

R S G B

MARCH, 1958

BULLETIN

2/6 Monthly

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

VOL. 33, NO. 9

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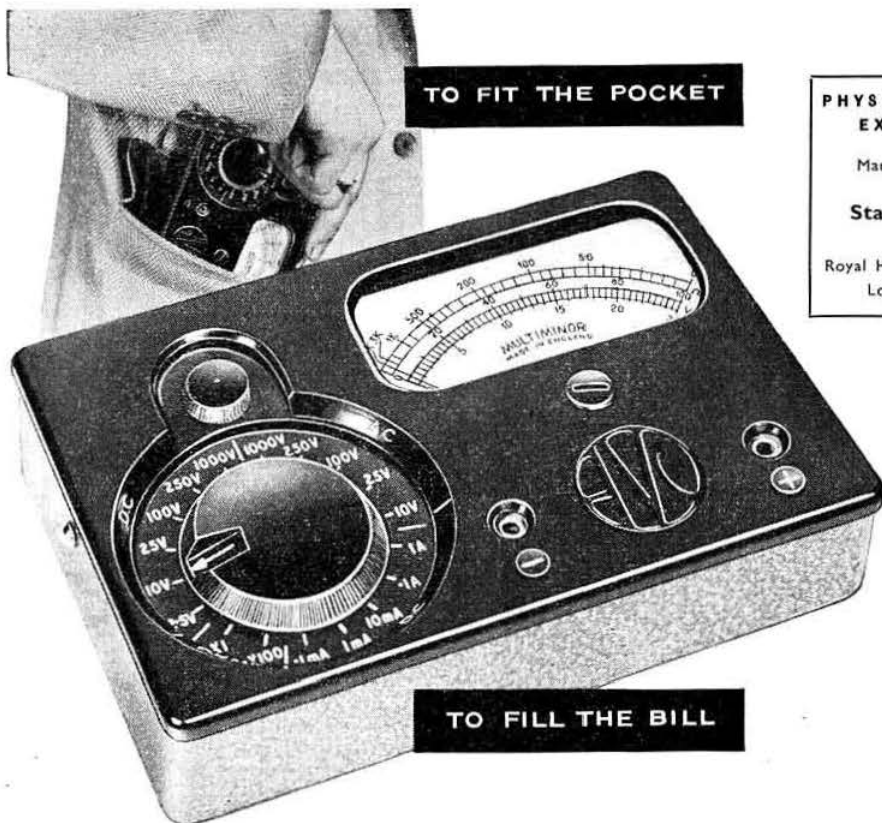
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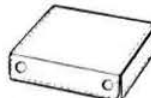
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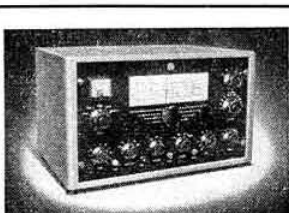
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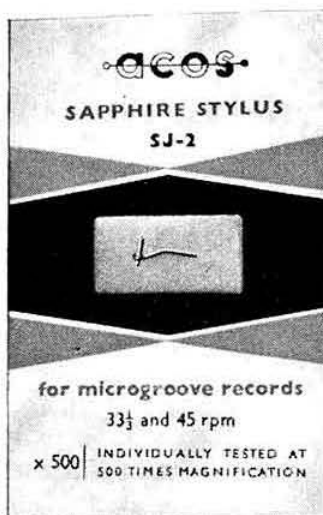
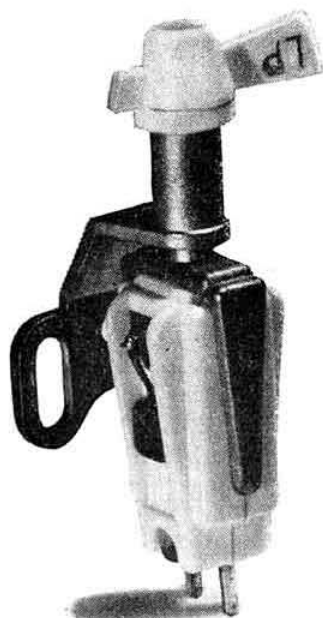
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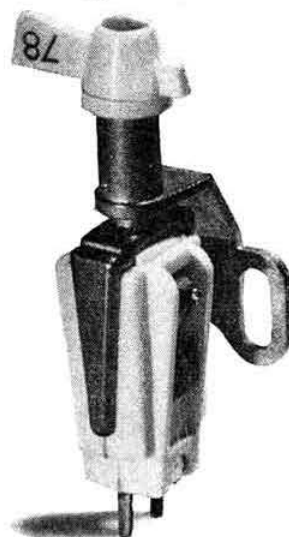
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Current Comment

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Today, the Society can claim about 7,000 Home Corporate members. Another 1,000 would increase revenue by the useful sum of £1,500 in a full year.

Oftimes the cry is heard, "If only I had had an application form handy I could have persuaded so and so to join up." That cry need not be heard again for a little while because every copy of this issue of the BULLETIN contains an application form for membership.

There must be many hundreds of people interested in Amateur Radio who are not yet members of the Society. Some are not members because they cannot afford the subscription—and that applies in particular to many of the up and coming youngsters—but the vast majority are outside the Society because they do not appreciate fully the advantages of membership. The main advantages should be well known to every member but reiteration can do no harm.

First in importance every member receives a copy of the Society's 48-page Journal each month. Second, he may use the Society's free QSL Bureau (the largest and smoothest running in the world) for sending and receiving QSL cards. Third, he is eligible to claim, at no cost to himself, a variety of handsome certificates and awards issued by the Society. Fourth, he is free to take part in Society contests and field days and to participate in activities arranged by his local group.

These are some of the tangible advantages of membership but in addition every Home Corporate member has it within his power to serve the Society as an elected representative or as a member of the Governing Body. In joining the Society he helps to contribute towards the cost of protecting the rights and interests of radio amateurs at International Conferences. If he is knowledgeable, in the technical sense, he can impart knowledge to his colleagues by means of the written or spoken word.

All in all, membership of the R.S.G.B. is something really worthwhile.

May we look forward to the early return to headquarters of the application form contained in this copy of the BULLETIN? Completed of course!

Who Will be the First?

NOW that both United Kingdom and New Zealand amateurs have permission to operate on frequencies around 52 Mc/s, it is of interest to speculate whether a U.K.-N.Z. contact can be made at that part of the spectrum. The New Zealand frequency allocations are 50-52.35 Mc/s and 52.65-54 Mc/s; the U.K. spot frequency allocation is 52.5 Mc/s.

It is now more than 33 years since Frank Bell (Z4AA) in Dunedin and Cecil Goyder (G2SZ) in London, linked the Antipodes for the first time by "short wave" Amateur Radio. The significant date was October 19, 1924 and the wavelength around 100m. Six days later Gerry Marcuse (G2NM) in Caterham worked Ralph Slade (Z4AG) in Dunedin over a distance of 11,900 miles. The present 6m DX record is held by JA6ER and LU3EX over a similar distance. Can two Commonwealth amateurs equal that record?

Reciprocity—Not Quite

THE announcement, published elsewhere in this issue, that the Canadian Government has reached an agreement with the United Kingdom Government on the matter of reciprocal licensing arrangements will be warmly welcomed, especially by those readers who plan to emigrate to Canada in the near future. Unfortunately the agreement falls down seriously in one important aspect.

Possession of a U.K. Amateur (Sound) Licence, even if it has been held for upwards of 30 years, does not in itself carry exemption from the Canadian radio examination. Only those who hold the G.P.O. Amateur Radio Certificate will be able to claim exemption. This means that all pre-war and many post-war licensees would be required to take the Canadian radio examination, notwithstanding their long experience of Amateur Radio.

The Society has asked the G.P.O. to take up this matter with the Canadian Department of Transport with a view to a more equitable agreement being reached.—J.C.

Trends in Aerial Design for the Amateur*

By S. R. KHARBANDA, A.M.Brit.I.R.E., Assoc.I.E.E.
(G2PU)†

THE present world-wide popularity of two- and three-element rotary end-fire arrays for the 14, 21 and 28 Mc/s bands leads many a newcomer to Amateur Radio to believe that this type of aerial is the ultimate for use at this order of frequency. Indeed in America the term "beam" seems to have become almost synonymous with the Yagi array, which probably accounts for its widespread popularity. It would certainly seem that only cash, space and the Local Planning Authority stand between many a British amateur and a three-element rotary beam.

Perhaps the best way in which we can follow recent developments is to examine first just what factors account for the 20 years or so of well deserved success of the conventional rotary Yagi. It certainly has much to commend it. At this point it should be noted that whilst Yagi aerials have been known since 1928, it was not until 1937 that they began to achieve popularity in amateur circles largely due to the late Morrill P. Mims (W5BDB).

Without a doubt, the most important single factor for satisfactory long distance communication at the upper end of the h.f. spectrum is the ability of the radiating system to concentrate the maximum amount of energy at low angles of elevation (i.e., 10° to 20°). It is proposed to dwell on this aspect for a few moments in view of its importance, and no apology is made for presenting information which can be found in the popular handbooks on the subject. Let us

first refresh our memories by studying polar diagrams in the vertical plane of a horizontally polarized half-wave dipole at various heights above ground. Fig. 1(a) shows this for a height of a quarter-wavelength above ground and it should be observed that there is only one rather broad lobe which is at a maximum at an elevation of 90° which of course is useless for effective long distance communication. Perfectly reflecting ground is assumed in all cases. Now if we raise the dipole to a height of one half-wavelength, we get a vertical polar diagram as shown in Fig. 1(b). Again there is only one lobe, this time at an elevation of about 30°. Whilst this angle of radiation would be fairly effective for DX on 3.5 Mc/s and 7 Mc/s, it is too great for best results on the 14, 21 and 28 Mc/s bands.

Fig. 1(c) shows similar information for a height of three-quarters of a wavelength. Two points should be noted: the reduction in angle of elevation of the major lobe to about 20° and the appearance of a secondary lobe of equal amplitude at 90°. Fig. 1(d) is for a height of one wavelength and it will be seen that the primary lobe is now at a maximum at about 14° and the secondary lobe at about 48°. Fig. 1(e) is for a height of one and a quarter wavelengths; it will be seen that in addition to the low angle lobe at 12° there are now two secondary lobes, one at 37° and the other at 90°. Clearly therefore, increasing the height of a half-wave dipole lowers the angle of radiation but the improvement factor for long distance transmission is not as great as it would be if it were not for the wasted energy going into the secondary high angle lobes.

As is well known, the end-fire array concentrates more

*A paper read to members of the Society in the Lecture Theatre of the Electric Lamp Manufacturers' Association, on Friday, September 27, 1957.
†Labgear Ltd., Willow Place, Cambridge.

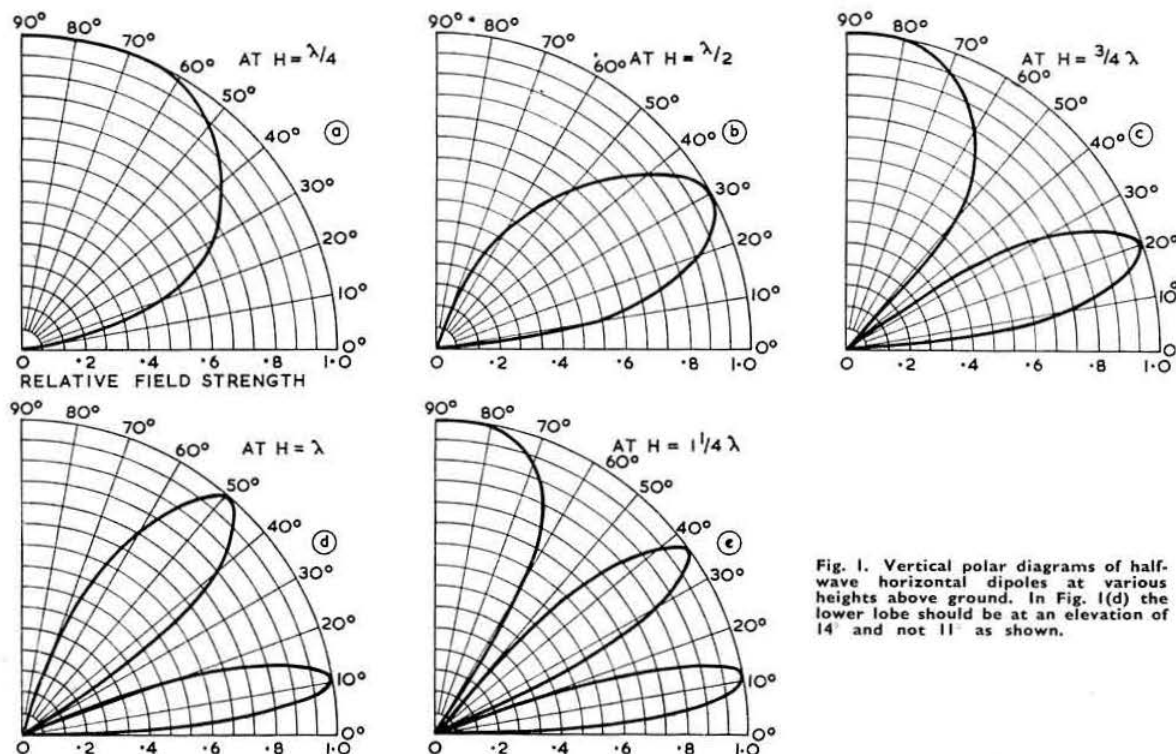


Fig. 1. Vertical polar diagrams of half-wave horizontal dipoles at various heights above ground. In Fig. 1(d) the lower lobe should be at an elevation of 14° and not 11° as shown.

energy at low angles than does a simple dipole, which of course is one of the principle reasons for its popularity. Fig. 2(a) illustrates this for a two-element array at $H = \lambda/2$ and Fig. 2(b) at $H = \frac{3}{4}\lambda$. It is interesting to note that, contrary to popular belief, the simple end-fire array does not actually reduce the angle of radiation to any appreciable degree, but does greatly improve the ratio of power in the primary low angle lobe to that in any secondary high angle lobes. Moreover it provides a worthwhile amount of free space power gain.

Use of Parasitic Elements

Obviously a still greater improvement factor will be yielded if more end-fire elements are used. Mainly because of economic reasons, the three-element Yagi has become the most accepted aerial of this type for the 14, 21 and 28 Mc/s bands. Fig. 3(a) shows the vertical polar diagram of such an array. The solid curve is for $H = \lambda/2$ and the dotted curve for $H = \lambda$. It will be observed that ground reflection still exerts an over-riding influence on the angle of elevation of the primary lobe, and these angles are not essentially different from those of a dipole at similar heights. A much greater percentage of the total radiated energy however goes into the primary lobe although the wasted high angle radiation is by no means insignificant. The use of three elements complicates the design from a purely theoretical standpoint, and generally speaking this is arrived at empirically. The radiator is usually made self-resonant, the reflector about 5 per cent longer and the director about 4 per cent shorter. Spacings between elements of from 0.05 λ to 0.3 λ have been used successfully, the wider spacings giving greater power gain, allowing easier matching to the line and yielding

broader bandwidth than the closer spacings. A useful graph has been published [1] facilitating the design of a three-element Yagi, which is reproduced in Fig. 3(b). From this it will be seen that the maximum gain is about 8db and that individual spacings are relatively unimportant provided the overall length of the array is in the region of 0.45 λ . Indeed in any Yagi, it is the overall length which determines the maximum possible gain rather than the number of elements or spacings, although it can be shown that, for any given boom length, an optimum arrangement of elements is necessary to yield maximum gain. The gain figure of 8db quoted above is with reference to a resonant $\lambda/2$ dipole at the same position. Higher gains are sometimes quoted and one can only assume that these are with reference to an isotropic radiator which would account for an extra 2.15db. Unfortunately the optimum gain can seldom be realised at 14 Mc/s because a boom length of about 30 ft. is necessary which makes the construction and support of such an array a major mechanical undertaking. Consequently a boom of about one-half of the optimum length is frequently employed causing the gain to fall to about 6db with attendant matching and bandwidth troubles. If, therefore, one arbitrarily limits the maximum boom length to say 14 to 15 ft., the best gain which can be realized from a three-element Yagi using half-wave elements is about 6db at 14 Mc/s, 7db at 21 Mc/s and 8db at 28 Mc/s.

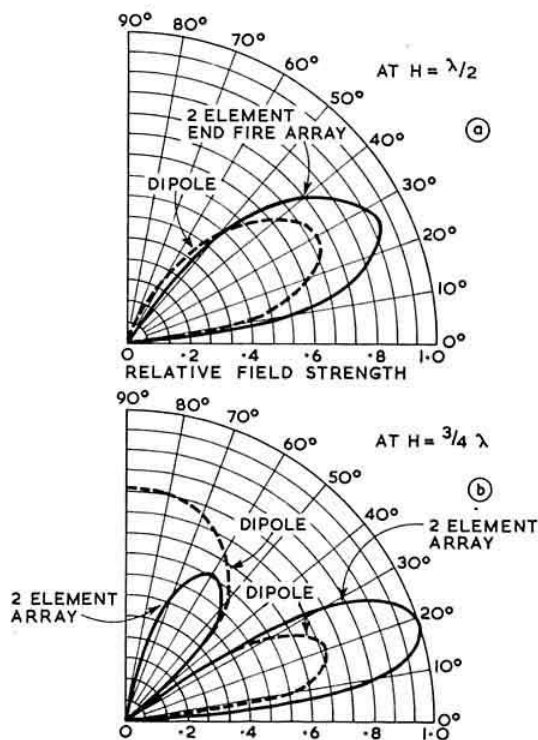


Fig. 2. Vertical polar diagrams for dipole and two-element end-fire arrays.

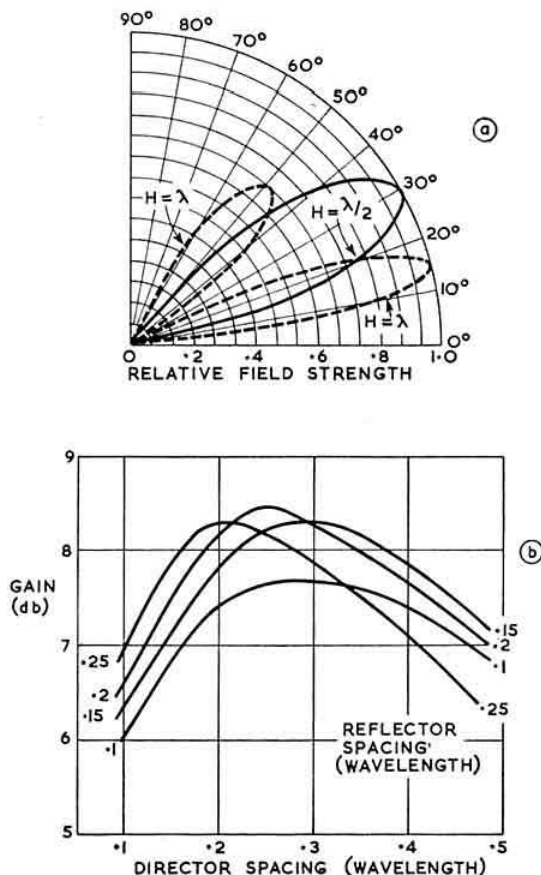


Fig. 3(a). Polar diagram in the vertical plane of a horizontally polarized three-element parasitic array. (b). Gain/element spacing for three-element Yagis.

Recent Developments

We have now arrived at a point at which we have briefly studied the characteristics and capabilities of the amateurs' most popular beam aerial; we want to be progressive, but where do we go from here? Two principal developments of the basic end-fire array have appeared for the amateur during the past decade. The first is the all-driven array which allows a gain of approximately 6db to be achieved with only two elements; this has become known as the "ZL Special," and many users can testify as to its effectiveness. The second development is the multi-band Yagi which has been described in its various forms sufficiently recently to warrant omission from this article [2]. Both of these developments have made it possible for many amateurs to put out a reasonably good signal when they are unable to install a full-sized multiple three-element beam.

Nothing so far discussed will out-perform the three-element wide-spaced Yagi and it is desirable at this point to draw attention to the enormous increase in size of well-known beam arrays necessary to give a significant increase in power gain. Fig. 4(a) is a basic Yagi design curve prepared from work by Labgear Ltd. on Band III television aerials. Note that for a power gain of 10db the boom is 1λ long and for a gain of 12db is $1\frac{1}{2}\lambda$ long. The solid curve in Fig. 4(b) shows the gain obtainable with a "Vee" beam. Leg lengths of 7λ are required for a gain of 10db and 11λ for a gain of 12db. The dotted curve in Fig. 4(b) shows the position using a terminated rhombic. In this case each side must be 4λ to achieve 10db gain and $6\frac{1}{2}\lambda$ for a gain of 12db. Such huge arrays are obviously unsuitable for the majority of amateurs, not only on grounds of space but also due to the impracticability of achieving world-wide coverage.

Desirable Characteristics of Amateur Beams

At this stage the close resemblance of this problem to that encountered in the design of fringe Band I television aerials is obvious. In both instances, the desirable characteristics are:

- (i) High gain.
- (ii) Low angle of elevation of major lobe.
- (iii) Good directivity.
- (iv) Small in size and having a configuration suitable for withstanding gales.
- (v) Should preferably match standard 75 ohm co-ax without the complication of a matching transformer.
- (vi) Broad bandwidth.

