Transmitter type 51 new, in carrying case, £4. TU9B, no case, £1. VCR 96 units, complete VCR 97, valves, etc., 55/- each. 1132 receiver complete metered power pack, £5. RT22/APX/1, complete all valves, £10. R2/ARR3 complete valves, dynamotor, plugs, etc. £10. —123 Hamill Road, Burslem, Staffs. (653)

SALE.—Ham clearing spares. Meters CRTs, Transformers. Wilcox-Gay v.f.o., H.R.O. P.P. and six coils, etc. S.A.E. low priced lists.—G3BDG, 836 Dagenham Road, Dagenham, Essex. (684)

SALE or exchange.—Mullard B.100 cathode ray tube unit; for valve tester or best offer.—EDWARDS, 89 Victoria Road, Birkenhead. (656)

SALE or exchange.—2-metre converter, £3 10s. Jefferson Travis 12 V vibrator pack, 30/-, Four SCR.522 transmitter chassis, 25/- each. H.R.O. 12 V power pack. Rotary converter, d.c., 220 to 500 V d.c. 1 A, £3 15s. B.T.H. d.c. dynamo, 720 V 0.14 A, £3 15s. Webster Dynamotor, 19-24 V in 390 V 0.095 A d.c. out., 35/-, Wanted: S.27CA, any condition or similar set. V.H.F. gear. Valves, meters, H.R.O. coils. 1132A, 350 V 100-200 mA power pack, v.f.o. covering 80 metres. Frequency meter, or consider anything.—Boringham House, Plympton, Devon. (676)

SALE.—Power packs, steel cases, 200 V, 300 V, 750 V. Offers, details on request. QCC crystals, 7150, 7195, 5/- each; 7005, 1864, 15/- each; 100 kc/s bar, £2; matched pair PX25s, £1.—Box 671, NATIONAL PUBLICITY CO., LTD., 36/37 Upper Thames Street, London, E.C.4. (671)

S.R. tape recorder for sale, as new, complete with Aco microphone and two reels; £30.—J. C. FOSTER, College Engineer, Wye College, Nr. Ashford, Kent. (663)

SCR.522, complete with control rack, less one 832, £5. R.208, 10-60 Mc/s receiver, internal speaker and 6 volt or 230 volt power pack. Complete, working, £5. Crystals, 8.07333, 8.10666, 8.04000, 8.0066, FT.243, 7/6 each. 3 cm magnetron unit, suitable modulator, and 205 test set. Suit experimenter. Offers.—D. Wilson, 17 Berwood Farm Road, Sutton Coldfield, ERD 3255. (648)

URGENTLY wanted.—Collins TCS series, transmitter/receiver complete with 12 volt power supply. State price and condition.—Yacht "WAPI", Harbour Master, Poole, Dorset. (646)

VALVES, new and boxed: 807 (6), 10/-; 35T (1), 15/-; 100TH (1), 40/-; 866a (6), 5/-; PT15 (6), 10/-; 830B (6), 3/6; 803 (2), 15/-; 813 (2), 60/-; VT127A (3), 10/-; 811 (4), 25/-; 805 (3), 20/-; 838 (1), 3/-; CV251 (3 cm Mag), 10/-; C.R.T.s: 3EP1 (1), 15/-; 3BP1 (2), 15/-; VCR527 (1), 10/-; H.R.O. receiver, 0.9-30 Mc/s, noise limiter; set of new spare valves, speaker, power pack and manual; excellent condition; no offers; £35. V.F.O. output, 7 Mc/s, fitted nbm reactance modulator speech amp. complete with crystal microphone, £8.—Box 695, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (695)

VARIACS, 270 V 8 A, £8 each or offer. Other transformers, vibrator packs, valves and meters for sale. Exchange ECC91s, EF91s, EL91s for 829B, S.A.E. list.—Box 697, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (697)

WANTED.—Battery-type communication transmitter and receiver, 1224 or similar, or all-dry.—GM3HDI, 79 Inverie Road, Bucksburn, Aberdeenshire. (694)

WANTED.—BC.610 Hallicrafters, ET4336 transmitters SX28s, AR.88s, receivers and spare parts for above. Best prices.—P.C.A. RADIO, The Arches, Cambridge Grove, W.6. (658)

WANTED.—Class D Wavemeter, good condition.—Offers to: BARK, 7 Park Crescent, Newark, Notts. (685)

WANTED for Field Day, BC.348, preferably unmodified; if modified, Dynamotor required. Good price for good condition Receiver; would consider BC.343. Sale: Type 18 Trans/Receiver complete, serviceable microphone, webbing, no battery, £4.—G2ZV, 199 Uxbridge Road, W.7. Ealing 2749. (683)

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WANTED.—H.R.O. coil, 900 kc/s-2050 kc/s. Exchange for 3.5 Mc/s-7.3 Mc/s or purchase.—Box 696, NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (696)

WANTED.—Power supply units for No. 33 transmitters (Z.A.10729).—Call or ring P.C.A. RADIO, The Arches, Cambridge Grove, W.6. RIV 3279. (660)

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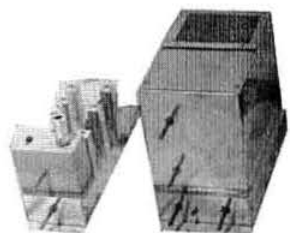
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