Stacked Arrays

A stacked array is an obvious solution and double "Hs" and double three-element Yagis for TV reception are

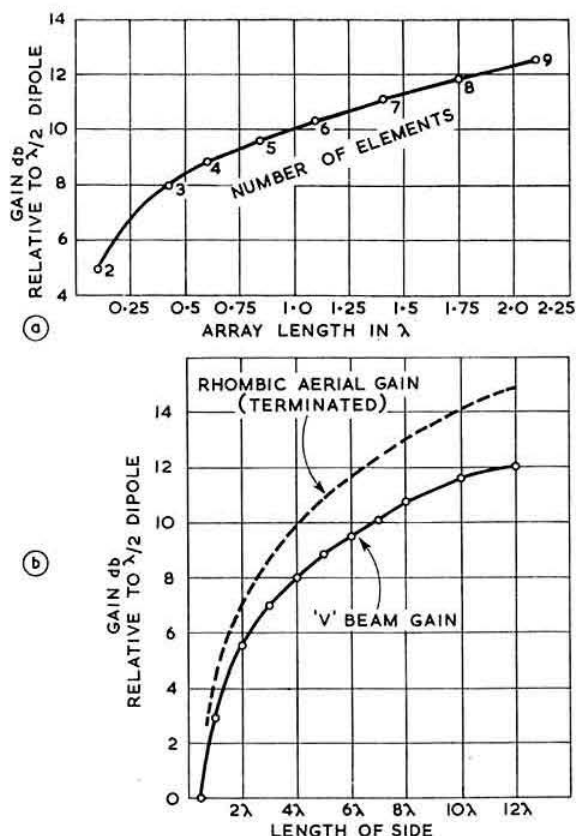


Fig. 4(a). Yagi design curve. (b). Gain v. length of side of a "Vee" beam and a terminated rhombic aerial. The "V" beam gain curve should show a gain of 12 db for a side length of 11λ and not 12λ as shown.

to be seen in extreme fringe areas particularly where the presence of ghosts requires sharp directivity, so it will be profitable to examine the radiation characteristics of a stacked arrangement in comparison with an end-fire aerial using the same number of elements. Fig. 5(a) shows the vertical polar diagram of a two-element horizontal end-fire array at heights of $\lambda/2$ and λ . Notice that when the array is elevated to secure a low angle of radiation, an appreciable amount of

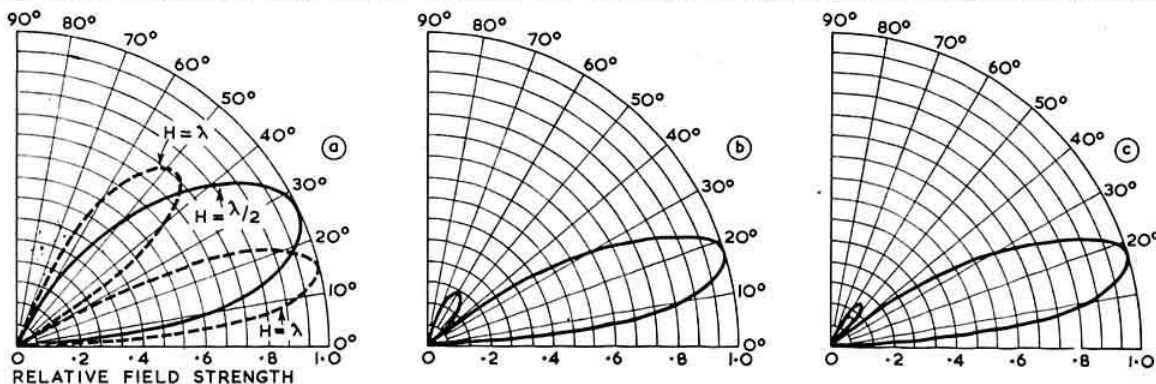


Fig. 5(a). Vertical polar diagram of a two-element horizontal end-fire array at varying heights above ground. (b). Vertical polar diagram of two horizontally polarized stacked dipoles in phase when the lower element is a half-wave above ground and the upper elements a wave-length above ground. (c). Vertical polar diagram of a four-element stacked end-fire array (two stacked dipoles with reflectors) at the same height.

energy is wasted in the minor lobe. Now compare this with the polar diagram of a two-element stacked array as shown in Fig. 5(b). The top element is still only 1λ above ground, but the energy wasted in the minor lobe is very much less. The major lobe is at a maximum at about 4° higher elevation and carries the same forward gain.

Fig. 5(c) shows the vertical polar diagram of a four-element array combining both end-fire gain and also that due to stacking (i.e., 2-over-2). The minor lobe has been reduced to negligible proportions and the gain has been increased substantially. When properly designed an all driven 2-over-2 array can be made to yield almost 11db gain over a half-wave dipole and occupies a space of about $\lambda/2 \times \frac{3}{8}\lambda \times \lambda/10$. This order of gain would clearly be very acceptable for a rotatable array, but the dimensions are still too large for such an aerial to enjoy wide-spread popularity among amateurs.

The part of any aerial which does most of the radiating is that section carrying the greatest current. For example, the centre quarter-wave of a half-wave dipole radiates about 90 per cent of the total radiated energy, the two end $\lambda/8$ sections serving principally to bring the aerial into resonance. This accounts for the fact that, when necessary, it is good practice to shorten a half-wave element by capacity loading the ends but not such good practice to shorten it by inductively loading the current anti-nodal point (i.e., the centre). Again, this is the reason why the loading coil is placed well up a whip aerial and not at the base for best results. Accordingly, the end $\lambda/8$ sections of a dipole may be bent at right angles to the centre section without losing performance to any serious degree, provided the overall length of the dipole is adjusted to maintain resonance.

Cubical Quad and Bi-square

The basic principles on which a comparatively new compact beam has been developed have now been outlined. This in one form is known as the "cubical quad" and in another, involving an essential modification, called the "Bi-square," a name which is perhaps more descriptive. Fig. 6 schematically shows the derivation of this type of aerial. Note in particular the direct connection of the voltage anti-nodal points of the two bent half-wave elements

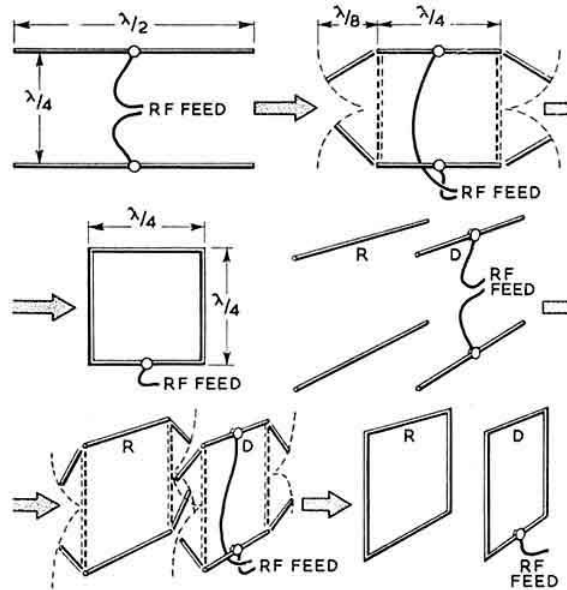


Fig. 6. Development of the Labgear "Bi-Square" aerial.

which comprise each square loop. This greatly simplifies the feed problem and ensures the correct phase relationship. The second loop is derived in the same manner as the driven element and is generally made a parasitic reflector and spaced about $\lambda/5$. This results in the best compromise between forward gain, front-to-back ratio and match to a 75 ohm line. In view of the fact that the reflector loop must be inductively reactive, it is necessary either to make it a little longer than the driven element or add a small tuning stub. The latter is preferable because it permits easy adjustment to secure the desired performance and also enables both square loops to be of identical dimensions, which usually simplifies the mechanical construction.

As far as can be ascertained the cubical quad has been known since 1948 but it did not at that time enjoy much popularity as each loop originally consisted of two turns and matching to the transmission line presented problems. In 1955, S. B. Leslie (W5DQV) described [3] a version of the cubical quad using single turn loops which presented a good match to a 75 ohm line. Most quads which have been constructed since that date have been based on this design and sufficient evidence exists to establish the power gain over a dipole at the same height as approximately 8db, which it will be noted is the same as that for a three-element wide-spaced Yagi. In spite of this the cubical quad has advantages over the three-element Yagi because (a) the radius of the turning circle is only about one-half of that required by the Yagi and (b) for a given height above ground there is less waste of power at high angles, although it must be admitted that the horizontal pattern is broader. It is undoubtedly easier to match to a 75 ohm line than a three-element Yagi and has a better bandwidth characteristic.

In an effort to adapt a cubical quad for Band I television reception an important discovery was made. When plotting

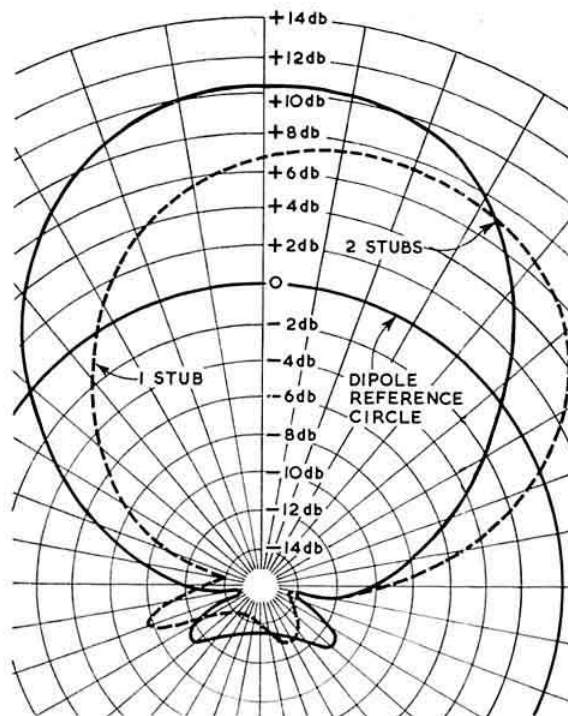
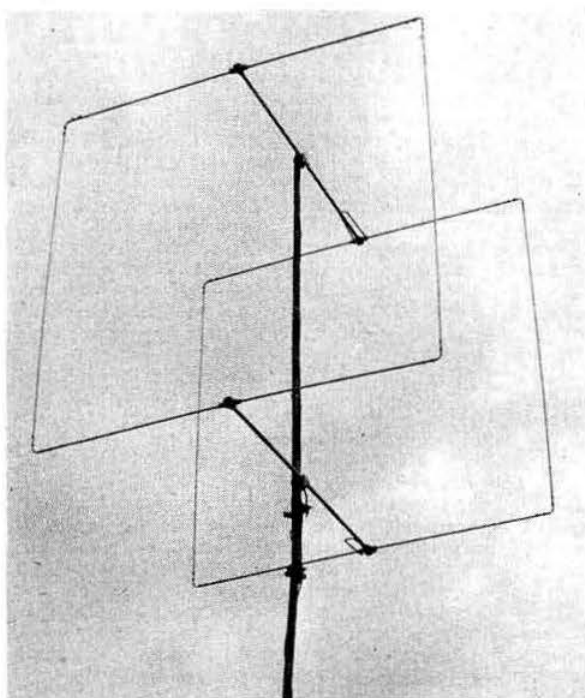


Fig. 7. Comparison of the horizontal polar diagrams of a "Bi-square" aerial with one and two stubs (aerial vertically polarized).

the horizontal polar diagram for a vertically polarized quad, it was noticed that the lobe was not symmetrical with respect to the axis and it occurred to the writer that this might be due to the asymmetry brought about by the tuning stub on the reflector which it will be appreciated is at one side of the vertically polarized loop. Accordingly, it was decided to add a second stub at the opposite side of the reflector loop. Both stubs were made one-half as long as the original single stub, and could be adjusted for maximum gain. Immediately, the gain jumped by about 3db and the forward lobe became symmetrical about the axis. Fig. 7 shows these two polar diagrams.

It is improbable that this discovery would have been made had we worked exclusively with horizontally polarized quads, since in this case the asymmetry does not manifest itself when taking a horizontal polar diagram and imperfect ground reflection effects mask asymmetry in the vertical plane.

In view of the commercial importance of this discovery from the television angle, it was decided to obtain patent



A typical "Bi-square" aerial. For 14 Mc/s, the two squares are of identical dimensions and have a side length of 16 ft. 9 in. The spacing between the squares is 13 ft. 9 in. and the two stubs on the reflector are each 14 in. long, spaced approximately $2\frac{1}{2}$ in. It is desirable for the lower stub to be made adjustable. Dimensions for other bands may be calculated on a proportional basis although individual stub adjustment is desirable if the best possible performance is to be obtained.

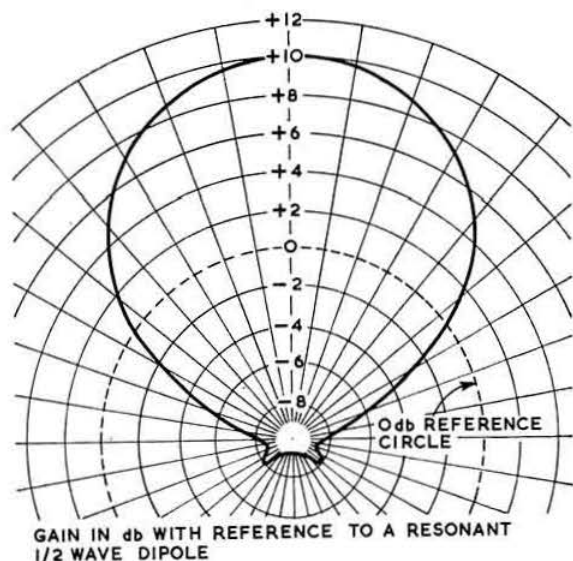


Fig. 8. Horizontal polar diagram of a Labgear 28 Mc/s "Bi-square" horizontally polarized aerial tuned for maximum front-to-back ratio.

protection and the name "Bi-square" was chosen as being adequately descriptive to the lay mind. "Bi-square" aeriels are now made commercially for f.m. reception, Band I television and for the 28 Mc/s and 70 Mc/s amateur bands. Scores of gain measurements have been taken, almost all of which have fallen within the limits 10 to 12 db with reference to a standard comparison dipole. Whilst it must be acknowledged that aerial gain is very difficult to measure with accuracy, a figure of 10db forward gain for the "Bi-square" is undoubtedly a conservative estimate. Fig. 8 shows the horizontal polar diagram of a horizontally

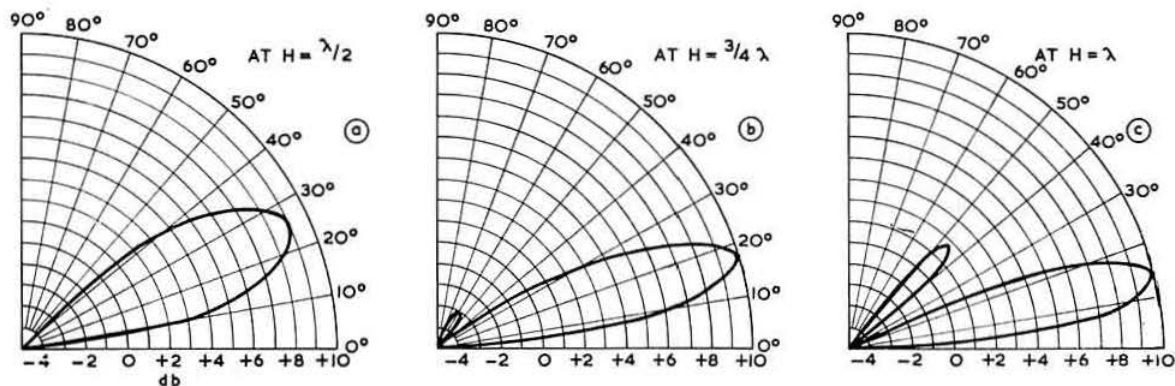


Fig. 9. Vertical polar diagrams of a 28 Mc/s "Bi-square" aerial.

polarized "Bi-square" and Figs. 9(a), 9(b) and 9(c) show estimated vertical polar diagrams for the aerial at centre heights above perfect ground of $\lambda/2$, $3\lambda/4$ and 1λ respectively.

Like most parasitic arrays the front-to-back ratio is more critical to tuning of the reflector than is the forward gain. Under idealized conditions, a front-to-back ratio of over 35db can be realized and the maximum-to-minimum ratio exceeds 40 db. However, the field is usually distorted due to the proximity of the house, the mast and guy wires, trees and other objects, and in practice both front-to-back and front-to-side ratios are in the region of 20 to 25db.

An experimental rotary "Bi-square" is shown in the photograph on page 412.

The "Vee-H" Aerial

So much for the "Bi-square"; now let us turn our attention briefly to another television development which has amateur applications. In an effort to make a cheaper

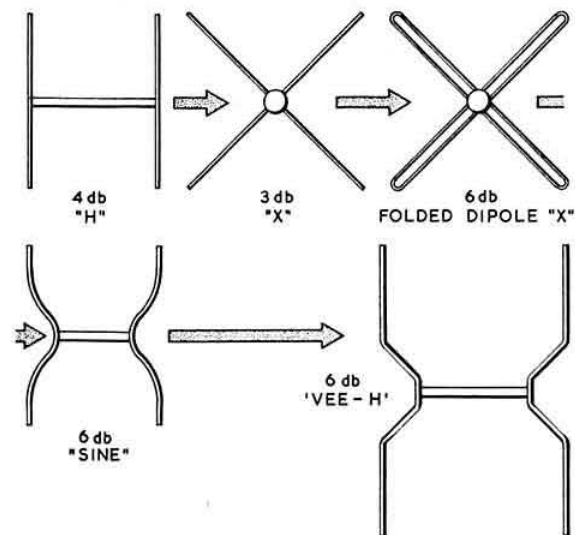


Fig. 10. Development of the Labgear "Vee-H" aerial.

television aerial, experiments were conducted some years ago to see how short the boom of a conventional "H" could be made. It was found that acceptable results were obtained without a boom at all provided that the ends of the elements were fanned outwards and in this way the "X" aerial was born.

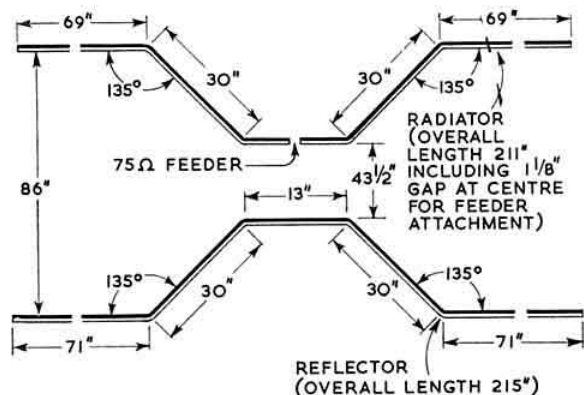


Fig. 11. "Vee-H" aerial designed for 28.5 Mc/s. The design may be scaled for use at other frequencies.

Unfortunately, the "X" aerial does not provide a very good match to 75 ohm feeder, so that in practice feeder losses limit the effective gain to about 3db, although a version of the "X" using folded dipole elements is on the market, which has a claimed gain of 6db. Naturally the gain of the aerial array proper is not changed but the true gain figure is more nearly realized with reasonably accurate matching. This leads one to suspect that the published figures for the maximum gain from a two-element parasitic array might perhaps be bettered by adopting a non-standard configuration.

Until the advent of the "X" aerial all parasitic arrays were characterized by the use of parallel elements. Never having been completely clear of the reason for this, we decided to experiment with other configurations, and about two years ago it was discovered that if the spacing between the active and reflector elements was made proportional to the current flow at that point, a rather remarkable gain was achieved. Clearly the elements become approximately sinusoidal in shape, the closest spacing being at the current anti-nodal points and the widest spacing at the voltage anti-nodal points. The minimum spacing was set to secure a good match to 75 ohm feeder and the forward gain proved to be about 6db. This figure is most attractive for a two-element beam not involving the expense of folded dipole elements and we next sought to put it in a practical form which could be manufactured cheaply. Sinusoidal elements are uneconomical to produce and fortunately it was found that an excellent compromise could be secured by adopting a slightly different form of element involving only two bends in each $\lambda/4$ section. Fig. 10 makes this clear. Such an aerial can be produced almost as cheaply as a conventional

(Continued on page 429)

GAIN IN db WITH REFERENCE TO A RESONANT $1/2$ WAVE DIPOLE

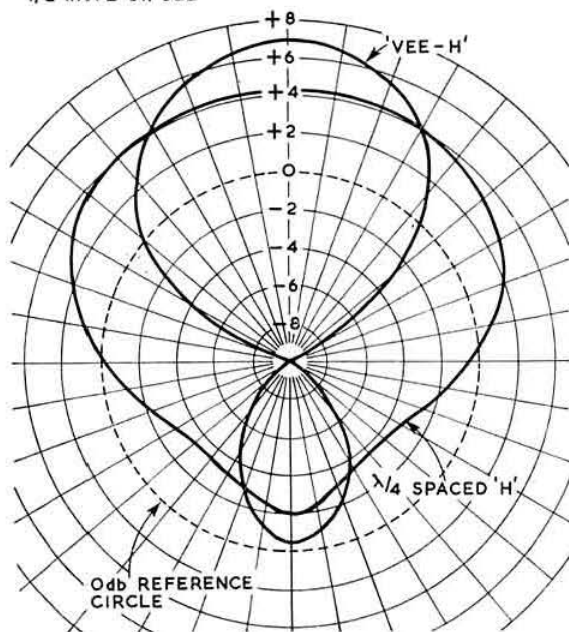


Fig. 12. Horizontal polar diagram of a horizontally polarized "Vee-H" aerial compared with a conventional "H" aerial with reflector spaced one quarter-wave from the driven element (both tuned for maximum forward gain at 65 Mc/s. The maximum gain of the "Vee-H" aerial should be shown as 6db and not 7db.

A Heterodyne Frequency Converter for S.S.B. Transmission

By F. C. B. JORDAN, M.Sc. (W3FIU)*

IN the article *The W3FIU Single Sideband Exciter* which appeared in the November 1957 issue of the BULLETIN, we saw developed a basic single sideband radio telephony generator which produced one or two watts of signal at a frequency in the 3.5 Mc/s band. The present article proposes to describe a simple heterodyne frequency converter which can be used with this or a similar exciter to permit operation on all the h.f. bands allocated to amateurs, and which at the same time will amplify the signal to a level sufficient to allow effective communications.

It has many times been shown that frequency conversion of an s.s.b. signal must be accomplished by a heterodyning process and not by frequency multiplication, and furthermore that class A or B amplification must be utilized if the s.s.b. signal is not to be distorted beyond usefulness. Keeping

these principles in mind, the valve line-up chosen (Fig. 1) was a 6SA7 pentagrid frequency converter (V2) operating in class A, a 2E26 beam pentode (V3) as a power amplifier operating in class B, with a 6SH7 pentode (V1) tuned-anode crystal controlled oscillator furnishing the heterodyning voltage to the injection grid of the frequency converter valve.

The specific choice of valves was dictated in the writer's case by what was at hand. Valves with similar general characteristics will do equally well however; for instance, an 807, 5B/254M, QV06-20 or 6146 could have been used as V3. A 6BE6 could be used for V2 and a 6AU6 for V1 without change of circuit values. In substituting valves however, the difference in socket connections and in some cases operating voltages must be taken into account. The voltage of B1 and the value of various dropping and bias resistors such as R1, 2 and 3 may also have to be adjusted accordingly.

*Captain, U.S.N.

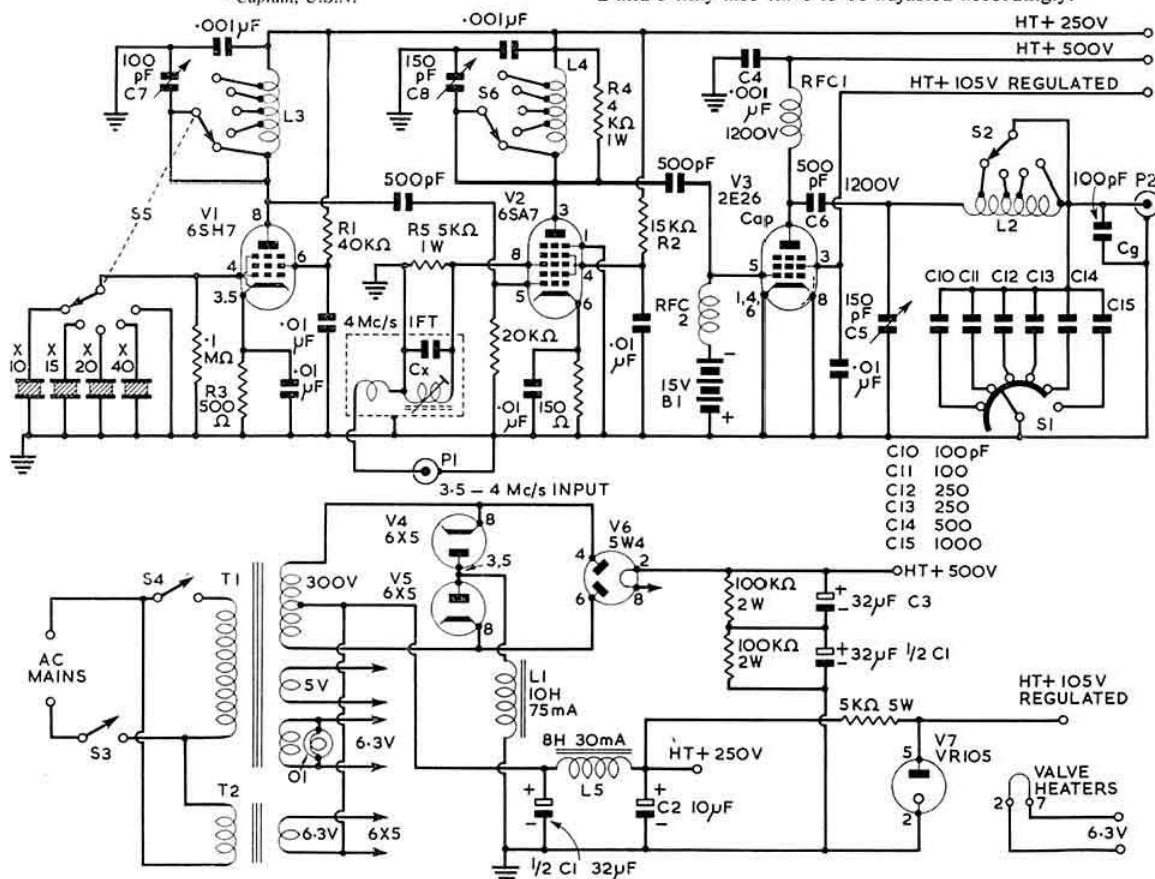


Fig. 1. Circuit diagram of the W3FIU Heterodyne Frequency Converter. Fixed condensers are 600 volt working ceramics except electrolytics which are indicated by polarity notation and should be 450 volt working type. C4 and C6 are 1,200 volt working ceramics. The resistors are all $\frac{1}{2}$ watt rating unless otherwise indicated. S1 is a seven-position progressively shorting type switch; S2, 6, four-position single-pole; S5, five-position double-pole. The coil details are as follows: L2, 40 turns 22 s.w.g. d.c.c., winding length $\frac{1}{2}$ in., diameter $\frac{1}{2}$ in., tapped at 5 turns for 10 and 15 metres, 10 turns for 20 metres and 20 turns for 40 metres. See the photograph of the upper side of the chassis for the method of winding, spacing some turns as well as the sections. L3, 30 turns 24 s.w.g. d.c.c., winding length $\frac{1}{2}$ in., diameter $\frac{1}{2}$ in. This winding will tune from approximately 5 to 26 Mc/s and the taps must be placed to permit tuning to the appropriate injection frequency for each position of the crystal selector switch S5. Refer to Table I and to the text. L4, 57 turns 24 s.w.g. d.c.c., winding length $\frac{1}{2}$ in., diameter $\frac{1}{2}$ in., tapped at 5 turns for 10 and 15 metres, 12 turns for 20 metres and 27 turns for 40 metres. The 5 volt and 6.3 volt windings shown as part of T1 should be on T2.

Choice of the heterodyning frequencies is determined first, by avoiding frequencies whose harmonics and/or various additive and subtractive combinations with the 80 metre s.s.b. signal (except the desired combination) fall within the pass-band of the tuned output circuits of V2 and V3; and second, by the availability of crystals. On the first point for instance, using a 3600 kc/s crystal to convert an s.s.b. signal at 3500 kc/s to one at 7100 kc/s (in the 40 metre band) would be unsatisfactory because the second harmonic of the crystal would produce a strong interfering signal on 7200 kc/s, which is well within the passband of an r.f. amplifier tuned to 7100 kc/s.

Assuming a v.f.o. (or selection of crystals) allowing adjustment of the input s.s.b. signal frequency between 3500 and 4000 kc/s, the following tabulation shows a usable choice of crystal frequencies:

Table 1—Heterodyning Crystals and Frequencies

Band	Crystal Frequency in kc/s	Frequency Multiplier factor	Injection Frequency in kc/s	Output Frequency range in kc/s
80m	none	none	none	3500—4000
40m	5500	2	11,000	7000—7500
20m	5250	2	10,500	14,000—14,500
15m	8750	2	17,500	21,000—21,500
10m	8166.7	3	24,500	28,000—28,500
10m	8333.3	3	25,000	28,500—29,000

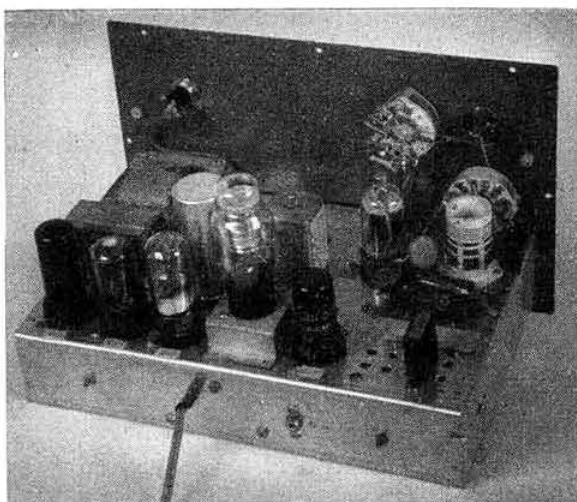
Crystals oscillating at the injection frequency may be used but are a bit more difficult to grind than those in the 5 to 8 Mc/s range. An infinite variety of other crystal frequencies may also be used as long as the above-mentioned caution regarding interference is heeded. If it is desired to cover the entire 28 Mc/s band, additional crystals are required as one crystal is needed for each 500 kc/s of output frequency coverage.

Since output frequency stability is largely determined by the v.f.o., the exciter itself and by the heterodyning crystal, the heat generated by a built-in power supply can be tolerated. It was therefore decided to include a power supply on the chassis for the sake of convenience. The power circuit utilized is conventional with the exception of the bridge connection of the rectifier valves. This permits the use of a small receiver-type power transformer to get the relatively high anode voltage required for the power amplifier stage. Voltage regulation is stressed for the sake of a "clean" signal. Choke input is used for the filter circuit, a regulator valve (V7) stabilizes the screen grid voltage of the power amplifier and a miniature 15 volt dry battery, B1, is soldered into the circuit to provide stable grid bias to the same valve. Since the converter valve V2 is operated in class A and with small signal input, there is no need to take special pains to stabilize its voltages.

Construction

There is nothing sacred about the details of construction or the arrangement of components. Certain elementary precautions were taken however, such as placing the crystals as far as possible from the heat-producing power supply, and decreasing harmful feedback between the tuned circuits C8L4 and C5L2 by placing them on opposite sides of the chassis. The photographs show how the entire unit may be mounted on a 11½ in. × 7 in. × 2 in. chassis without undue crowding. V7, incidentally, was placed on a small platform in order to make room on the bottom of the chassis for C2 and L5. S5 and C7 are mounted below the chassis on a small angled piece which also serves to shield the oscillator circuit from the power amplifier. C8 and S6 are mounted on the panel below the chassis; C5 and S2 are also mounted on the panel but above the chassis.

No special parts are utilized in the construction with the



Top view of chassis. Reference to Fig. 2 will facilitate identification of components. Note the method of mounting the ceramic coupling condensers C10 to C15 on S1, thereby getting the shortest leads possible; also the method of winding the final tank inductance L2. All but one of the crystals have been removed in order to show the crystal socket construction: two wafer type octal valve sockets mounted on the bottom of the chassis with oversize holes drilled in the chassis to pass the crystal pins without their touching the chassis metal.

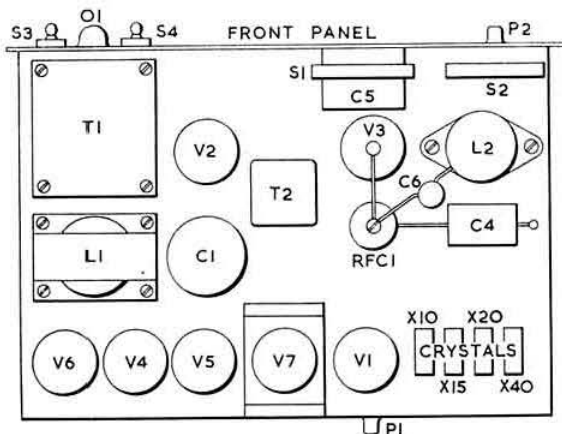


Fig. 2. Layout of the principal components.

exception of T2. This is a 4 Mc/s slug-tuned i.f. transformer whose primary inductance and capacity have been removed, and a new untuned primary (about eight turns closewound with 26 s.w.g. d.c.c. wire, diameter ½ in.) closely coupled to the cold end of the secondary.

All fixed condensers, with the exception of the electrolytics in the power supply, are ceramic in order to conserve space. Their working voltage rating is 600 volts except for C4 and C6 which are rated at 1200 volts. The mica type would of course be equally suitable.

R4 is a loading resistor across the tuned anode circuit of V2. It helps to stabilize V3 should there be any tendency towards self oscillation and, at the same time, by placing a constant load on the output of V2, improves its output voltage regulation. R5 performs a similar task.

As a check on the coil winding, a grid dip meter is used to ensure that L2, L3 and L4 with their respective tap switch

and variable condenser tune over the desired frequency range. Remember that the L2 and L4 circuits should tune the amateur bands but that the L3 circuit should tune to the appropriate injection frequencies.

Adjustment

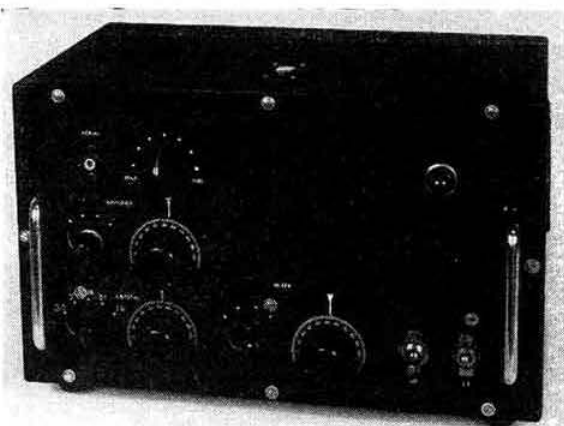
After verifying the wiring, insert all valves except the final amplifier V3. Turn on S3, then allow a minute for the V4 and V5 heaters to reach working temperature before switching on S4. Check all voltages with a voltmeter to ensure that the power supply is functioning properly.

Apply a steady 2 or 3 volt 80 metre signal to the input terminal P1. This voltage may be conveniently furnished by the station v.f.o. Adjust all tap switches to their 80 metre position. The crystal oscillator V1 will not be oscillating since no heterodyning is necessary on this band and the converter V2 will be acting simply as a low gain amplifier. Tune C8 to resonance. A convenient resonance indicator can be a one turn 1 in. diameter loop soldered to a miniature flashlight bulb and held close to L4. Record the setting of C8 for future reference.

Now set all tap switches to the 40 metre position. Adjust C7 for good output from V1 on the selected injection frequency (11 Mc/s in this case), then adjust C8 to resonance in the 40 metre band, recording the settings of C7 and C8. Repeat this process for 20, 15 and 10 metres. As long as an appreciable glow comes from the resonance indicator coupled to L4 there will be sufficient drive for the final amplifier.

The tuning procedure for the final stage requires a dummy load capable of dissipating 10 to 15 watts and having a resistance approximating equal to that into which the output will normally be fed. A light bulb of suitable size and voltage connected to the output terminal P2 will do quite well. Turn off the high voltage by means of S4, insert V3 and affix its anode connector clip. Turn all tap switches to the 80 metre position and detune C8 in order to cut off or radically reduce the r.f. drive voltage at the grid of V3. Set the output coupling tap switch S1 to about its middle position and re-apply the high voltage by switching on S4.

Slowly increase the grid drive to V3 by turning C8 towards the previously recorded setting for 80 metre resonance, while varying C5 between maximum and minimum. Resonance will be indicated by the load lamp lighting up. Vary



A front view of the s.s.b. frequency converter. The heterodyne crystal selector switch and tuning dial are grouped together at the lower left corner of the panel with the power amplifier controls immediately above. The mixer controls are located together at the lower centre. In the lower right corner are the two power switches S3 and S4 with the h.t. indicating light above. The output connector P2 marked "aerial" is in the upper left corner with the output coupling control S1 immediately to its right.

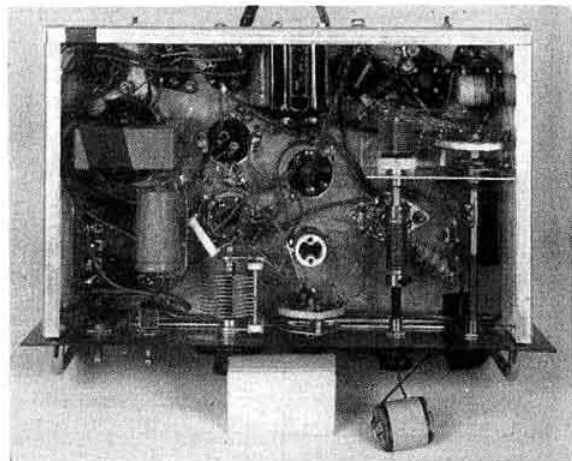
the coupling control S1, for maximum output with the load being used, re-adjusting C5 as necessary. Record the settings of S1 and C5. During this tuning process watch V3 closely for overheating, reducing its grid drive quickly if this should occur. Repeat the above process for the other bands. Once correct tuning has been accomplished, the final amplifier should run cool with the specified anode voltages and normal s.s.b. input.

The unit is now ready for the final test. Disconnect the v.f.o. from the input connector P1 and replace with an s.s.b. exciter having one or two watts output in the 80 metre band. With all voltages turned on, tap switches set to the desired band and all other controls set to their recorded optimum position for that band, speaking into the microphone should cause the output load bulb to brighten in accordance with the loudness of the speech. After completion of the signal quality tests mentioned below, the aerial may be connected in place of the dummy load, either directly or through an aerial matching network, and you are on the air.

The particular unit illustrated produced a signal output substantially devoid of distortion. However, no s.s.b. signal should be put on the air without a prior check of some sort. A simple oscilloscope connected to give an X or double trapezoid pattern is recommended for this purpose (Fig. 3).^{*} In any case, do not fail to make an actual receiving test to ensure that the output is readable and that neither the high nor the low frequency voice components are over attenuated. The latter may occur in the case of an exciter using a sharp r.f. filter if the carrier frequency is set too near or too far, respectively, from the filter pass band. And of course, if the carrier has been placed *inside* the filter pass band, no amount of receiver tuning will allow the resulting monkey chatter to be deciphered.

Although not included in this unit for the sake of simplicity,

(Continued on page 418)



Under chassis view showing the power supply in the left hand third of the chassis. The crystal oscillator circuitry can be seen at the upper right corner, with L3 mounted horizontally on the chassis side and C7 and S5 mounted on a small angled bracket doubling as shield. L4 is located slightly below the centre and immediately adjacent to its tap switch S6 and tuning capacity C8.

^{*}To make the double trapezoid test, apply r.f. output voltage to the vertical plates of the cathode ray tube, audio modulating voltage to the horizontal plates. Adjust these voltages until, under full modulation conditions, the resultant oscilloscope pattern almost fills the screen. For correct operation, the pattern will be two perfect triangles joined symmetrically at the centre of the screen to form an X. Any deviation from this form denotes a defect in the signal and can be analyzed in the same manner as the trapezoid test pattern for a.m. signals. The pattern will, of course, vary in size in accordance with the amount of modulation, but should not change in shape. See Fig. 3 for wiring connections.

Curing TVI with Co-axial Stubs

BY T. N. LLOYD (G3SL)*

THE purpose of this article is to describe a method of curing TVI with co-axial stubs and also a method of cutting such stubs to resonate at the centre frequency of the band to be suppressed.

The transmitter at G3SL is a G5RV-type using a single 807 in the p.a. with a pi-network output circuit. The transmitter feeds an all-band dipole (as described in the R.S.G.B. BULLETIN for April 1957) via a three-section filter and a 72 ohm co-axial cable. There is no aerial tuning unit. Using this arrangement it was found that heavy interference was caused to the B.B.C. Channel 1 sound and vision. It was obvious that something more effective was needed to suppress the harmonics occurring in the band 42-45 Mc/s.

It occurred to the writer that a stub made of co-axial cable could be used to short circuit effectively such harmonics. A line, whether co-axial or otherwise, has a characteristic impedance which is determined by its physical dimensions and the dielectric constant of the insulating material. When terminated by an impedance equal to its characteristic impedance, all the energy is absorbed in the load. When terminated by any other value of impedance, some energy is reflected back to the source. The greatest possible deviation from the characteristic impedance at the termination must be the conditions of minimum and maximum impedance, i.e., short circuit and open circuit. Under these conditions, the maximum amount of energy is reflected back to the source.

There must be points along the line where the reflected energy is opposing the energy travelling towards the load, and if the reflected energy can be of sufficient magnitude, the cancellation will be complete, except for slight losses in the line. At the points where the voltages cancel, a very low impedance exists, i.e., an effective short circuit. This condition will recur at intervals of a quarter-wavelength, but here it should be noted that owing to the change of velocity in the cable, the actual length will be less than a quarter-wavelength in free space. The velocity constant of the particular cable in use will determine the actual length needed to represent a quarter-wavelength.

A quarter-wavelength of line open circuited at one end will appear to be almost a short circuit at the other end. On the other hand, a quarter-wavelength of line short circuited at one end will appear to be an open circuit at the opposite end. For any length other than a quarter-wave (or multiples thereof) the line will "look" reactive, being resistive at the exact quarter-wavelength points.

The Co-axial Stub

The stub used by the writer is a piece of co-axial cable with an open circuit at its free end, cut to an exact quarter-wavelength at 43 Mc/s so that a very low impedance appears at the other end. This low impedance is put across the feeder at the transmitter output to act as a bypass, thereby preventing harmonic energy travelling up the feeder to the aerial and so being radiated. A Belling-Lee co-axial plug is fitted at the end to be connected to the transmitter, while the other end of the cable is trimmed to avoid stray ends of the braiding shorting to the inner conductor. As a further precaution, it is dipped in polystyrene cement to seal the end. In use the stub dangles down the rear of the table on which the transmitter stands.

The first stub was constructed of solid polythene dielectric co-axial cable known as Uniradio 70 (B.I.C.C. T3022). It has an impedance of 72 ohms, a velocity constant of 0.67,

and capacity of 22pF per foot. The inner conductor consists of seven strands of 0.0076 in. copper wire, while the overall outside diameter is 0.23 in. Similar cable with the same characteristics is made by various manufacturers. The length required for Channel 1 is 3 ft. 7 in. including the Belling-Lee co-axial plug.

A semi-air-spaced co-axial cable with sponge polythene dielectric, manufactured by Aerialite Ltd. under the code number 2695/4493, has also been tried. This has an overall diameter of approximately 0.21 in. and an inner conductor of seven strands of 0.01 in. copper wire. The length required with this type of cable is 4 ft. 6½ in. including the plug on the end.

The arrangement in use before the installation of the stub is illustrated in Fig. 1 (a). From the modified arrangement in Fig. 1 (b), it will be seen that the 5pF capacitor coupling the harmonic check point to the output socket has been removed and the two sockets connected in parallel. These sockets are strapped with a piece of 14 s.w.g. tinned copper wire about ¾ in. long. It is important that this connection should be made as short as possible—if necessary a new socket should be installed for the stub, which can then be plugged in parallel with the feeder where it emerges from the transmitter.

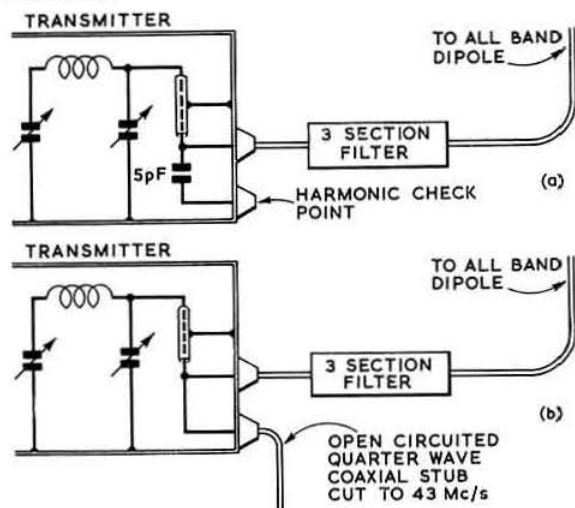


Fig. 1. (a) Original arrangement of the transmitter output at G3SL. (b) Installation of the co-axial stub.

The stub acts as a suppressor for a band of frequencies centred on 43 Mc/s, but at the frequencies of the amateur bands (1.8 to 30 Mc/s) the stub is much shorter than a quarter-wavelength and adds only a little capacity to the p.a. output circuit, which results in a slight change in the tuning point to restore resonance.

As co-axial cable has a velocity constant of less than one the physical length of cable required is less than that of a quarter-wavelength in free space, as mentioned earlier. If cable other than the type described above is used, the following procedure should be adopted to cut it to the exact length.

Adjusting the Stub to Length

The test equipment required for accurately adjusting the length of the stub is a calibrated signal generator covering

* 14 Rosemary Avenue, Hounslow West, Middlesex.

43 Mc/s and a valve voltmeter complete with diode probe. The equipment is connected up as shown in Fig. 2(a) with the signal generator adjusted to give maximum reading on the valve voltmeter when tuned to 43 Mc/s; the cable is connected in parallel with the diode probe with the shortest possible connections. It is best to start with about 5 ft. Pieces are then snipped off the free end of the cable while watching the valve voltmeter reading. It will soon be noticed that the reading falls as the correct length is approached. Before it has fallen to zero the frequency of the generator can be rocked to find the exact frequency and in this manner the tuning can be followed "up the dial" as it were as the last few pieces are snipped off.

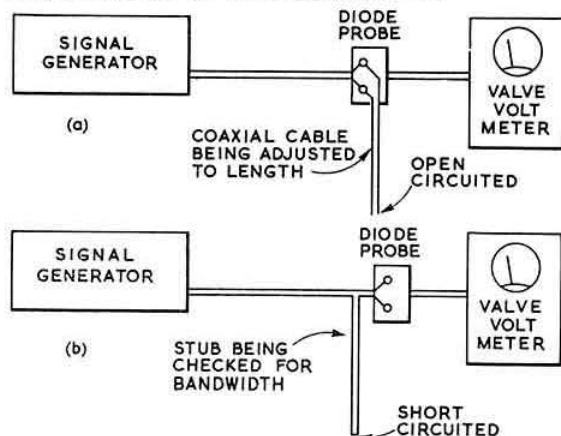


Fig. 2. Methods of adjusting co-axial stubs and checking their bandwidth.

Stubs made from the cables mentioned were checked with the arrangement shown in Fig. 2(b). These tests showed that the Uniradio 70 cable gave a high attenuation over about 10 Mc/s from 40 to 50 Mc/s, whereas the stub made with the semi-air-spaced cable had a narrower bandwidth of 9 Mc/s between 38.5 and 47.5 Mc/s. The tests were carried out with a 100 millivolt reading on the valve voltmeter when off tune and the limits quoted are those at which the meter

TABLE I

A selection of co-axial cables with the same velocity constant (0.67) as Uniradio 70. The length of a quarter-wave stub of all these types should be the same as quoted in the text for Uniradio 70. All the cables listed have solid dielectric and p.v.c. outer sheaths except Uniradio 56 which has a polythene sheath.

Uniradio No.	Inner Conductor	Characteristic Impedance Z_0	Overall Diameter	American Equivalent
31	1/029	91 ohms	0.405 in.	—
32*	—	—	—	—
39	1/036	69 ohms	0.310 in.	RG39U
43	1/032	52 ohms	0.200 in.	RG29U, RG55U, RG58U
54	7/0076	72 ohms	0.325 in.	—
56	1/022	71 ohms	0.230 in.	—
57	1/044	75 ohms	0.405 in.	—
67	7/029	52 ohms	0.405 in.	—
70	7/0076	72 ohms	0.23 in.	—

* All characteristics the same as Uniradio 70 except that Uniradio 32 has a single strand inner conductor.

readings dropped substantially to zero. Between these points an amplifier, or a much more sensitive valve voltmeter would have been needed to measure the residual output.

A list of similar cables to those tested is given in Table I.

The "proof of the pudding"

Since the installation of the stub, tests have been made with neighbours and no interference can be detected when on either c.w. or telephony. It may well be that the three-section filter is not necessary now.

The cure at this station has been effected entirely by the stub at the transmitter; neighbouring receivers have not been touched in any way. It is a great relief to be able to operate at any time one chooses. The cost to G3SL was about 3/6d.

A short-circuited stub might have possibilities if connected across the aerial input of a TV receiver for the B.B.C. channel only. In this condition it would attenuate signals other than those around its resonant frequency. The arrangement could not be used with multi-channel receivers employing a single feeder for Bands I and III.

It is hoped that the foregoing will assist other members to overcome TVI and the writer will be pleased to hear of experiences with the method.

Scatter Propagation and its Application to Television

THE fundamental aspects of radio wave scattering at v.h.f. in the ionosphere, and at v.h.f. and u.h.f. in the troposphere are described by Dr. J. A. Saxon of the Radio Research Station, Slough, in a paper contributed to Vol. 8, No. 7 of the Journal of the Television Society. The author points out that scatter transmission is useful only for point-to-point links, and that the performance of these links depends on such parameters as frequency, bandwidth and aerial characteristics.

A Heterodyne Frequency Converter for S.S.B.

Transmission (Continued from page 416)

a milliammeter reading either the anode or screen grid current of V3 at the throw of a d.p.d.t. switch would be of assistance in the tune-up procedure. There is plenty of room on the panel for its mounting.

Results

The peak output of this unit is only about 30 watts but all continents have been worked on both 10 and 20 metres. No DX has been worked on the other bands but primarily because little or no time was devoted to them. No TVI complaints have been received and a television set can be

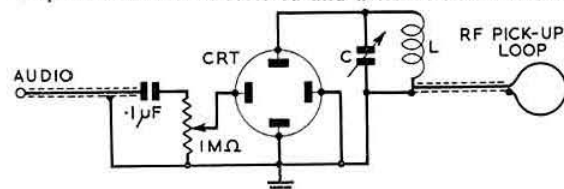


Fig. 3. Circuit arrangement for the double trapexoid test. L and C resonate at the signal output frequency. The pick-up loop should be loosely coupled to the output tank circuit. The audio connection may be made to the anode of the audio driver valve in the exciter. In the case of the exciter described by the author in the November 1957 issue of the R.S.G.B. Bulletin, the connection should be made to terminal P4 in the anode circuit of V2.

operated without interference in the same room. This is probably due to the effective combination of low power, fairly good shielding, the pi output circuit, and C9 connected directly across the output terminal. It is possible that a low pass filter in the aerial lead may be necessary in a congested TV fringe area.

Propagation Survey 1957/58

By J. DOUGLAS KAY (G3AAE)*

SINCE the last survey appeared in the March 1957 BULLETIN, there have been several occurrences of major importance to the world at large and of particular interest and significance to the radio amateur.

Sputniks I and II

Firstly, the unheralded launching on October 4, 1957 by the U.S.S.R. of the first earth satellite, whose signals on 20,005 and 40,002 kc/s were heard by a great number of amateurs throughout the world. This was, of course, the first time that "un-natural" signals at radio frequencies had ever been transmitted from the other side of the ionosphere and the observations taken at the time the satellite's transmitter was radiating will probably provide a great deal of information on the ionosphere and its composition and on its reflecting and refracting effects on radio signals. The second "satellite" transmitted on similar frequencies, thereby enabling the re-commencement of observations, which had ceased with the ending of transmissions from the first satellite.

The I.G.Y.

On July 1, 1957 there commenced the International Geophysical Year, which will continue until December 31, 1958. This long awaited event started off in a blaze of glory, as on July 1 there were solar disturbances of the first magnitude, which sent observers rushing to their instruments and greatly increased the impetus of the whole operation.

Record Sunspot Activity

Although of great importance both of these events are rather outside the scope of this survey. It is with the third major occurrence that the survey is primarily concerned. The year 1957 produced the highest sunspot activity ever recorded since records were started in 1778. At the beginning of the year the sunspot count was already so high that

it was generally thought that the peak would occur within a few weeks, but contrary to all expectations the count continued to rise, and appears still to be rising. The peak cannot be far away however (assuming that it has not already been reached), and the next two years at least will continue to see extremely high levels of sunspot activity.

As a direct result, radio propagation conditions on all the h.f. and the lower v.h.f. bands have been, and should continue to be, outstandingly good.

H.F. Bands

Activity on 3.5 Mc/s continues at a low level, and the DX potentialities of the band do not appear to be as good at sunspot maximum as they are at sunspot minimum. This is an impression which may well be attributable more to lack of activity than to actual fact. 7 Mc/s, although appearing slightly sub-standard continues to be an interesting and rewarding band to those amateurs who like, and are competent, to do their DX-ing the not so easy way.

The 14 Mc/s band has been plagued by short skip, and the bad operating tactics and signals of some of the less fortunately endowed brethren—mainly European. The extremely short skip does, however, show up some of the black sheep in the home flock. Beneath all those unwelcome distractions the early mornings have yielded consistently good signals from the West Coast of the U.S.A. and Canada, and from Alaska, Hawaii, New Zealand, Australia and very occasionally from some of the Pacific Islands. During the late afternoon and early evening signals from South Africa, mid-Asia, the Far East and Pacific have been consistently good during the short intervals they have been audible between those of S9 short distance European QSOs. Obviously these non-DX working stations have just as much right to enjoy their hobby as the rest of us, but it is rather exasperating when a long awaited "rare-one" is covered by an avalanche of QRM. Patience and an even temperament are indeed qualities that the amateur needs in special quantity. However, despite all the pros and cons, there is little doubt that 14 Mc/s is still the band for working the rarer class of DX, and it probably always will be. The band has been open virtually 24 hours a day every day of the year.

The 21 and 28 Mc/s bands have shone as never before. 21 Mc/s has been open for DX working almost every day from dawn to dusk and more often than not until long after

Frequency Predictions for April 1958

PREPARED BY J. DOUGLAS KAY (G3AAE)

BAND	NORTH AMERICA East Coast	NORTH AMERICA West Coast	CENTRAL AMERICA	SOUTH AMERICA	SOUTH AFRICA	NEAR EAST	MIDDLE EAST	FAR EAST	AUSTRALIA	ANT-ARCTICA
M.U.F.	26 Mc/s 1800	20.5 Mc/s 1900	32.5 Mc/s 1530	38.5 Mc/s 1330	40 Mc/s 1230	37 Mc/s 1200	36 Mc/s 1200	35 Mc/s 1200	33 Mc/s 0930 SP	35 Mc/s 1500
28 Mc/s	1800	1900	1100/2200	1100/2200	0800/2100	0730/2000	0800/1700	0800/1700	0800/1230 SP	1000/1830
21 Mc/s	1100/2300	1900	0830/0200	0930/1130 1800/0600	0700/1000 1300/0000	0600/0100	0600/2200	0700/2100	0730/1100 LP 1000/1800 SP 2100/0100 LP	0900/1100 1800/2030
14 Mc/s	0830/1030 1800/0830	0600/1100 1300/0130	2200/1030	2000/0900	1800/0200	1300/0930	1500/0200	1630/0000	0600/1000 LP 1300/2200 SP	2000/2300
7 Mc/s	0000/0800	0700	0200	0200	0000	1900/0200	2000	0000	1800 SP	0200
3.5 Mc/s	0400	0700	0200	0200	0000	2330	2000	0000	1800 SP	0200

These predictions are based on information provided by the Engineer-in-Chief of the Post Office. All times are G.M.T.

dusk. During the summer months this band was open to North, Central and South America often throughout the night, and after midnight signals from Australasia were not uncommon. Agreed that noisy non-amateur squelchers have polluted the band during the mornings and early afternoons, and that short skip has sometimes been troublesome but on the whole this has been the most consistent band for working DX without loss of temper. 28 Mc/s has been back to its best 1946-7 form, with S9 signals arriving from all round the globe, often at the same time, and frequently attributable to low power transmitters and simple aeriols. Troubles due to short skip and commercial intruders have been negligible, and the day-time activity on the band has been an all-time record, with every available kc/s occupied by several stations at weekends. During the present winter the band has been open to all parts of the world from dawn to dusk. Last summer it was open to South Africa, South America and the Near East during daylight hours, with occasional signals arriving from the Middle East and the Far East. As always during summer, however, the path across the Atlantic to North America and by either path to Australasia remained stubbornly closed.

V.H.F. Bands

On the higher frequencies a considerable number of cross-band 28/50 Mc/s contacts have been possible between the U.K. and all parts of North America, while at least one U.S. amateur has worked all continents on 50 Mc/s, a feat never previously achieved. A number of cross-band 28/50 Mc/s contacts have been made between stations in the Near East and South Africa by trans-equatorial scatter propagation.

The additional 20 Mc/s up to the U.K. band on 70 Mc/s has, however, proved so far to be an impassable barrier for DX working by F layer propagation, but there have been a record number of openings on 70 and 145 Mc/s to Europe, due to auroral propagation.

Television

Conditions for reception of the B.B.C. Channel 1 television signals have been very similar during the winter 1957/58 to those experienced a year earlier. Reception in Asia and South Africa has not been quite as consistent as during the previous year but in North America it has been the best ever, with good signals audible on many days, with the reception of pictures reported from as far inland as Michigan. Many reception reports have been received, including some from the most unexpected places: OX3WE, for instance, reports excellent reception in Western Greenland using an unmodified Pye receiver and a simple dipole aerial.

The Future

The future outlook is bright. During the next twelve months conditions should be very similar to those experienced during the past year with the prospect of almost as good conditions during the subsequent two years. After that time the best of 28 Mc/s will be over for this sunspot cycle, and 21 Mc/s will not be as consistent. The 14 Mc/s band will not open during the winter nights but it will probably be more desirable during the hours of daylight due not only to lower usable frequencies but also to the lengthening of the skip distance and the consequent drop in short skip interference.

Disturbances

While the record sunspot count has resulted in excellent propagation conditions on the higher frequency amateur bands, it has also resulted in an increased number of ionospheric disturbances.

The ionosphere is formed by ultra-violet radiations from the Sun's surface, and in order to increase its density sufficiently for high frequency signals not to penetrate but be reflected back to earth, it is necessary for the Sun to give off

these radiations in large quantities. Provided the Sun does this evenly no turbulence will take place in the ionosphere, and all will be well, but unfortunately this radiation often occurs in sudden bursts from extra large sunspots and solar flares. When this happens the ionosphere is disturbed and so are radio propagation conditions for a period of up to about five or seven days depending on the severity of the storm. These might lead one to believe that at sunspot maximum conditions are more unreliable than at sunspot minimum, but that is not the case. It is true that the disturbances at sunspot minimum may be fewer, but the state of the ionosphere is then so poor that even small disturbances wreak havoc with it. As its powers of recovery are low, conditions remain disturbed for prolonged periods of time. At sunspot maximum, on the other hand, the disturbances are generally short-lived as the ionosphere's powers of recovery are considerable.

During 1957 sunspots of a large enough size to affect radio propagation conditions were sighted on 59 occasions. Of these, 21 were large enough to cause considerable disturbances. These 21 major disturbances resulted from 11 groups of large sunspots. Seven of these 11 groups were separated by intervals of approximately 28 days—the time taken for the Sun to make one complete revolution on its axis. Of the 21 major warnings, five occurred in June and six in September. Thus, on the whole, propagation conditions during these two months were more unreliable than during the rest of the year.

The major disturbances during the year were caused by solar flares associated with large sunspots, which occurred on June 1 and August 28, followed by geomagnetic storms, resulting in almost blackout conditions on the h.f. bands during the subsequent seven day periods.

Frequency Predictions

It is now exactly three years since the first table of frequency predictions and an explanation of their derivation and use appeared in the BULLETIN. A brief recapitulation of the salient points may be useful to newer members, while refreshing the memories of those who do not periodically scan through back issues.

The frequency predictions are based on information provided by the Engineer-in-Chief of the Post Office, who in turn obtains the basic data from measurements made at the Radio Research Station at Slough and at its overseas observation stations. The tables cover predictions for five amateur bands for ten transmission paths from the United Kingdom—overseas amateurs may find some discrepancies on the paths to the U.K., due to the fact that propagation conditions are not always identical in both directions. Much has been written about propagation reciprocity, but it is a subject which is outside the scope of the present review.

When working to the Antipodes it is generally known that communication can be established by beaming the transmission over either the short path or the long path. In the case of Australia and New Zealand the long path is that over the north of South America and through the Pacific Ocean, while the short path lies over the U.S.S.R. and China. The M.U.F. and L.U.F. values are quite different for each path, and while it is sometimes found that communication is possible beaming both ways, usually one path is open and the other closed. Thus in the prediction column for Australia the letters SP (short path) and LP (long path) indicate in which direction signals should be beamed during the periods stated.

Long path working to other parts of the world, e.g., Singapore, is sometimes feasible, but as under normal conditions the short path is always preferable for amateur transmissions, the short path is assumed in all cases apart from Australia and New Zealand. This is implied in all the other columns in the prediction tables where no path indication is stated.

The top line of figures gives the highest value of maximum usable frequency (M.U.F.) predicted for each circuit, and the time of day at which it is expected to be reached. The lower columns indicate the period of time when the various amateur bands can reasonably be expected to be open to the areas of the world indicated. In a number of cases it will be observed that there is more than one period of time when the path should be open, and this results in a period, often during the middle of the day, when no communication is likely. This generally occurs on 14 and 21 Mc/s, and is due to the value of lowest usable frequency (L.U.F.) being higher than the frequency of those bands during those periods. A contemporary publication produces monthly prediction curves for several circuits from the U.K., but when consulting these it is important to bear in mind that the limiting value of L.U.F. is not indicated and that, therefore, the full picture of the usable frequency spectrum is not shown.

In the R.S.G.B. predictions there will also be seen a number of occasions when only a single time is indicated. This means one of two things:

1. *On the higher frequency bands.* That the value of M.U.F. is not expected to rise sufficiently to permit two way communication on such a high frequency.

2. *On the lower frequency bands.* That the L.U.F. is expected to exceed the frequency of the band at all times, so that again no communication should be possible. It is realised, however, that under unusual conditions the circuit may exceptionally be open on occasion and for short periods, and the single time in the prediction table indicates the time at which this phenomenon is most likely to occur.

Readers are again asked to co-operate by reporting all cases of openings of amateur bands outside the periods indicated in the monthly prediction tables.

Stereophonic Sound Transmission

By F. C. JUDD (G2BCX)*

ON Sunday, February 2, the first successful amateur stereophonic sound transmission was made by G3JHL of Leytonstone and received and recorded, in stereo, by G2BCX of Woodford. The recording was later listened to over a twin speaker and amplifier system.

A preliminary test was made during the preceding week but night-time QRM from ships to shore stations made things too difficult, although the stereo effect was obtained. However, early Sunday afternoon seemed to offer best results from the point of view of clear channels, and accordingly G3JHL set up two transmitters to operate about 50 kc/s apart in the 1.8 to 2 Mc/s band. It should be mentioned here that permission for transmission on two frequencies in the same band had been obtained from the Post Office.

The transmission consisted of speech and various sounds in different parts of the room. By listening with headphones, one connected to the left and one to the right channel, G2BCX was able to monitor the live transmission and record simultaneously.

No difficulty was experienced in placing the positions (relative to the microphones) of sounds or speech; for example, a door slamming on one side of the room whilst speech and other sounds were occurring at the centre and opposite side. Footsteps from one side of the room to the other were reproduced quite faithfully from the tape recording version which was played back in a room of approximately the same size as the original.

* 152 Maybank Road, South Woodford, London, E.18.

The Equipment

Starting from the transmitting end, a description of the complete system may be of interest. Two microphones spaced about 10 ft. apart on opposite sides of the room at G3JHL were used to obtain "the two-eared effect" required by stereophonic sound. Then followed the necessary twin amplifiers and modulators each coupled to a transmitter for the left and right hand channels respectively.

Separate aeriels were used for each transmitter, the latter operating with about 5 watts input. In order to keep down noise level at the receiving end it has since been decided to use the full 10 watts to the transmitters and improve the aerial system.

At the receiving end (G2BCX) two straight receivers each with an output from a linear detector were fed to the twin recording amplifiers and thence to the upper and lower halves of a standard quarter-inch tape. Recording was made at 7½ in. per second. Out-of-line recording heads were used and playback affected via twin high-quality amplifiers and corner loudspeaker systems. With the possibility of two-way stereo at a later date G3JHL's recording equipment will most likely use an "in line" stereo head. Apart from slight noise on one channel the stereo effect was certainly good enough to warrant future experiment in this new trend in sound recording. The possibility of two channels being transmitted on one frequency is being considered.

New French Navaid System being tested on Top Band

USERS of Top Band may have heard signals from a new navigational aid system which is being tested in France. The system, known as Radio Web, uses four transmitters located in the form of a square with sides about 60 miles in length. The stations have a rated power of 100 watts and operate in pairs on frequencies between 1679 and 1971 kc/s.

Transmitter A (located at Meaux) is square-wave modulated (pulsed) at a frequency of 384 c/s and Transmitter B (at Montargis) at a frequency of 385 c/s. Modulation frequencies may be obtained alternatively with continuously oscillating tuning forks or crystal oscillators. Transmitter C (at Chateaudun) is modulated by a local oscillator locked on the frequency of transmitter A while transmitter D (at St. Andre de l'Eure) is modulated in a like manner by a local oscillator locked on the signal from transmitter B.

A full account of Radio Web appeared in a recent issue of *Aviation Week*.

International Instrument Show

TICKETS for the Fourth International Instruments Show may be obtained on application from the sponsors, B. & K. Laboratories Ltd., 57 Union Street, London, S.E.1. The Show is to be held at the Caxton Hall, Westminster, from March 24 to 29, 1958.

London Meeting Friday, March 21, 1958

"The Junction Type Transistor and its application to Short-Wave Radio"
by E. Wolfendale, B.Sc., A.M.I.E.E. and
L. E. Jansson (Mullard Radio Valve Co. Ltd.)

at the
Institution of Electrical Engineers
Savoy Place, Victoria Embankment

Buffet Tea 6 p.m.

Lecture 6.30 p.m.



I.G.Y. News

Transatlantic 144 Mc/s Tests

FROM Walt. Morrison (W2CXY) come proposals to carry out trans-atlantic tests on 2m. W2CXY is a v.h.f. operator who has much experience of tropospheric and meteor scatter and auroral propagation on 144 Mc/s (see *QST*, November 1957). He considers it most unlikely that either meteor or auroral propagation would be possible across the North Atlantic. However, three possible methods remain—ionospheric scatter under conditions of intense F_2 layer ionization, moon bounce or tropospheric propagation. Whatever the form of the propagation, it is certain that the signals, if there at all, will be weak in the extreme. The chance

By G. M. C. STONE (G3FZL)*
R.S.G.B. I.G.Y. Co-ordinator

of a two-way contact is more remote since the gear at W2CXY (see *Four Metres and Down*) is not likely to be reproduced by anyone in this country. However, while certain U.K. members have 1 kW authorization, a chance of a life-time exists. A copy of the W2CXY proposals will be sent to anyone interested in this project.

Aurora

A preliminary analysis of last year's reports of auroral propagation in the 2m band has now been made. The important fact to note is that the equinox is the optimum time for auroral conditions and all v.h.f. operators are warned to be on the lookout during March and April for possible openings. Typical signs to be noted are:

* 10 Liphook Crescent, Forest Hill, London, S.E.23.

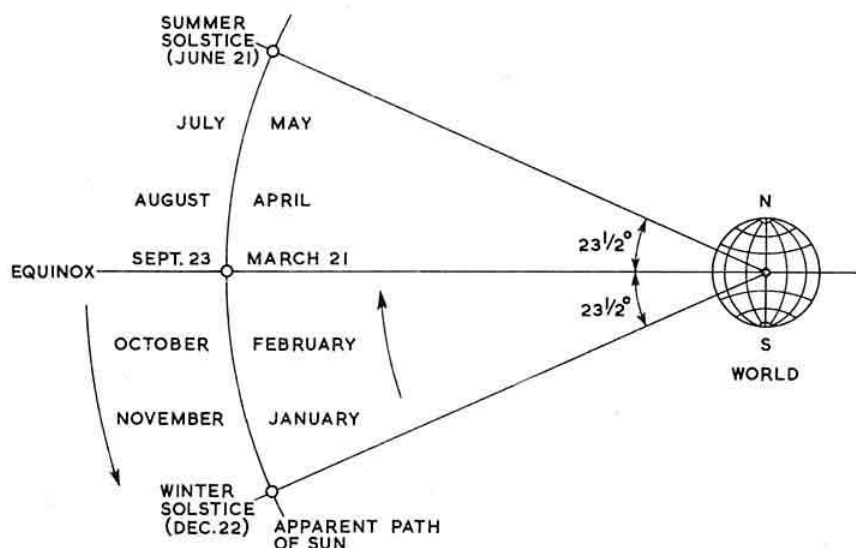


Fig. 1. Apparent path of the Sun relative to the Earth. Optimum time for aurora is about the equinox. The assessment of aurora during 1957 was as follows: July 1, good; July 31, fair; September 4, good; September 22, very good; September 23, good; September 29, excellent. The aurora of February 11, 1958, was considered fair.

- (i) Fade-out of trans-atlantic signals on 28 and 21 Mc/s and below.
- (ii) Better than average propagation on 1.8 and 3.5 Mc/s.
- (iii) Ringing type echoes on signals from 1.8 Mc/s upwards.
- (iv) Interference to television broadcasts in fringe areas.

With reference to Fig. 1, it will be seen that the occurrence of auroral conditions gradually built up towards the equinox with the best conditions on September 29, 1957. During spring the apparent movement of the Sun will be in a reverse direction and this suggests that March 14/15 may be the optimum time.

The first auroral opening this year occurred on the morning of February 11 from about 09.00 to 13.00 G.M.T. A very complete report has been received from PE1PL (who is reporting in the R.S.G.B. I.G.Y. scheme) and is detailed in *Four Metres and Down*.

Beacon Station GB3IGY

As many people know, Ken Ellis (G5KW) has been operating a v.h.f. beacon station on behalf of the R.S.G.B. since the start of the I.G.Y. The burden of running such a station is considerable and much credit is due to G5KW for his perseverance with a difficult undertaking. There have been many problems some of which have been solved and others which have necessitated a change in plans.

Originally the transmitter was a standard "Hamobile" driving a pair of 4-125As to some 300 watts input. The aerial was a single 6-over-6 J-Beam slot-fed Yagi about 30 ft. high. The transmitter was keyed by the automatic tape machine that was originally used for GB1RS. The first trouble experienced was due to the fact that the punched tape quickly became worn with the result that the sending gradually became distorted and eventually unintelligible. The particular machine had also been known to have this defect when used with GB1RS some years ago. Last October another machine and a perforator were obtained on loan from G6LX but the life of a tape is not very long due to the high humidity at G5KW. It is hoped that a convector heater placed below the machine will overcome the trouble.

The QTH of G5KW, although some 500 ft. above sea level, is very damp. Because of this there have been some power supply troubles, one of which resulted in a burnt-out high voltage transformer. On another occasion, while Ken himself was temporarily absent from the station, the blower motor cooling the 4-125As failed and one of these expensive

valves was destroyed. The transmitter was put on the air again with the last remaining 4-125A in place and continued to work for some two months before the filament of one valve failed. As a result the transmitter was once again off the air.

A meeting was held by the Co-ordinators to discuss the future of GB3IGY and it was agreed that the prime requirement of a beacon station was reliability rather than high power operation. As a result, GB3IGY was again put on the air running at a power of 25 watts.

At this time Relda Radio Ltd. kindly loaned to the Society a surplus 200 Mc/s radar transmitter which employed a pair of VT90s and looked a suitable basis for modification to a high power p.a. for the beacon station. Experiments are at present being conducted with this p.a. and it is hoped that high power operation of GB3IGY will be resumed in the near future. Another of these transmitters is being modified for station use at G3FZL with the VT90s replaced by a single 4X150A which it is planned to run at 250 watts input for I.G.Y. experiments.

In future, during an I.G.Y. Alert or Special World Interval, GB3IGY will be operational either continuously or for 10 minutes each hour from 8 a.m. to 11 p.m. Special arrangements are being made for periods when no I.G.Y. warning is in progress.

The U.S. Satellite "Explorer"

THE United States earth satellite *Explorer* was released on January 31 and is at present circling the earth in about 115 minutes at a speed of 18,000 miles per hour. The satellite orbit is elliptically inclined at an angle of 34° to the equator and has a maximum altitude of 1,587 miles and a minimum of 219 miles (compared with maxima of 560 miles and 1,062 miles for *Sputniks* I and II respectively).

It is considered possible that the *Explorer* may have encountered a tremendous solar flare about a week and a half after it was launched. This flare was the largest emitted by the Sun in the last century.

The satellite is bullet shaped and is about 80 in. long with a diameter of 6 in. It has a total weight of 30-8 lb.

Information gathered by the instruments in the satellite is transmitted continuously. The more powerful of the two transmitters operated on a frequency of 108 Mc/s with a power of 60 milliwatts and its signal was receivable by amateurs located near or under the orbit. The nearest that the *Explorer* comes to the British Isles is some 800 miles away and hence it is unlikely that signals could be received from it unless very specialized equipment were used. The higher power transmitter functioned for about two weeks before the batteries failed. A second transmitter operates on 108.3 Mc/s with a power of 10 milliwatts from batteries capable of sustaining operation for about 2 to 3 months. This signal will be very difficult to detect even for amateurs located under the orbit.—G. M. C. S.

Weather Forecasting

WEATHER forecasting in the Southern Hemisphere has already been improved as a result of the information gathered at the United States I.G.Y. station at the South Pole. Studies show that temperatures in Antarctica vary as much as 100° between places no more than 850 miles apart. Scientists at the South Pole have discovered that activity in the ionosphere above the Pole did not diminish during the Antarctic winter. The energy of the upper air remained, despite the absence of the Sun. The results of these studies may benefit radio transmission and reception.

The network of 40 I.G.Y. stations in Antarctica has made it possible to produce the Antarctic's first year-round comprehensive weather maps.

R.A.E.N. Notes and News

By E. ARNOLD MATTHEWS (G3FZW)*

Dagenham Railway Accident

NOW that full details are available it is possible to comment on the operation of the Essex Group in response to the "alert" signal from Essex Red Cross Headquarters. County Controller G8TL had two nets operational within an hour of receiving instructions from B.R.C.S., with G2BCX/M, G3HWQ/M, G3JGL/M and others (including G2OR/M who returned from Burnham-on-Crouch upon hearing G8TL's call) under control and ready to move. London Controller G3IIR maintained landline contact with G8TL. Later instructions from B.R.C.S. ordered the group to remain in readiness, which was done until midnight.

These bare details hide much effective planning. Speedy mobilisation proved the thoroughness of recently made plans. The county having been divided up, each A.C. had only to think about his own sector. Chelmsford group, more remote, was not alerted—thus forming a reserve to be used later if needed to reinforce or replace operators already committed. London/Essex liaison demonstrated again that R.A.E.N. is not composed of individual watertight units but is a widespread organization practising mutual aid between groups. One minor point of criticism—why did the net not move off the calling frequency when netting was completed?

Red Cross "School"

London Branch B.R.C.S. week-end school at High Leigh was addressed by G2ACD on January 26. A demonstration of R.A.E.N. portable and mobile operation was arranged by G8TL (control), G3CIM/M and G2OR/M, with assistance from G3ABB, who was also present. B.R.C.S. members were much impressed.

Upon returning to Danbury the same day G3ABB and G2ACD heard G2OR/M and G3GNQ/M obviously engaged in yet another demonstration—this time to the local S.J.A.B.!

Around the Groups

A new group is being formed in Bingley, Yorkshire. Prospective members are asked to contact D. M. Pratt (G3KEP) of 27 Woodlands Grove, Cottingley, Bingley, Yorkshire (Telephone No. Bingley 3699). Morpeth, Northumberland, B.R.C.S. wish to establish contact with the local R.A.E.N. This will necessitate the formation of a group, and prospective members are asked to contact I. Pryde (G3LGU), "Ashleigh," Ellington, Morpeth.

Northern Ireland County Controller, G13BHK, is maintaining close liaison with B.R.C.S., and hopes to find a R.A.E.N. member who will be able to work regularly across to England to extend the Western Trunk Route. This route is now nearly complete, and G2AO (Malvern) has undertaken to act as route manager.

Changes of Address

A few cases have occurred where members have changed address without notifying the Hon. Secretary, or without informing R.S.G.B. Headquarters that they are R.A.E.N. members. Members who change their address are asked to notify the Hon. Secretary, R.A.E.N. Committee—or insert a note marked "For the attention of R.A.E.N. Records" in any notification to Headquarters.

* 1 Shortbatts Lane, Lichfield, Staffs.

Cambridge & District Model Engineering Exhibition
CAMBRIDGE and District Amateur Radio Society will man a stand in the form of an Amateur Radio station at the Cambridge and District Model Engineering Society's Exhibition to be held in the University Examination Hall, Rene's Street, Cambridge, from March 24 to 29. The Exhibition will be open daily from 10 a.m. to 10 p.m.

THE MONTH

DATE TIME	FREQ.	STATION CALLED	CALLED BY	STATION HEARD OR WORKED			IF QSO RESULTED			REMARKS
				R	S	T	MY SIGS.	TIME OF ENDING QSO		

BY S. A. HERBERT (G3ATU)*

ONCE again we are happy to report that the bands have been in excellent form, with a variety of DX available. These days of course there is always plenty to occupy the attention of those of us who are just starting on that toughest of tasks, the climb up the DX ladder, but the interesting thing is the appearance in recent weeks of calls in what we might describe as the "super-rare" category—the kind which attract the 200 and 250 plus men. Quite a few of these rare ones have been active—as usual, mostly on 20m—and it will be interesting to see how 1958 compares with last year, which was about the best twelve months for DX since the last war. Your commentator hereby sticks out his neck and prophesies that 1958 will beat them all.

The B.E.R.U. Contest was as popular as ever and added to the fun, although conditions on the 80m and 40m bands might have been better. But more of B.E.R.U. later. Now on with the month's doings, starting with the news from distant parts.

News from Far and Wide

Christmas Is. (VR3). G3EMY finally arrived on the island after delays en route and is now licensed as VR3O. Operation is allowed only on 14 and 21 Mc/s—where the frequencies used are the same as in the U.K., and also in the range 28.8 to 30 Mc/s only, which makes the 10m going tough, even with an exotic call-sign. So far, no Europeans have been heard either on 28 or 21 Mc/s, but on 14 c.w. they do come in. The best time seems to be 15.00 to 17.00 G.M.T. and the period 04.00 to 07.00 G.M.T. is also useful. Of the few Gs heard to date, all but one were on c.w. The exception—no guesses required—was G2PU1. And for those lucky enough to contact VR3O, the address is simply: R. Moreton, VR3O, Officers' Mess, H.Q., Grapple, B.F.P.O. 170.

Christmas Is. (ZC3). Activity from this sought-after spot has been nil for too long. Recently, however, rumours began to indicate that ZC3AC was back on the air and these were confirmed by a snip in the M.A.R.T.S. Journal, *The Malayan Radio Amateur*. Final confirmation comes from your commentator, who counts himself very lucky even to have heard the ZC3, who was on something like 14110 kc/s c.w., working Ws at 14.00 G.M.T. There he was, at an S5 or so, but on that frequency the obvious happened and he vanished under a round-table of 11s on phone. This particular net was still in full cry one hour later and for all G3ATU knows, they're still at it; his blood-pressure was reaching dangerous heights and he fled muttering from the shack.

Viet Nam: Ex-W3ZA, now living in Saigon, was officially licensed in January as XV5A and while the original permit was valid for only 90 days, permanent operating authority is expected. Rundy operates mainly on 14305 kc/s, s.s.b. at 00.45 to 01.15 and 10.00 to 11.00 and on 14030/080 kc/s c.w. at 11.00 to 11.45 G.M.T. His address, for use by stations outside North America, is L. M. Rundlett, Michigan State University, 137, Duong Pasteur, Saigon, Viet Nam.

Labrador: The Goose Bay A.R.C. will hold a QSO Party on all bands starting at 00.00Z, April 4 and ending 24.00Z on April 10. A1, A3 or both may be used and stations outside

Canada and the U.S.A. should submit logs giving the date, time and frequency of four VO2s worked to Jack Willis (VO2NA), Goose Bay, who will issue successful applicants with the W.A.G. Certificate.

Sudan: ST2AR (G4AR) is on the air again and causing a pile-up on 14 c.w. ST2AC is the only other ST2 and he appears infrequently, so that ST2AR takes the full force of the attack. He confirms that a short call—off his frequency—is the thing. The long-call zero-beat experts have had it. Eric also says that if people who QSL direct would enclose I.R.C.s or mint Sudan stamps, they would get his card in a few days. Finally, ST2AR points out that the Sudan became independent on January 1, 1956 and so no longer helps towards Empire awards.

Kuwait: Bill Burgess (ex-MP4KAC) sends a list of the newly-issued 9K2 calls which replace the previous MP4K series. Bill now signs 9K2AZ and the other 9K2s are 'AH, 'AJ, 'AK, 'AM, 'AN, 'AP, 'AQ and 'AX. G3ISX (Welling) reveals that 9K2AQ is Ron Crowther (G3FJU), who will be on c.w. only until May, when he returns home. He will keep an ear on 160m also, but static will probably win in the end. G3ISX remarks that QSLs will be sent, unless a card is owing to G3FJU!

Mauritius via Rodrigues Is.: G3CHJ (Hartlepool) has been working VQ8AQ, who joined VQ8AS for a short time on Rodrigues. Derek Wilson (VQ8AQ) is actually a native of Hartlepool and a near neighbour of G3CHJ, who passes the welcome news that Derek will by now be on Mauritius, where he will spend some sixteen months, so it seems that at last there is a real chance of an active and efficient VQ9.

Malayan Area: Des Shepherd (VS1HQ) sheds light on the Maldives affair. VS1HJ did make the trip, but he was



This is the operating position at VS1HU, station of the Kranji Amateur Radio Club, Singapore. Equipment visible includes a TCS transmitter-receiver for 7 Mc/s and a CR100 receiver with "S" meter standing on top. The main transmitter, running 100 watts to an 813, is situated out of the picture to the left. The aerials are a 300 ft. long wire and a 7 Mc/s dipole. The Kranji Club was founded by Mike Matthews (G3JFF).

*Roker House, St. George's Terrace, Roker, Sunderland.

so bound in red tape that he never got on the air. Then VS1HX arrived, complete with the necessary permission, only to have his transmitter go phut! The trip is still on ... later. Des suggests 21 Mc/s for JT1AA QSOs. He uses the band from 08.30 G.M.T. and no pile-up. XV5A was worked and has QSL'd and XW8AI is on and is quite happy to get T3 reports! The Kranji Club (VS1HU) goes from strength to strength and new ones on 14 Mc/s for them were VK9JF (Cocos), '9AT (New Guinea), ZK2AD, CR9AH, FO8AC, CR10AA, JT1AA, YJ1DL, KH6CEJ/KJ6, ZC3AC, ZM6AS and VK0TC (Macquarie), while 7 Mc/s yielded VQ8AS, VU2RM, CR6, ZD2CKH, FE8AH, DU7SV and other lesser fry! The VS1HU W.A.S. hangs fire only for lack of Nebraska and North and South Dakota. W0s, please note! G3FPK passed late news that VS1HU had just had QSLs from CR9AH, JT1AA and XW8AI and had now worked 152C. Good going. Ex-G3DEW is now VS2HC and is on 14.21 and 28 Mc/s phone, with a beam towards the U.K.

U.S.A.: Roy Waite (Ballston Spa, N.Y.) reports KL7FLA to be an I.G.Y. station on a two miles square ice island. VPORT was the call used by W6ITH when operating from Anguilla Is., B.W.I. Reg is checking with the A.R.R.L. as to country status. PY1CK/O, P.O. Box 5292, Rio de Janeiro, says the A.R.R.L. will recognize Fernando do Noronha for DXCC.

British Guiana: B.E.R.S.216 (395, Mara St., McKenzie) heard G, DL and FA on 7 Mc/s, but bad conditions made full calls difficult to copy. However, GD6IA, G8LG, HH5JC, TG9AB, PX1YR and a KC6 were logged on 21 Mc/s A3. B.E.R.S.216 would like to correspond with other radio enthusiasts.

Sweden: LA6CF (Särpsborg) wants to make WAE2 before he goes to sea in April and from March 29 to April 4 he will be on 3525 kc/s (02.00 to 03.00 and 21.00 to 22.00), 7025 (04.00 to 05.00, 19.00 to 20.00), 14025 (06.00 to 07.00, 17.00 to 18.00), 21025 (09.00 to 10.00, 15.00 to 16.00) and on 28075 (10.00 to 11.00) to make WAE QSOs.

Gambia: According to newly licensed F. Buckley, ZD3F (Cable & Wireless Ltd., Bathurst) there are now three active amateur stations in Gambia. The other two are ZD3E, mostly on 28 Mc/s phone and ZD3G on c.w. only all bands. ZD3F works phone on 14, 21 and 28 Mc/s.

News from Nearer Home

B.E.R.U.: G6CJ (Stoke Poges), for many years an enthusiastic and expert supporter of the contest, notes that this year the start was poor. Only 3.5 and 7 Mc/s were open and they were noisy (though WVV was sending "N7"), but at 05.00, 14 Mc/s opened and things began to hum with 21 Mc/s. On Sunday, activity was high and VEs rolled in. 28 Mc/s was open but mainly for VE and Africa; 21 Mc/s was world-wide, while 14 Mc/s was good and Dud pulled ZC5AL out of the ruck and raised VE7 and '8 on 7 Mc/s, plus South Dakota on 21 as a side-line! He heard no B.W.I. stations and little from VK or ZS. 9G1BQ was calling on 3.5, but they could not quite make it. Dud's bet for the Senior trophy is ZS6DL (ex-ZS2A), with 600 QSOs (if he sends a log), or the stalwart VE3KE, while ZC4IP should head the 25 watt men.

G3ANV (West Byfleet) says QST has it that FY7YF will QSL only if a s.a.e. is enclosed with your card, which must be sent direct. G3ANV bought a 1947 set of French Guiana mint Victory stamps—the latest he could find—and the decorative envelope duly returned, complete with QSL. Ian reports a major tragedy when he finally hooked JT1AA, who gave him RST589, but would keep addressing him as G3AGV, so it looks as though poor old G3ANV will have to do it again before a QSL is forthcoming!

Mr. R. T. Glynn, G3AKZ, "Oberon," Kaye Lane, near Cheltenham, Glos, would be glad to hear from any U.K.

members who logged signals from VP5RG between March 24 and April 21, 1957. Between those dates Mr. Glynn was operating a B2 set from various sites in Jamaica on a frequency of 14,028 kc/s.

The Ten Metre Band

Business is brisk as usual and G3JWQ (Derby) forsook v.h.f. to try his 3-element beam and 807, which pulled in VK9LE (Cocos), AP5T, CR7LU, VP1OLY, '2GC, VP8AQ, VQ6ST, 9K2AX, plus 36 W States. Tony has a regular sked with ZD3E and '3E, '3F and '3BFC were all in one recent QSO. A sked with ZD3G would complete the picture!

G2FNS (Manchester) worked VK4DD (Townsville), who would like QSOs with Accrington, his home town, on Sundays, when he can be heard well on phone. G3FPK (London, E.10) had phone clashes with 9G1CH and UQ2AD, while B.E.R.U. yielded MP4B, VQ3, '6, ZD2 and '3—not bad for a low dipole and a doubling p.a.

A.1376 (Winscombe) logged Ghana's 9G1BV, ZD3E and ZS4PB, while **B.R.S.21399** (Bromley) reports 9G1CI, OY2A, VS9AD and VP8AC on A3. **B.R.S.20135** (Newport, I.O.W.) points the finger of scorn at the pin-wits who switch on a fat carrier (generally right on top of a rare station) and then whistle or blow until finally—off goes the carrier for good; no call-sign is ever given, of course. Bert left them to it and heard A3 from KR6SO, '6BH (11.00) and ZL2BX.

B.R.S.3003 (Battle) is welcomed as an OT of pre-war days (he was a member of the now defunct 28 Mc/s Propagation Group) and as a phone enthusiast. His working life is tied up with c.w., so listening to phone makes a change! Four feet of wire pulled in FE8AH (15.30), VP2LB (St. Lucia), VK9LE (12.00), VP8AQ (15.00), CR4AS, VU2CQ (first heard in 1938) and PY1CK/O. **B.R.S.2292** (Hounslow), who also has the years to guide him, mentions ZS3AG, VP5RF, '7NF and 9K2AJ on A3 and CE3AG, VU2MD, VE7EH, VS9AD, VQ6LQ, VK4EL (14.30) on c.w. When the QRM is bad on 28 Mc/s, Charles tunes 27 Mc/s and there he logged W5ZKJ, '7ZVP and KP4AEB. The W7 was trying a "CQ cross-band," but to no avail. **B.R.S. 20317** (Bromley) heard a brand new one in CE0AG (100-16.30) on c.w., plus two more—VP5BE (Caymans) and VP8AQ on phone. **B.R.S.20106** (Pett's Wood) missed ZS8I on phone, but he did hear KG6AGO, VP8AQ (15.30), VQ6ST and VK9DB (11.00), then he pulled in JA3AB, FY7YC (10.30) and VP7NM on the key.

Fifteen Metres News

G3FPK uses a 68 ft. 10 in. centre-fed aerial with success on the band and B.E.R.U. meant MP4B, VE7, '8, VK2, '3, '5, '6, VQ2, '3, ZD3, ZE, ZL and ZS for him. ZS6DL was battling away at 50 w.p.m. (No wonder he made 600 QSOs!). Norman also worked W7TPE (Montana), YN1AA and VU2JA for a band total of 52, so far.

A.1491 (London, N.13) used a BC set to log PY1CK/O, VU2, ZL and OQ5BT and he heard W1FH and CN8MM discussing YO6BN's trip to Albania in May—perhaps! **A.1426** (Bristol) logged PY1CK/O and HH4MV, while **B.R.S.21279** (Birmingham) heard the PY1/O say he counted as a new one. **A.1376** heard new ones ZL1TJ and VQ3DQ (ex-VQ5DQ) and **B.R.S.21399** got ZD6RM and VP8AQ on A3.

B.R.S.20135 heard phone from VP4MM, VP1BS, XQ8AG (Chile), OY5S and VS9AE (20.30). **B.R.S.2292** lists JT1AA, ZD3G, VQ2RG, '3SS, ET2US on A1 and he heard FF8AP, VP5BL, ZD3BFC, ZL, etc. on A3. New ones for **B.R.S.20317** were YK1AT and ZD3G and Bill also heard FB8BW, UA0SJ, VK9JF and old JT1—c.w.

Twenty Metres DX News

The band of the rare ones is as good as ever and G3FPK (3A2BT) worked HA5AM/ZA, who was RST5 10 9! But

Norman's big moment was when he worked his first 3A2! 3A2CD obliged. He is CN8FQ/W4UFQ and he was operating from the same hotel that Norman used when he signed 3A2BT.

B.R.S.20104 (South Harrow) logged the 3A2 and other new ones on c.w. were SUIIM, ZD3G, HA5AM/ZA, VE8ME (Baffin Is.), XE1YF, ST2AR, LA2JE/P (Svalbard), UA0KU and VK0RO, while Goff hears that VR2AP may be in VR4 and CR10 in March. YJ1DL was S7 in Sweden recently. '20104 has a QSL from ZK2AD and he says a B.R.S. friend has 225C/39Z confirmed! **B.R.S.21279** heard HL9KT and CR8AC on c.w. and HVICN, HE9LAC, I5FL, I5ACD, FP8AP (20.00—speaking French), VK0RR, all in the evenings, plus VK9AD in the morning. Martin hears that JT1AA's XYL is operating as JT1XL and that PY7SC/0 will be active circa April 3. **A.1376** heard new ones on A3 in KG1EE (Greenland) and CT3AB and he dug VK4JB (20.00) from the 14th layer.

DX of the Month

ZC3AC. 14110 kc/s approximately 14.00 G.M.T.
VK0AS (Mawson). 14100 kc/s phone. 18.00 G.M.T.
VQ8AS (Rodrigues Is.). 14013 kc/s c.w. 17.30 G.M.T.
KP6AL. 14030 kc/s c.w. 16.00 G.M.T.

B.R.S.21399 logged AP2U, YK1AK and 3A2BF on A3 and B.R.S.21035 mentions VS9AJ (19.30), VK5AB, '5MS (20.00) and PK5CK (20.30), who seems somewhat dubious. **B.R.S.2292** logged masses of c.w. DX, such as CT2BO, EA6AZ, ZK2AR (22.00—ST2AR and UN1AR were on the band at the same time!), YS10 and ZS3B and he logged W7GC (Nevada) on phone. **B.R.S.20317**, up to 239C, was delighted to log AC5PN (18.30, '056) and HA5AM/ZA, with ZS2MI (17.20, '062), CR5AC (19.30, '009), FB8CD, FK8AL (08.30), FO8AB, '8AG, HS1C (18.50, '018), KW6CM (10.15, '068), VK0KT (19.00), '0RO (Mawson), XW8AI and ZC5AL (17.15, '010) to complete quite a list.

B.R.S.20106 also continued his good work. Norman's phone list shows YS1MS, T12AB, OA1K, VP2KM and '2AB, while the c.w. tally includes ZK1AU (07.00), FG7XC (20.00), XZ2TH (14.00), ZD8JP (19.50), FB8YY, XW8AI (14.40), VP8CW (01.30 where, we wonder), XE1RY (06.00) and T19MA whose "CQ" was answered unsuccessfully by a DL—and by G3ATU. He vanished under the same phone crew who were blanketing ZC3AC! HC1FG was in phone contact with FO8AB and VK9AD (both inaudible at 06.00) and it appears that FK8AS has had a modulator breakdown.

News of the other Bands

Still with **B.R.S.20106**, who searched forty c.w. for FB8YK (23.17) whose "CQ" was answered by G and YU, to no avail. Probably someone with a quaint sense of humour. However, VO1DX, '1B and ZD3G are all right. Norman heard W1, '2 and K2 on seventy-five phone, while Top Band DX was from W1BB/1, who was S7/8 and W8GDQ (S5), both on February 2. VE3EK was heard at 06.20 on February 9 and YU3EU was logged.

G3FPK is one who thinks that not enough use was made of forty metres during B.E.R.U. ZD3G and MP4s were good signals around 21.00, but ZC4, VE and VO were about the only other DX on the band.

B.R.S.2292 logged ZL1HY on forty, with ZC4, ZB1, UA9 and some PYs, but on one-sixty, Charles heard several DLs and, last December, he logged UB5FJ up there.

B.R.S.20317 found DX around, with F9QV/FC, MP4BBE, VQ4KPB, ZD3G, 9G1BQ and VE8 on forty, while he pulled in HE9LAC, ZC4IP, OY7ML and 4X4JE on eighty.

The Boy Scout International Jamboree-on-the-Air Gilwell Park, 1958

IN connection with the forthcoming Boy Scout Jamboree to be held at Gilwell Park, Essex during the week-end of May 10-11, 1958, the Wanstead, Woodford & District Radio Club have been asked to instal and operate an Amateur Radio Station. By arrangement with the G.P.O. this station has been licensed under the call-sign GB3BP and will be on the air continuously throughout the Jamboree.

There will be two operating positions available, one on 160m and 80m, and the other for the higher frequency bands, and in order to minimise congestion it is proposed that G calls be confined to the 160m and 80m transmissions, and all other calls to the remaining h.f. bands. It is hoped that many visitors will come along and see the station at work. Further details may be obtained from the Honorary Organiser, The Boy Scout International Jamboree-on-the-Air, 965 Oxford Road, Tilehurst-on-Thames, Reading, Berks, or from the Organizing Secretary, G3AAJ.

G3FZW wins Junior Institution of Engineers Silver Medal

THE Awards Committee of the Junior Institution of Engineers have awarded the Midland Section Silver Medal for the 1957/8 session to Mr. E. Arnold Matthews for his paper "British Amateur Radio in the Past Decade." Mr. Matthews is Honorary Secretary, R.A.E.N. Committee and until recently was C.R. for Staffordshire.

His paper was published in the February 1958 issue of the Journal of the J.I.E.

A Two Meter Mobile/Portable Transmitter-Receiver

IN Fig. 3 of the above article on page 364, R.S.G.B. BULLETIN January 1958, pin 4 of V4 should have been shown connected to the terminal of S2 marked "OFF."

East Midlands Regional Meeting

SUNDAY, APRIL 20, 1958

AT THE

**MECHANICS INSTITUTION,
NORTH CHURCH STREET
(Opposite Victoria Station)
NOTTINGHAM**

Programme

Assemble	-	-	-	-	1.30 p.m.
Meeting	-	-	-	-	2.15 p.m.
Tea	-	-	-	-	4.30 p.m.
Lecture and Raffle Period	-	-	-	-	5.30 p.m.

Tickets, price 9/6 per head (which includes tea), available from the Region 4 Representative, Dr. E. S. G. K. Vance (G8SA), 43 Blackwell Road, Huthwaite, Sutton-in-Ashfield, Notts, and the Notts C.R., Mr. A. Walmsley (G2HIO), Park House, Cinderhill Road, Cinderhill, Nottingham, not later than April 15. Council will be represented by Messrs. W. R. Metcalfe (G3DQ), A. O. Milne (G2MI) and J. A. Rouse (G2AHL).

FOUR METRES



AND DOWN

By F. G. LAMBETH (G2AIW)*

Transatlantic Tests on 144 Mc/s—India and Switzerland on 50 Mc/s—Auroral Propagation—London U.H.F. Group Annual Dinner

CONTACTS across the Atlantic on 144 Mc/s have been the dream of v.h.f. operators for many years. Now, as reported in *I.G.Y. News* elsewhere in this issue, W2CXY has put forward a plan in connection with the International Geophysical Year which may well result in that dream becoming a reality. As might be expected, the plan bears a striking resemblance to that employed by KH6UK and W6NLZ which culminated in their setting up the world record for the band of nearly 2,600 miles.

W2CXY will operate on 14-095 Mc/s and 144-01 Mc/s simultaneously transmitting "IGY TEST IGY TEST IGY TEST DUAL 14095/144010 DE W2CXY" at about 20 w.p.m. for five minutes commencing at 13.30, 19.00 and 03.00 G.M.T. (08.30, 14.00 and 22.00 E.S.T.) on Saturdays and Sundays and at 23.30 G.M.T. (18.30 E.S.T.) Mondays to Fridays. The five-minute transmission period will alternate with similar listening periods on both bands.

Equipment to be used by W2CXY includes a Collins KWS-1K running 1 kW to a ground plane on 14 Mc/s. For 144 Mc/s, the transmitter comprises a modified SCR522 driving push-pull 4-125As also running 1 kW input and feeding a 40-element array consisting of four 16 ft. long Yagis spaced 12 ft. by 12 ft. on a 70 ft. tower. A new co-axial final using an Eimac 4CX1000A tunable from 60 to 450 Mc/s will be completed soon. The station is 350 ft. above sea level with a relatively clear path to the Atlantic 20 miles north-east of Chatham, New Jersey.

Further information on this very interesting project may be obtained from G3FZL.

HB and VU on 50 Mc/s

VU2CQ (Bombay) and VU2EJ (Poona) are both now active on 50 Mc/s. At VU2EJ the equipment consists of a crystal controlled converter, a transmitter with an 807 in the final and a beam mounted on the same boom as the 28 Mc/s quad. According to *PRP News*, VU2EJ will listen and send CQs from 11.45 to 12.00 G.M.T. daily and from 12.00 to 12.15 G.M.T. will search the band for replies. At 14.30 G.M.T. he will be on 28 Mc/s looking for stations to check with on 50 Mc/s.

Swiss amateurs have been given permission to operate in the 50-54 Mc/s band when there are no TV transmissions, i.e., on weekdays from 22.00 to 14.00 G.M.T. Sunday periods are somewhat irregular. Maximum power input on this band and on 71 to 71.5 Mc/s is limited to 50 watts.

G2BVN is listening for VU2EJ who transmits on 50-216 Mc/s at 08.30-08.35 G.M.T. and half-hourly thereafter until 10.30 G.M.T. on Saturdays and Sundays. HB9CZ is also carrying out tests with VU2EJ. VU2CQ has been hearing B.B.C. TV sound.

Prospects for contacts from India to Australia and South Africa by trans-equatorial scatter look promising.

Aurora Report from PE1PL

PE1PL observed aurora on February 11 at 09.00 and 13.00 G.M.T. G2NY was called on sked from 09.00/09.05,

PE1PL beaming 300°. G2NY's signals were reported as RST529 with slow QSB, accompanied by a hollow ring, sounding like the scatter signals which are usually received. Alternatively, however, the G2NY signals sounded like hiss-notes. PE1PL was reported by G2NY as being 5 3/1 9 mostly 539. Both beams were then turned north-west, signals both ways becoming RST554, almost steady but with a solid strong hiss-note like a spark transmitter.

PE1PL then called G6FO, who reported PE1PL's signals 445 with his beam north-west. With G6FO's beam east the report was 578, but rough. G6FO's signals were reported as 5 2/3 4, steady, solid hiss-note. Both stations were then beaming north-west. G6FO next turned his beam eastwards and PE1PL fired due west. These are normal directions for tropospheric working. With these arrangements, G6FO's signals were slowly varying between 0.15 and 0.5 μ V, but mainly 0.3 μ V, with a clear note although the usual hollow ring was present.

At 09.45 G.M.T. a continuous carrier with hollow ring was heard on 142.25 Mc/s, the signal strength being approximately 0.05 μ V with the beam north-west; the signals gradually built up to 0.2 μ V with hiss. This was believed to be the Dresden TV station. From 10.35 to 10.44 G3CZZ (Cornwall) was called in vain.

At 12.40 DJ1XX (Osnabruck) was contacted by tropospheric reflection, DJ1XX's signals being 0.4 to 1 μ V and PE1PL RST59. By aurora, with both beams pointed north-east, signals strengths at both ends were RST554 with hiss; only c.w. was possible. At 13.00 Dresden TV station produced a direct scintillation signal of about 0.5 μ V with PE1PL's beam at 105° to 110° and with the beam north-east, an auroral signal of 0.2 μ V steady. From 13.00/13.10, OZ7IGY came through with an auroral signal of about 0.15 μ V which faded slowly and disappeared.

G3FZL suggests that members make tape recordings of auroral contacts for the I.G.Y. project.

London U.H.F. Group Dinner

A record number of 54 members and friends attended the annual dinner of the London U.H.F. Group held at the Bedford Corner Hotel on February 7. Phil Thorogood (G4KD) was in the chair. After an excellent dinner, there was an interesting talk from Dr. Smith Rose covering the I.G.Y. in general, followed by Geoff Stone (G3FZL) and Charlie Newton (G2FKZ) who gave a résumé of the progress made by amateurs so far, while D. N. Corfield (G5CD) gave an amusing discourse on radiation effects. Among those present were G3BZG, G2UJ, G2WJ, G5BD, G2AHL and many other well known v.h.f./u.h.f. operators. B.E.R.S.920 from South Africa was a welcome visitor.

Solar Noise on Six Metres

G4LX (Newcastle) reports that on February 9 at 14.00 G.M.T. it was noticed that very loud bursts of solar noise were increasing in intensity on the 50 Mc/s band. At the same time, the M.U.F. rose above 50 Mc/s and signals were heard from across the Atlantic by F2 reflection. Signals were

* 21 Bridge Way, Whitton, Twickenham, Middlesex

not strong but were T9. They were *not* coming from the north, and were not auroral. At 14.32 G.M.T. they reached their peak, and W8HXT was identified on phone. The bursts of solar noise continued till 16.30 G.M.T. The M.U.F. fell back after 14.32 and by 15.00 no more carriers were heard.

On February 10 at 13.00 G.M.T. the 50 Mc/s band was monitored, and the British TV signals were found to be attenuated. The aurora disturbance was already affecting them. From 17.00 to 18.15 G.M.T. the band was monitored, with the aerial north, but no signals were heard.

During the period October to January, 61 different W and VE stations were contacted cross-band. The 50 Mc/s band generally opened up at 13.15 G.M.T. in Newcastle. The earliest QSO made was with W1GKE at 12.59 on November 5, 1957. The band generally closed by 17.00 G.M.T. The first station to be heard each day was usually VE10D.

G4LX thinks 52.5 Mc/s will be a difficult frequency for general I.G.Y. observations, as it is very near the Caen TV frequency (52.4 Mc/s 100 kW) and the Saarbrücken TV station on 52.4 Mc/s. On the reception side, 52.5 Mc/s is troubled by all the local TV receiver oscillators, whilst there are no television signals on 50 Mc/s.

G3FXB (Southwick) worked crossband from 10m from October 27 to January 15. During that time 105 QSO's were made with 77 stations in 20 states. The only call area missed was W6. (Signals were heard but no QSO resulted.) Many more could have been worked but for pressure of time. The equipment was a modified RF26 into a SX24 with the 24 ft. driven element of the G4ZU Minibeam used as 6m receiving aerial. This aerial proved superior to a three-element wire beam previously used.

B.R.S. 21476 (Penarth, Glam.) has noticed three significant things about this band recently: (i) Reception of the U.S.A. Channel 2 video on 55.25 Mc/s on January 19; in spite of very severe video QRM on the same channel the signal was periodically locked on a monitor receiver modified for 525 and 625 lines. The M.U.F. was then at least 56 Mc/s, a new "high." Some of the American amateur stations gave enormous signal strengths on January 19 well in excess of S9. (ii) The 50 Mc/s band seemed to completely fold up after the end of January. (iii) The sound channel (41.25 Mc/s) of the Caen TV station is receivable.

G2BVN (Romford) found conditions on 6m during the latter half of January fair, with good days on the 15th, 17th and 22nd. The 26th was outstanding and W and VE signals were very strong, with a particularly good path to W5 around 16.00 G.M.T. The last identifiable W signals on this band were heard on February 1, although weak carriers have been heard on odd occasions since that date. This is more or less in accordance with the propagation predictions. It is expected that signals over the north-south path will be heard again during the next few weeks.

G3EHY (Banwell) has had three months of extensive activity on 6m and on some days found the band as easy to work and quite as active as 10m. It has indeed not been uncommon to find several stations on 6m badly affected by other stations on the same frequencies. The M.U.F. is tending to decline although still hovering around 45 to 47 Mc/s on many occasions. It would be a mistake however to assume that the east-west path has now completely closed for the season for 6/10m communication, and although less numerous than earlier, U.S. stations were worked every day up to the end of January. Hopes of working into February were realized, and two solid contacts were made with W1GKE and W1FCP on the afternoon of February 1. During the first 14 days of February, seven were suitable for working, and stations in W1, 2, 3, 4 and 8 were both heard and worked. The last solid QSO was with W4UCH (Virginia) on February 11. These February openings were never of more than 8 to 10 minutes duration, sometimes less. Usually only one but sometimes two were recorded per day

and never later than 16.00 G.M.T. During the last two months every U.S. call area except W6 was worked cross-band. The best DX heard was OA7Y. Skeds have been arranged with FF8AP (Dakar), ZS6W and ZS6KO. ZS6W has promised to have inserted in their local bulletin the news that G3EHY and other Gs will be looking for 6m signals from South Africa during the afternoon from now on. G3EHY's receiver for 50 Mc/s is a converter with two r.f. stages feeding into an Eddystone S640. The aerial is a two-element rotary fed with 50 ohms co-ax.

Four Metres

G5MR (Hythe, Kent) says there are signs of improving conditions as the days get longer. **G3GDR** (Watford) was worked on February 2 for the first time on the band. On February 16 **G6NB** was heard again and called without success. The skeds with France are being maintained. Whilst listening on 4m at around noon on February 4 and 5, loud bursts of noise were received on the Sun's bearing at frequent intervals; some of these reached S6 over the ambient noise level.

G3EHY (Banwell) has been carrying out many 4m tests with U.S.A. during his 6m work, but without any positive success. Stations in the W1/4 areas were very enthusiastic, but as no station was really properly set up for the band (no resonant beam aerials, no specially tuned receivers) there was not a great hope. Even on local working a three element beam makes a truly tremendous difference on strength of reception. If **W1HDQ** can persuade some of his operators to develop gear for 70 Mc/s as efficient as that which they already have for 50 Mc/s we shall all be grateful.

GM3GUJ (Saltcoats, Ayrshire) reports that he and **GM3LLP** (West Kilbride) are active on 4m, using a Transmitter Type 440B (thanks to the magnificent response to his *Can You Help?* notice in a recent BULLETIN). Others due on the band soon are **GM2FNF** (Island of Arran), **GM3JIG** (West Kilbride) and **GM3EZO** (Buckie, Banffshire). Skeds are wanted with Northern Ireland or Northern England stations.

Two Metres

B.R.S. 19162 (Dewsbury) logged **G3FAN** (I.O.W.) on February 3, an unusual occurrence because his signals are rarely heard. Otherwise conditions have been "thin." Nothing was noticed after the aurora of February 10. **B.R.S. 20133** (Melton Mowbray) is pleased to think that 2m men are gradually coming out of hibernation, and hoped for better things during the open Contest on March 1 and 2. **G5HB** borrowed the five-element Yagi in preparation for going out/P then!

G8VZ (Princes Risborough) found conditions and activity generally poor, although fair conditions were noticed on January 31 and February 1. Stations to the north-west came through with quite good strength with fairly deep fading. On February 2, **G5DW** (Ashcott) was worked at S9, a very nice steady signal, and later **G3ENY** (19.40 G.M.T.) and **G3JZG** (19.52) but the latter had deep QSB. It appeared that the path to the west was good, but lack of activity made a further check impossible. On February 3, signals over 50 miles to the north, north-west and south were worked at good strengths with little fading. On February 6, **G8VZ** started to work skeds as follows: **G3JWQ** (Ripley Derbys.) at 19.20, **G3ENY** (Bridgnorth) at 19.30 and **G3KHA** (Bristol) at 19.45 every evening except Tuesday in order to check over the paths.

G3DVQ (Purley, A.R. for the Coulsdon area, reports that there is a Group Net in operation on 145.8 Mc/s on Wednesday evenings at 22.00 G.M.T. The frequency was adopted to avoid QRM in the more densely populated part of the band. Visitors are invited after the usual Group business is disposed of. **G5BD** (Mablethorpe) joined in on one occasion! Coulsdon hope that other members will be attracted to build gear and join the Net.

G2ANT heard PEIPL and G2NY via both tropospheric and aurora on February 11. G3MDZ and G3MEV of Maidenhead are both on 2m and looking for QSOs.

G3JWQ (Ripley, Derbys.) reports a not very lively period, apart from the odd opening. There have however now been 368 contacts with G8VZ. The total number of stations worked is now 370 in 48 counties and 12 countries.

G5DW (Ashcott) specially mentions a "nice opening" on February 2 and 3. Scores of stations were then coming in at S9+ and a difficult decision had to be made "to put off the ragchew until another day" and work the QSOs while that was possible.

G2HDR (Bristol) also benefited from February 3 when G3JZG and G6XM were worked. Two newcomers have been worked for South Wales; GW3HAW and GW3MFY; by the way, it is certainly good to see newly licensed stations coming on to 145 Mc/s.

FOURTH INTERNATIONAL V.H.F./U.H.F. CONVENTION
 Prince of Wales Hotel, London
MAY 17th, 1958
 Organized by the R.S.G.B. and the London U.H.F. Group
FULL DETAILS NEXT MONTH

News from Scotland

GM6WL (Glasgow) found the period fairly quiet but there was a reasonable amount of local activity on both 2m and 70cm. In spite of many alerts for possible aurora, GM6WL regrets there have been no auroral radio phenomena to report since the big openings in September last. A recurrence is hoped for around the Spring equinox.

GM6WL's sked with G15AJ (Thursdays and Saturdays) continues and contact of some kind is seldom missed, although conditions are sometimes poor. G15AJ has opened a sked with G2NY which is almost 100 per cent reliable. Signals are much the same but there appears to be less fading on the Preston path. Glasgow to Bangor usually produces plenty of QSB. G15AJ mentions that G13GQB has finished a new transmitter and will be on again any time now. Recently GM3GAB (Rutherglen, near Glasgow) was heard having good QSOs with GM6SR and GM3FGJ (both in Edinburgh), signals being S9 at Rutherglen. This is very encouraging, as hitherto GM3DDE was practically the only station heard from the Edinburgh area.

GM6XW (Larbert) is steadily improving his 70cm crystal converter, and at a recent V.H.F. Group meeting at GM6ZV (Clarkston, Glasgow) all those present were able to hear a comfortable S9+ QSO with GM6XW on 70cm. The path of about 20 miles is particularly good between these two.

On the morning of February 9, there were six stations on 70cm phone (GM6KH, '3GAB, '6ZV, '3GUO, '5VG and '6WL). Well, Jock, that's much more news about 70cm than we are getting from the rest of these Islands, which is precisely nil at present! Many thanks.

That's the lot for this month. The writer has the feeling that we shan't do much better until there is more activity. It all depends on you! The next deadline, March 18. Please don't be late.

Microwave Transmission Beyond the Horizon

MICROWAVE enthusiasts may be interested to know that the paper read by G. A. Isted at the I.E.E. Symposium on Long Distance Propagation above 30 Mc/s, on January 28, 1958, has been abstracted, complete with references. The paper describes Marconi's experiments between 1928 and 1936, and shows that 25 years ago Marconi reached conclusions in this field, which we are only now actively investigating. The paper is abstracted in the *Engineer* for February 7, 1958, pages 207 and 208, which should be available in all reference libraries of repute. W. J. G.

European V.H.F. Contest, 1958

OF the first ten places in the final results by points, Czechoslovak stations occupy the first nine, DL6MHP being tenth. The only British stations taking part, G2XV and G5MR, occupy positions 37 and 162 respectively. G2XV shares his position with OK1KPL/P, while G5MR shares his with DJ2MU, IIAXT and OK1GT/P.

In its report on the Contest, the R.S.G.B. Contests Committee states that 283 entries and 18 check logs were received. Czechoslovakia submitted 82, Germany 58 and Italy 44.

The points scored by the leading stations were as follows: OK1KAX/P—615; OK1KKA/P—538; OK1KBW/P—531; OK1VR/P—515; OK1KKD—453; OK1KVR/P—452; OK1VAE/P—450; OK1KLR/P—437; OK1KNT/P—389; DL6MHP—344. A copy of the complete tabulation of results may be obtained on request from R.S.G.B. Headquarters.

The contest was organized by the R.S.G.B. at the request of the Region I V.H.F. Committee—EDITOR.

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Trends in Aerial Design for the Amateur (Continued from page 413)

"H" but yields about as much gain as a three-element close-spaced Yagi. It lends itself well to amateur use, particularly for 28 Mc/s, as the dimensions involved at this frequency permit the use of self-supporting elements (Fig. 11). For commercial reasons this aerial is called the "Vee-H" although I must confess that my colleagues call it the "Marilyn Monroe" and refer to its vital statistics in terms of parameters to which I can find no reference in the text-books!

Fig. 12 illustrates the horizontal polar diagram of a horizontally polarized "Vee-H" and compares it with that of a conventional "H" aerial.

In conclusion may I take the opportunity of expressing thanks to my co-directors at Labgear Ltd. for their permission to publish this article, and for the encouragement they gave to me in its preparation.

References

- [1] A.R.R.L. *Antenna Book*, Seventh Edition, p. 168.
- [2] "The Multimatch Antenna System," C. L. Buchanan (W3DZZ), *QST*, March 1955.
- [3] "More about the Minibeam," G. A. Bird, R.S.G.B. BULLETIN, October 1957.
- [4] "A Cubical Quad for 20 Metres," S. B. Leslie, *QST*, January 1955.

Patent Notice

The Labgear "Bi-Square" and "Vee-H" aerial designs are the subject of provisional patent application and, whilst there is no objection to individuals constructing aerials based on these principles for their own private use, commercial manufacture and marketing of these designs may only be undertaken if prior written permission is obtained from Labgear Ltd.

Mobile Column

BY JOHN A. ROUSE (G2AHL/M) *

MOBILE rallies have become a familiar feature of the Amateur Radio calendar since Oxford and District Radio Society, albeit with some doubts as to the likely support for such an event, organized the first in October 1955. Those doubts were quickly proved unfounded. Since then, the popularity of these informal gatherings has rapidly increased, a trend well catered for in 1958. Starting on April 13 at Harewood House, Leeds, the programme includes Rallies in the North Midlands (April 20), Cheltenham (May 11), Lincolnshire (May 18), Stockport and South Manchester (tentatively May 18) and Longleat, Wiltshire (June 15). Plans for another rally at Woburn Abbey are already well under way.

Hastings Spring Tour—a DXpedition with a Difference

Another mobile activity, suggested by G3BDQ and likely to be followed by others, takes place next month. Members of the Hastings and District Amateur Radio Club are to make an 800 mile tour commencing on April 12 and ending on April 19 which will be of particular interest to those wanting contacts with the "rare" counties of Rutland, Merioneth and Montgomery. It is hoped to make personal QSO's with clubs en route and honorary secretaries are invited to write to W. E. Thompson (B.R.S. 19773), 8 Coventry Road, St. Leonards-on-Sea, Sussex (Hon. Secretary of the Club).

* Assistant Editor, R.S.G.B. Bulletin



VE2ACT/M operates on 28-256 Mc/s phone, usually between 1800 and 1900 G.M.T. daily. The transmitter, a crystal controlled Babcock, runs 18 to 20 watts input. The aerial wire runs under the car to a whip at the rear. More than 70 countries have been worked. The regularity of operation of VE2ACT should be useful to I.G.Y. observers in connection with the H.F. Project.

(Photo, courtesy of G2PT).

The itinerary is as follows:

- April 12. Hastings, Sevenoaks, London, Stamford, Oakham.
- 13. Oakham, Leicester, Nuneaton, Birmingham, Wolverhampton.
- 14. Wolverhampton, Wellington, Shrewsbury, Llangollen, Cowen.
- 15. Cowen, Bala, Dolgellau, Machynlleth, Newtown.
- 16. Newtown, Cross Gates, Knighton, Presteign.
- 17. Presteign, Knighton, Cross Gates, Llandrindod Wells, Builth, Brecon.
- 18. Brecon, Merthyr Tydfil, Pontypridd, Cardiff, Newport, Gloucester.
- 19. Gloucester, Cirencester, Swindon, Newbury, Basingstoke, Guildford, Haywards Heath, Hastings.

All transmitters will be crystal controlled, the frequencies being 1815 kc/s (c.w., /A stations), 1970 kc/s (phone, /A and /M stations), 1990 kc/s (phone, /A and /M stations), 3630 kc/s (phone, mobile stations), 7011 kc/s (c.w., /A stations), 7037 kc/s (c.w., /A stations), 7073 kc/s (phone, /A and /M stations), 28300 kc/s (phone, G3FXA/A or /M only). The call-signs in use will be G6HH/A and G6HH/M, G3BDQ/A, G3FXA/A and G3FXA/M, G3HRI/A and G3KMP/A.

April Mobile Rallies

NORTHERN MOBILE RALLY Harewood House, near Leeds

(by kind permission of H.R.H. The Princess Royal and the Earl and Countess of Harewood)

Sunday, April 13, 1958

Control stations will be in operation on Top Band, 80 and 2m to guide visitors to Harewood House from either Leeds or Harrogate. Fixed stations will be on hand to guide visitors into Leeds or Harrogate and mobiles are asked not to call the control stations until they are in one of these places. On arrival, visitors will be directed to Reception, asked to leave their cards, sign in and receive a special attendance card.

Concours d'Elegance for a Trophy to be held for one year, presented by J. R. Petty (G4JW), Region 2 Representative. Hostesses will be in attendance to direct visitors to the House (entrance 1/6d.), Grounds, Farm and other attractions of this Royal Residence.

Meals are obtainable in an up-to-date cafeteria and a private room is available for those booking in advance. There will be no charge for car parking (a special concession). Entrance to the grounds is 1/- per person.

Intending visitors are asked to write to N. Pride, Hon. Secretary, Spen Valley Amateur Radio Society, 100 Raikes Lane, Birstall, near Leeds. Car stickers will be provided on request.

Organized by Spen Valley Amateur Radio Society in association with the Leeds, Bradford and Leeds University Union Radio Societies.

NORTH MIDLANDS MOBILE RALLY Trentham Gardens, near Stoke-on-Trent

(4 miles south of Stoke on the A34 Manchester-London road).

Sunday, April 20, 1958

Large reserved room with car park adjoining. Catering in the Ballroom (no prior booking required). Miniature railway, Italian Gardens, Rose Gardens, Hot Houses, Boating Lake. The A.A. is erecting direction signs locally. Fix your QSL card on the windscreen for identification.

RALLY STATIONS

on 1.8 Mc/s—G3BGU/A, 3.5 Mc/s—G3MAR/A and 144 Mc/s—G3BA/A and G6SN/M

Entrance to Gardens: Adults 1/6d., Children 9d., Cars 1/-. Organized by the Stoke-on-Trent Radio Society and the Midland Amateur Radio Society.

Society News and Proceedings

Top Band Users Take Heed

THE Danish Administration have complained to the British Post Office that interference to their ship-to-shore radio telephone service is being caused during the hours of darkness by British amateur stations operating in the band 1800-2000 kc/s. As this band is shared with the maritime service by U.K. amateur stations on a basis of non-interference, amateurs are urged to take steps to avoid causing interference with the operation of radio telephone communication between ships and shore stations.

The avoidance of interference applies to all maritime stations in the band in question but the Danish Administration have listed the following frequencies used by their maritime service which fall between 1800 and 2000 kc/s:

Frequency kc/s	Name of Station or Service
1806	Lynby Radio.
1813	Blavand.
1834	Thyboroen.
1988	Ships to Skagen Radio.
1995	Ships to Roenne Radio.

In all cases the type of modulation is 6A3 (Amplitude modulated telephony, 3000 c/s maximum modulation, double sideband, full carrier).

The frequencies in this band used by U.K. coast stations are as follows:

Frequency kc/s	Name of Station
1827	Wick and Folkestone.
1834	Niton.
1841	Cullercoats and Lands End.
1848	North Foreland and Oban.
1855	Ilfracombe, Stonehaven and Newhaven.
1856	Stonehaven.
1869	Humber.
1883	Portpatrick.
1911	Lands End, Niton and Seaforth.
1925	Lands End, Niton and Seaforth.

British ships work on 1953 and 1981 kc/s, French ships on 1960 kc/s and Dutch ships on 1974 and 1995 kc/s. Loran operates on 1950 kc/s.

The following frequencies should also be avoided: 1857, 1890, 1930 and 1940 kc/s.

Radio Amateurs' Examination—Late Entries accepted up to March 22

THOSE readers who wish to obtain an Amateur (Sound) Licence are reminded that they must pass the Radio Amateurs' Examination as evidence of possessing the requisite theoretical technical knowledge and also the Post Office Morse Test within one year of applying for the licence.

The Radio Amateurs' Examination is a pass examination consisting of a single question paper of three hours duration. The paper is divided into two parts. As from May 1958 Part I will contain only two questions each of which must be answered. Part II will consist of eight questions, six of which must be attempted. Candidates will be required to achieve a pass in each Part separately; failure in either Part will entail failure in the examination as a whole.

The examination is open to all candidates, whether they have attended a course of tuition or not and a certificate is issued to those who are successful.

Part I of the Syllabus deals with licensing conditions and transmitter interference and Part II with the theory of electricity and magnetism, radio principles, valves and circuitry, receivers, low power transmitters, propagation, aërials and measurements.

The 1958 examination, set by the City and Guilds of

London Institute, will take place on May 9. Readers who intend to sit for this particular examination should already have sent in their application but in exceptional circumstances late entries will be accepted up to March 22, 1958, on payment of an additional fee of 20/-. The normal fee is 20/-.

The address of the City and Guilds of London Institute is Gresham College, Basinghall Street, London, E.C.2.

U.K. Amateurs Emigrating to Canada

LAST year at the request of the Society, the G.P.O. wrote to the Canadian Department of Transport about reciprocal arrangements for amateurs in Canada and the United Kingdom.

Following somewhat protracted correspondence between the two Government Departments, the G.P.O. have now informed the Society that the Canadian authorities are introducing the following arrangements:

(i) U.K. amateurs emigrating to Canada may qualify for a Canadian Amateur Certificate of Proficiency in Radio by successfully passing the Canadian amateur examination. In lieu thereof, they shall be considered eligible for such a Certificate if they meet the following conditions:

- They shall be the holders of United Kingdom Amateur Radio Certificate, or United Kingdom First or Second Class Radiotelegraph Operators' Certificates issued in accordance with the Radio Regulations annexed to the International Telecommunication Convention (Buenos Aires, 1952).
- They shall attend an informal interview with a Department of Transport Radio Inspector and shall produce the certificate required in (a) above.

Canadian Amateur Experimental Station licences will be granted to holders of Certificates of Proficiency in Radio. However, to be eligible for advanced radio-telephone privileges, the licence holder would be required to pass a Morse Code test at 15 words per minute and to satisfy the examining officer that he was proficient in radio-telephone operating practices and had operated an amateur station actively for at least 12 months. The required 12-month period of operation could occur before or after the issue of the Canadian Amateur Experimental Station licence, but prior experience in another country would have to be substantiated by documentary proof, such as station log books, copies of licences, QSL cards, etc.

(ii) U.K. amateurs visiting Canada who obtain a Canadian Amateur Certificate of Proficiency in Radio, as outlined above, will be eligible for a Canadian Amateur Experimental Station licence, on payment of a fee of \$2.50 per annum.

"Intruder Watch"—More Volunteers Wanted

MAJOR DENNIS HAYLOCK (G3ADZ), 3 Norris Gardens, Grange Estate, Havant, Hants, will be glad to hear from any member who is willing to assist in watching for intruders in the exclusive amateur bands.

The present members of the Intruder Watch have produced much valuable information which has been forwarded to the G.P.O. An extension of the Watch is now contemplated.

Major Haylock will be glad to provide volunteers with further details of what is required.

Birmingham O.R.M.—B.B.C. Engineer to talk about Aërials

AN Official Regional Meeting will be held in the Digbeth Institute, Birmingham, on Sunday, May 11, 1958 from 2 p.m. Earlier in the day a luncheon will take place at a local hotel, details of which will be announced shortly.

Buffet tea at the Digbeth Institute will be followed by a talk on Aërials by Mr. Simms of the B.B.C. Station visits are being arranged for the evening.

London Meeting—Lively Discussion follows Lecture on the TVI Problem

AN attendance of 85 was recorded at the meeting held on Friday, February 14, 1958, at the Institution of Electrical Engineers, London, W.C.2, when Mr. G. A. Bird, G4ZU, lectured on "The T.V.I. Problem."

The Chair was taken by the President (Mr. L. E. Newnham, B.Sc., G6NZ) who had the support of several members of the Council.

A lively discussion followed the lecture, after which Mr. H. A. M. Clark, B.Sc., M.I.E.E., G6OT (Vice-President) proposed a vote of thanks to Mr. Bird.

(A précis of Mr. Bird's lecture will appear in a future issue of the Society's Journal—EDITOR.)

Second 70 Mc/s Contest, 1957

DUE to an oversight at Headquarters, a valid entry for the above contest was not considered by the Contests Committee before the report on page 337 of the January BULLETIN was prepared. The correct results are as follows: G5MR scored 917 points from eight contacts (five of which were with French stations), GM2FHH scored 180 points

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Thursday, January 23, 1958, at 6 p.m.

Present: The President (Mr. L. E. Newnham in the Chair), Messrs. N. Caws, C. H. L. Edwards, D. A. Findlay, W. J. Green, F. Hicks-Arnold, J. H. Hum, W. R. Metcalfe, A. O. Milne, W. A. Scarr, A. C. Williams, E. W. Yeomanson, John Clarricoats (General Secretary) and John A. Rouse (Deputy General Secretary).

Apologies for Absence

Apologies for absence were submitted on behalf of Messrs. W. H. Allen, H. A. Bartlett, E. G. Ingram and H. W. Mitchell.

Absent: Mr. R. H. Hammons.

* * *

Financial Statement

The Hon. Treasurer submitted an estimated income and expenditure account for the six months to December 31, 1957, and a budget for the remaining six months of the financial year.

In answer to a point raised by a member, the President explained that the Council had, within the last three years, given careful consideration to the amount of commission paid to The National Publicity Co. Ltd. and had decided that the present arrangements, bearing in mind the service provided, were satisfactory.

For the information of new members of the Council Mr. Findlay explained the basis upon which the Society is assessed for Income Tax.

Resolved to receive the financial statements prepared by the Hon. Treasurer.

The President, on behalf of his colleagues, thanked Mr. Caws for the valuable information which he had prepared at short notice.

Reports of Committees

R.A.E.N.

Resolved to receive as a Report the unconfirmed Minutes of a Meeting of the Committee held on December 7, 1957.

It was stated that the R.A.E.N. Committee had recommended that the Council should ask the G.P.O. to extend the terms of the Amateur (Sound) Licence to enable co-operation between amateurs and the police forces to take place under the same conditions and in the same manner as exists for the British Red Cross Society and the St. John Ambulance Brigade.

Resolved that the R.A.E.N. Committee be asked to furnish Headquarters with satisfactory documentary evidence to show that the Home Office has been officially approached by the police forces and that the Home Office supports the proposals in respect to co-operation between amateurs and the police.

It was reported that a letter had been received from a Chief Constable stating that co-operation was sought. This information had been passed on to the G.P.O. who had informed the Society that it was the intention of the Home Office to write officially to the Society asking for co-operation between R.A.E.N. and the Police. The letter had not yet been received from the Home Office.

It was agreed to await further developments from the Home Office and G.P.O.

Contests Committee

Resolved to receive as a Report the unconfirmed Minutes of a meeting of the Committee held on December 19, 1957, and to adopt recommendations contained therein relating to the award of Society trophies and certificates to leading entrants in the Low Power and Second Top Band Contests, 1957.

A Report of the 1957 European V.H.F. Contest was submitted. **Resolved** to refer back the Report to the Contests Committee and to ask that Committee to make firm recommendations to the Council in regard to awards.

and G3COJ 66 points. A check log from G3EHY is gratefully acknowledged.

The Council has awarded a Certificate of Merit to Mr. V. Mellor (G5MR).

Second Annual Radio Hobbies Exhibition, November 26-29, 1958

THE Second Annual Radio Hobbies Exhibition will be held in the Old Hall of the Royal Horticultural Society, London, S.W.1, from Wednesday, November 26 to Saturday, November 29. The Exhibition will again be organized by Mr. P. A. Thorogood (G4KD), 35 Gibbs Green, Edgware, Middlesex, to whom all enquiries regarding stand space should be addressed.

New Regional Representatives Appointed

THE Council has been pleased to confirm the appointment of Mr. J. Wm. Douglas (G131WD) of Belfast as Region 15 (Northern Ireland) Representative, and Mr. H. H. Lowe (G2HPF) of Chelmsford, as Region 16 (East Anglia) Representative. Region 16 is a new Region formed out of the old Region 5.

I.G.Y. Report

Report No. 3 of the I.G.Y. Co-ordinators was submitted.

Resolved to receive the Report and to authorize the award of Certificates of Merit to all observers who have completed three consecutive months' reporting.

It was agreed that the Society should endeavour to obtain as much publicity as possible to the activities of British radio amateurs who are taking part in I.G.Y. projects.

Membership

Resolved (i) to elect 116 Corporate Members and 19 Associates; (ii) to grant Corporate Membership to three Associates who had applied for transfer.

The Secretary reported that 108 of the 792 members whose subscription became due on October 1, 1957, became 3 months overdue on December 31, 1957, and that 29 of the members concerned had written to resign.

It was reported that Mr. J. D. Kay (G3AAE) had enrolled a further 29 overseas members during the three months to December 31, 1957, making a grand total of 134 since he began his drive for overseas members in July 1956.

Resolved to grant affiliation to the Dowty Amateur Radio Club (Cheltenham), and the Plymouth Radio Club.

Constitution of Committees

Resolved (i) not to limit the size of Committees to a specific number of members; (ii) to constitute a Publications Committee.

(The Committees of the Council were constituted as shown in the list published last month.—EDITOR.)

Subscription Rates

Resolved to request the Finance and Staff Committee to give consideration to the question of subscription rates.

Southampton Group

A resolution was submitted from the Southampton Group dealing with, *inter-alia*, subscription rates and the location of Headquarters.

The Secretary was instructed to thank the Group for their letter and to point out that it is not the intention of the Council at the present time to increase subscription rates.

In connection with the suggestion that the Society should purchase a house outside London it was pointed out that accommodation must be available in Central London for the large number of Council and Committee meetings held each year.

O.R.M.s 1958

Resolved to authorize the Region 9 Representative to hold an O.R.M. in Exeter on Sunday, June 29, 1958.

National Convention—Bridlington

Discussion took place regarding the arrangements for opening the Convention, the view having been expressed that very few members would be available to attend the opening if it takes place on a Thursday.

Resolved that the Convention be held on a Saturday, Sunday and Monday in September 1958.

It was agreed to give further consideration to Convention arrangements at the February meeting of the Council, with particular reference to dates.

Aerial Masts

It was reported that a member living in Leicestershire had been advised by his local authority that his request for permission to erect two 40 ft. aerial poles in his garden had been refused; an appeal against the decision would be held on January 29, 1958. The member in question had enquired whether the Society would be prepared to pay his legal costs in connection with the appeal.

Resolved to authorize the member in question to engage the services of a local solicitor to conduct the appeal on his behalf and to defray the legal costs involved. (The solicitor engaged to conduct the appeal is himself a radio amateur.—EDITOR.)

The meeting terminated at 10.10 p.m.

Informal Reports on the Annual and Extraordinary General Meetings

Some of the Interesting Information revealed during Question Time

THE ANNUAL GENERAL MEETING

MEMBERS present at the Society's Thirty-first Annual General Meeting on December 13, 1957, asked questions on a wide variety of matters, once again showing a lively interest in the conduct of the Society's affairs. Much of the resulting information did not however come within the scope of the formal Minutes of the Meeting published on page 333 of the January BULLETIN. It is the purpose of this report to present as much of that information as possible in the space available for the benefit of members unable to be there in person.

Mr. David Deacon (G3BCM) had given notice in writing of a number of questions he wished to ask.

Bulletin Postage

Mr. Deacon asked whether in view of the tremendous increase in postage the Council had considered distributing the BULLETIN in bulk via T.R.s. The President (Mr. D. A. Findlay, D.F.C.) said he did not think this would be a practical proposition.

Income from Subscriptions

Mr. Deacon wished to know whether it would be safe to assume that, if the membership remains static, the Society's annual income will be about £1,300 higher in the next financial year. The President expressed the opinion that the subscription income will no doubt be higher due to the extra 2s. 6d. on Home Corporate subscriptions but was unable to give any estimate.

R.A.E.N.

Mr. Deacon expressed some doubt as to whether the spending of £204 (£151 on Committee meetings and £53 on other expenses) was in the best interests of the Society as a whole, particularly when compared with the costs of Council meetings (£163) and Regional meetings (£169). The President explained that the R.A.E.N. Committee expenses were high because most of its members have to travel long distances to attend its meetings.

In reply to a verbal question later from a Bristol member, Mr. Findlay stated that the R.A.E.N. Committee had been requested to limit the number of its meetings per annum in an endeavour to reduce expense. He added that now the network is established it might soon have to stand on its own feet. Mr. Ycomanson expressed the opinion that it was incumbent on the Society as the national body for Amateur Radio to foster R.A.E.N. but indicated that he felt more should be spent on actually running the organization and less on the Committee.

Exhibitions

Mr. Deacon noted that a figure of £376 was shown in the accounts as expenses in connection with the National Radio Show and the Schoolboy's Own Exhibition, but no income. Mr. Findlay explained that sales and subscriptions totalled more than £505 at these exhibitions and altogether 64 new members were enrolled.

Radio Hobbies Exhibition, 1957

Replying to another of Mr. Deacon's written questions, Mr. Findlay confirmed that Mr. Thorogood had agreed to pay the Society £100 in connection with the Radio Hobbies Exhibition and that £334 had been taken on the R.S.G.B. stand. Fifty-nine new members had been enrolled.

R.S.G.B. Bulletin

The President, replying to Mr. Deacon, said that 100,000 copies had been printed during the last financial year, of which 96,000 were posted direct to members. Most of the remainder went to Affiliated Societies, national societies, libraries, subscribers and advertisers. The rest were used at exhibitions and in connection with the membership drive.

Company Limited by Guarantee

Mr. Deacon wished to know who were the guarantors of the R.S.G.B. as a company limited by guarantee and what was their individual liability. Mr. Findlay explained that in accordance with Article 8 of the Society's Memorandum of Association, each member undertakes to contribute not more than 21s. in the event of the Society being wound up.

Investments

Mr. C. E. Newton (G2FKZ) had asked in writing a number of questions relating to the Society's investments, to which the following is a summary of the Honorary Treasurer's reply:

The present market value of the Society's fixed assets (for which £14,795.16 was paid) is £11,485 (£360 less than the middle market value quoted on July 1, 1957). In addition, £1,000 of 4 per cent Defence Bonds are held. £5,000 of 3 per cent Savings Bonds 1965-75 will be redeemed at par some time between 1965 and 1975—the market value at the time of the A.G.M. was £3,450. £4,000 of 1955-65 Savings Bonds will be redeemed at par at some time between now and 1965. The present value was 84½ per cent. A more encouraging prospect was that the £1,000 of Defence Bonds will be redeemed at £103 per cent on May 1, 1966.

Mr. Metcalfe considered that it would be possible to finance the new edition of the *Amateur Radio Handbook* without selling any securities at a loss.

Ordinary Administrative Radio Conference, 1959

Mr. Deacon drew attention to the importance of the Administrative Conference to be held in Geneva in 1959. Replying, the General Secretary stated that two months previously the R.S.G.B. had given the Post Office its views on frequency allocations generally and was in close touch with the latest developments. (The 1959 Conference will of course be a major item on the agenda of the Region I I.A.R.U. Conference in Germany next July.—EDITOR.)

Headquarters' Station

In reply to a member who wished to know what had become of the receivers and instruments which formed part of the old Headquarters station, Mr. Findlay stated that it had not been deemed good policy to dispose of them. In reply to a question from Mr. Wall (G3GQK), the President said the equipment was not really suitable for use in connection with the I.G.Y.

Budgetary System

Mr. Glaisher (G6LX) was assured by the Honorary Treasurer that the Society worked to a strict budgetary system and a monthly check was carried out.

Advertising Commission

Mr. Glaisher stated that he understood commission of 25 per cent was paid on advertising in R.S.G.B. publications whereas he believed 10 per cent was normal. The President pointed out that the services provided by The National Publicity Co. Ltd. far exceed those which would normally be obtained and appear to more than compensate for the difference in commission rates. The point raised by Mr. Glaisher had been carefully considered by the Council in recent years.

Rating Relief

Mr. Metcalfe explained that attempts to obtain relief had been made but to no avail.

Headquarters' Staff

Mr. Elton commented on the increase in staff salaries and remarked that for a membership of 8,000 the staff was at the moment somewhat top-heavy. Replying, the President said the paid staff was six in number and that most of the increase was due to the raising of Mr. Rouse's status to Deputy General Secretary. Mr. Findlay assured the meeting that this was really a form of insurance against Mr. Clarricoats. A competent person had to gain experience of the Society's affairs so that he could take over when Mr. Clarricoats retires.

Membership Drive

Mr. Clews enquired why the Society did not go all out for overseas members and suggested advertising in American magazines. The President said that efforts had been made to place such advertising but it had presented difficulties. Mr. Metcalfe explained his own method of inviting overseas amateurs to join and claimed a success rate of about 70 per cent. Mr. Milne paid tribute to the achievements of Mr. Kay (G3AAE)

who himself offered to handle overseas "prospects" for members. Mr. Kay asked whether the Council had considered appointing overseas "agents" to carry R.S.G.B. publications and canvass for members. Commenting on this suggestion, the General Secretary said that in pre-World War II days when the B.E.R.U. was functioning this had in effect been done but since the war it had proved difficult as most of the countries concerned now had their own national societies.

I.A.R.U. Region I Bureau

In reply to a question from Mr. Deacon, Mr. Milne said that all the work of the Bureau was carried out by himself from his home at no cost to the R.S.G.B.

Wholesale Stationery Supplies

Mr. Stone (G3FZL) stated that during the preparation of I.G.Y. circulars at Headquarters, he had noticed that stationery appeared to be purchased retail as and when required. Mr. Stone went on to suggest that stationery should be purchased wholesale at a consequent saving. The Honorary Treasurer said he was already investigating this matter as a result of his own observations.

R.S.G.B. QSL Bureau

Mr. Yeomanson enquired how much of the cost of running the QSL Bureau was offset by the sale of the many thousands of foreign stamps which must be received on packets each year. Mr. Milne replied to the effect that nothing was raised and added, "I am a stamp collector." Mr. Yeomanson thereupon protested against the facetious nature of the reply to what was intended to be a serious question.

QSL Cards for Foreign Amateurs in British Antarctica

After a member had suggested that it might be time for the Council to reverse their previous decision, the President agreed to arrange for the question of the handling of QSL cards for foreign amateurs in British Antarctica to be discussed again.

R.S.G.B. Bulletin

On behalf of the non-transmitting members of the Society, a member suggested that articles in the BULLETIN should deal with such aspects of the hobby as model control, tape recording and the like. He added that he believed it would pay the Society to commission from time to time competent writers of this type of article. It would encourage those interested in such matters to become members.

B.B.C. Television

A member from the Wirral stated that a recent television programme about Amateur Radio had made no mention of the R.S.G.B. and contained no information on how to become a radio amateur. Mr. Garrett (G5CS), who had taken part in the programme concerned, said he had tried hard to include a mention of the R.S.G.B. but had not been allowed to do so. He was however referring all those who wrote to him to the Society.

Council Election

After the announcement of the result of the election for new members of the Council, Mr. Cooper (G5LC) remarked that it seemed to him that the poll had reached a new low level. The President said that in effect the number voting was only 12½ per cent of the membership. In connection with Mr. Deacon's suggestion that future Annual and Extraordinary General Meetings should be held on a Saturday, another member asked that more prominence should be given to them in future in the BULLETIN.

THE EXTRAORDINARY GENERAL MEETING

AFTER the President had read the notice convening the meeting and had explained the reason for the resolution, Mr. Martin asked if the Council had any particular figure in mind to which the subscription would be raised in the event of the resolution being passed. The President replied that at the moment no increase had been discussed at a Council meeting and no figure had therefore been mentioned.

Mr. Newport made a plea on behalf of the Associate Members and the President promised that when the matter was discussed such members would be given every consideration.

One member somewhat humorously advised Council not to overdo things or members might find that they could do without the Society. He suggested that a ceiling figure of 40s. might have been safer. The President explained that the meeting was bound by the resolution and that the figure could not be altered.

After the President's explanation, Mr. Deacon complained that the resolution as set out appeared to be badly worded and asked what "lesser sum" the Council had decided upon. Mr. Findlay said that the "lesser sum" at the moment was 30s. Mr. Deacon commented that the Council must surely have considered some new figure in view of Mr. Metcalfe's mention of the "alarming position." The President and Honorary Treasurer however both denied that any discussions had taken place at all and said that they would probably take place at an early meeting of the Finance and Staff Committee.

Mr. Newton took quite a different line to previous speakers when he said he felt that the subscriptions *should* go up; everything in the Society was cut to the bone; in fact at the moment we were gnawing the bone. He could see from the answers to his questions during the A.G.M. that if we were to endeavour to raise more than £1,000 we should have to incur a loss by selling securities at less than their face value. The only way that we could make more money was by increasing subscriptions.

Associate Members

Mr. Rayner (G6IO) made a very strong plea for the Associate Members, particularly the schoolboys. He contended that they were the Society's future members and scientists and under no circumstances should we do anything which would prevent them joining. He suggested that the Junior Associate Grade should be reintroduced with a subscription of 15s. or even 12s. 6d. if possible.

A B.R.S. member said that approximately one-third of the Society's membership was composed of B.R.S. members. He considered a number would leave if the subscription were raised too high as the Society was at the moment concerned primarily with the transmitting amateur and did little to further the interests of the listening member. He pointed out that he himself in common with many others had not the slightest interest in taking out a transmitting licence and contended that the Honorary Treasurer's statement that everybody had had a salary increase of some sort or the other was fallacious and an insult to members. The President said that the loss of any member was of grave concern to the Council. He felt sure the Treasurer's report was not intended to give offence to any member.

Another B.R.S. member said that whilst he objected to paying more for anything he also objected to the Society being continually pruned and living on a day to day basis. He felt that the Society should be put upon a sound financial footing and that the Council should not be committed to counting farthings. They should feel that they had a strong backing.

The resolution was then put to the meeting and carried by an overwhelming majority.



To celebrate winning National Field Day 1957, Slough Group held a Dinner and Social at "The Crooked Billet," Iwer Heath, on January 29. A feature of the evening was the presentation of a miniature N.F.D. Shield to "Dud" Charman (G6CJ) in recognition of the enthusiasm and help he has contributed to the Group's Field Day efforts over many years and which played a large part in final victory. In this picture, left to right, are G6CJ, G2HOX (Town Representative), G3GYD, G3XC and G2AIW (Region 7 Representative). The event was organized by G3XC and G3GYD and included a screening of the film of N.F.D. 1952 by G. T. Peck of High Wycombe with equipment loaned by G4NT.

(Photo by Ted Lemon, Slough)

Regional and Club News

Bristol.—The Film Show arranged by D. V. Newport (G3CHW) on February 7 was well attended as was the meeting on February 21 when nearly 70 members were present to hear a lecture on the KW Electronics' Vanguard Kit Transmitter by R. G. Shears (G8KW) who also gave a short description of the new Gelson type G209 receiver for c.w., a.m. and s.s.b. reception. The Group won the Skittle Match against the Bristol and South West Centre of the Television Society on February 4. *Hon. Secretary:* D. F. Davies (G3RQ), 51 Theresa Avenue, Bishopston, Bristol 7.

Barnet.—In an effort to form a Barnet Amateur Radio Club or local R.S.G.B. Group, a meeting will be held at the home of J. D. Kay (G3AAE), 18 Fairfield Way, Barnet, on March 25 commencing at 8 p.m. All local members and others interested in Amateur Radio, whether transmitting amateurs or not, are assured of a warm welcome.

Brighton and District Radio Club.—Weekly Morse instruction and a beginners' class dealing with the fundamentals of radio has been started in addition to the regular Tuesday evening meetings at the Club Room, "Eagle Inn," Gloucester Road, Brighton 1. Visitors and prospective members are invited to contact the *Hon. Secretary:* R. Purdy, 37 Bond Street, Brighton 1.

Cheltenham.—Attendance was poor at the A.G.M. on February 6, in spite of otherwise increased activity locally. In the T.R.'s report he drew attention to the lack of support for lectures given through the year on other premises, and hoped that more success would be achieved by holding similar events in the normal meeting rooms in future.

Cornish Radio and Television Club.—At the meeting in Falmouth on February 5, members heard the R.S.G.B. Recorded Lecture on "Receivers" which was followed by a talk on the Monimatch Mark II by G3AET, following publication of the constructional details in *The Link*, the club's newsletter. The A.G.M. is arranged for April 2. *Hon. Secretary:* J. Brown (G3LPB), Waterworks, Penryn, Cornwall.

Crystal Palace and District Radio Club.—Charlie Newton (G2FKZ) was again re-elected chairman at the A.G.M. on February 15. The 1952 Committee Cup was presented to George Gaunt in recognition of his services to the club. Details of future meetings are given in *Forthcoming Events*. *Hon. Secretary:* G. M. C. Stone (G3FZL), 10 Liphook Crescent, Forest Hill, London, S.E. 23.

Derby and District Amateur Radio Society.—The finances of the society were reported to be in a very sound position at the A.G.M. when the following officers were elected for the current year: *Chairman:* C. M. Swift (G3IUK); *Hon. Secretary:* F. C. Ward (G2CVV), 5 Uplands Avenue, Littleover, Derby; *Hon. Treasurer:* H. Shaw; *Committee Members:* T. Darn (G3FGY), F. Clay (G3IBL), C. Rodgers (G3IJJ), B. J. C. Brown, H. Ward (G3JNV), F. Cox (G3GRM); *Auditors:* G. Treece (G3JY) and T. W. Brown. The society has a membership of over 100 fully

paid up members and meetings are held every Wednesday commencing at 7.30 p.m. (see *Forthcoming Events* for details).

Egham.—Efforts are being made to start a local group in Egham and District. The first event, a film show, will be on April 29. All interested are invited to write to D. S. Froome, 39 Manor Way, Egham, Surrey.

Flintshire Radio Society.—At the February meeting, arrangements were made for the siting of the two N.F.D. stations. A talk on the Amateur (Sound) Licence was given by F. G. Southworth (GW2CCU), the second speaker of the evening being G. Chambers who gave a short lecture on workshop practice.

Grafton Radio Society.—The Annual Top Band Contest for the G2AAN Cup will take place on March 22 and 29, commencing at 2230 G.M.T. on both dates and ending at 0100 the following morning. The first Saturday will be for c.w. only, the second for phone. As points will be awarded for all contacts, it is hoped that other Top Band stations will join in. At a recent meeting, R.A.E. Certificates were awarded to 17 successful entrants—a fine record for the society's classes. The Mullard film "Ultrasonics in Industry" was screened recently. *Hon. Secretary:* A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

Gravesend Amateur Radio Society.—At the A.G.M. the following officers were elected: *President:* V. H. Curling (G6VC); *Chairman:* A. Watson (G3DCV); *Hon. Treasurer:* F. B. Allen (G3JVV); *Hon. Secretary:* L. C. Bodycombe, 21 Grieves Road, Northfleet. Following the election, there was discussion on N.F.D. Meetings are held every Thursday at 7.30 p.m. at 4 Cobham Street, Gravesend. Morse classes are held and six members are being prepared for the R.A.E.

Ham Hop Club.—Preparations are now in progress for the election of a governing body. Facilities exist in the club for Ham Hop and family exchange holidays, also for group membership by local societies and for the forging of friendship links between local societies of comparable size. Full details of the club can be obtained from the *Hon. Secretary:* George Partridge (G3CED), 17 Ethel Road, Broadstairs, Kent. The National Representative is L. H. Williams (G3LQI).

Harlow and District Radio Society.—Among those present at the Annual Dinner at the Harlequin Restaurant on January 28 were G6UT, G3ERN, G3JVI, G3IVA and G3JMA. The President, reviewing the past year, said that several new members had been enrolled and an excellent mobile rally held. Arrangements are being made for a mobile rally to be held during 1958. *Hon. Secretary:* A. T. White, The Chestnuts, Fyfield, Ongar, Essex.

North Kent Radio Society.—Recent lectures have included "Ultrasonics" by R. Webb of Mullard Ltd., illustrated by films, and "Valve Reliability" by A. T. Watts of Brimar Valves. Visitors are always welcome at meetings, details of which are given in *Forthcoming Events*.

Northampton Short Wave Radio Club.—The final R.S.G.B. recorded lecture in the present series, "Hints on Mobile Operation," will be given on April 4. For details of activities, dates and



The 45th anniversary of the foundation of the Barnsley and District Amateur Radio Club was celebrated on January 18, 1958, by a Dinner at the King George Hotel, Barnsley. President and founder member George Wigglesworth, G2BH, is seated in the centre of the front row with Mrs. Wigglesworth. Others in the picture include G2AFV (Hon. Secretary), G4JJ (Hon. Treasurer), G3ABS (Chairman) and G5IV (R.S.G.B.T.R.). The dinner was organised by G5KM and G3EAE. (Photo, courtesy, "Barnsley Chronicle")

venues after April 4, contact the *Hon. Secretary*: S. F. Berridge G3IT(W), 20 Ethel Street, Northampton.

Nottingham and District Amateur Radio Society.—The club is playing an active part in the arrangements for the East Midlands O.R.M. on April 20 and details and tickets may be obtained from the *Hon. Secretary*: H. H. Pickering (G3DUL), 43 Plains Road, Mapperley, Nottingham.

Science Museum Radio Society.—The final lecture of the winter session, which will include a demonstration of Amateur TV, is on April 15. Non-members who wish to attend are asked to make prior arrangements with the *Hon. Secretary*: G. C. Voller (G3JUL), Telephone No. KENSINGTON 6371, Extension 237.

Slade Radio Society. Total membership is now 108—a post-war record. Lecture meetings are held at fortnightly intervals at Church House, High Street, Erdington, under the general direction of Maurice Fowler (G3GKZ). The G2AK Shield for outstanding achievements in the field of radio has been awarded to Don Wilson, Editor of the Society's magazine *Contact*. *Hon. Secretary*: Charles N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.



Seen here at the Liverpool and District Amateur Radio Society's Hamfest on January 25 are, left to right, G3EWZ (*Hon. Secretary*), G3LIU (*Vice-President*), G3LIU (*Chairman*), G6KS (*President*), G2AMV (*R.S.G.B. Region 1 Representative*), G3BHT (*Publicity Officer*) and G3HII (*T.R. for Liverpool and A.S.R., L. & D.A.R.S.*). There was an attendance of 92, reflecting the increasing local activity. The programme included a film show, raffle and demonstration of commercial equipment.

Torbay Amateur Radio Society.—At the February meeting, Arthur Hook (G3CMT) gave an instructive and interesting talk on "Antennas." The March meeting was devoted to a discussion of arrangements for N.F.D. The A.G.M. is on April 12—for details see *Forthcoming Events*. *Hon. Secretary*: George Western (G3LFL), 118 Salisbury Avenue, Barton, Torquay.

Hong Kong Amateur Radio Transmitting Society.—Office bearers for 1958 are: *President*: M. H. Duke (VS6BJ); *Hon. Treasurer*: P. J. O'Brien (VS6AE); *Hon. Secretary*: G. A. Cupple-ditch (VS6DS); *QSL Manager*: J. E. Jeckway (VS6CL). W. J. Northcott (VS6DL) and D. K. Lau (VS6DK) are Council Members. The Postmaster General was guest of honour at a recent Society Hamfest attended by 36 members and friends including BVIUS. There are at the moment 34 holders of VS6 calls, 26 of whom are members of H.A.R.T.S.

Representation

THE following are additions to the list of County Representatives published in the December 1956 issue:

REGION 11—
D. RICKERS (GW3HEU), 97 Ruabon Road, Wrexham, Denbighshire.

REGION 15—
M. G. WILLIAMSON (B.R.S. 7781), Avonmore, Antrim Road, Ballymena, Co. Antrim, Northern Ireland.

The following are additions to the list of Regional Representatives published in the December 1957 issue:

REGION 15—
J. WILLIAM DOUGLAS (G1IWD), 54 Kingsway Park, Cherryvalley, Belfast, Northern Ireland.

REGION 16—
H. H. LOWE (G2HPF), Akabo, Maun Road, Boreham, Chelmsford, Essex.

The following are additions to the list of Town or Area Representatives published in the December 1957 issue:

REGION 2—YORKSHIRE WEST

Bradford

D. G. ENOCH (G3KLZ), 86 Heaton Park Drive, Heaton, Bradford, 9.

YORKSHIRE EAST

Hull

G. W. TAYLOR (G3GWT), 124 Beverley Road, Hessle.

REGION 3—BIRMINGHAM

Solihull & District

W. S. CARTER (G5QI), The Ards, Dorridge Road, Dorridge, Warwicks.

STAFFORDSHIRE

Cannock & Lichfield

J. BEAMAND (G3DZT), 101 Valley Lane, Lichfield.

REGION 6—BERKSHIRE

Reading Area

LT.-COL. N. I. BOWER (G5HZ), Little Priory, Peppard, near Henley-on-Thames, Oxon.

OXFORDSHIRE

Oxford & District

C. MATHER (B.R.S. 20837), 5 Knolles Road, Cowley.

REGION 7—LONDON NORTH

Barnet Area

J. DOUGLAS KAY (G3AAE), 18 Fairfield Way, Barnet, Herts.

LONDON SOUTH

Croydon Area

R. I. RICHARDSON (G3KXT), 170 Orchard Way, Shirley, Croydon, Surrey.

LONDON SOUTH-WEST

Kingston Area

D. WHITE (G3JKA), 31 St. James Road, Kingston-upon-Thames, Surrey.

LONDON EAST

Gravesend & District

P. F. JOHNSON (G3HLF), 126 Old Road, West, Gravesend, Kent.

REGION 9—CORNWALL

Falmouth Area

J. BROWN (G3LPB/T), The Waterworks, Penryn.

DEVONSHIRE

North Devon

D. H. JONES (G3BO), Rosebank, Westcombe, Bideford.

SOMERSET

Weston-super-Mare

L. J. AVORY (G2FQP), 20 Swiss Road.

REGION 15—CO. ANTRIM

Ballymena

W. DAVISON (B.R.S. 19828), 1 Clarence Street.

REGION 16—ESSEX

Chelmsford

R. D. MAY (G3KTF), 46 Stansted Road.

VACANCIES

Mr. E. A. Matthews (G3FZW), has resigned as Representative for the County of Staffordshire and Mr. D. M. Williams (G3HZZ), as Representative for the town of Aberdare, Glamorganshire.

Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary, New Ruskin House, Little Russell Street, London, W.C.1, not later than April 30, 1958.

Affiliated Societies' Representatives

List No. 4

IN addition to the names listed last month the following Corporate Members of the R.S.G.B. have been nominated and elected as Affiliated Societies' Representatives for 1958:

GRAVESEND AMATEUR RADIO SOCIETY: Mr. V. Curling (G6VC), 65 Burch Road, Northfleet, Kent.

OXFORD & DISTRICT AMATEUR RADIO SOCIETY: Mr. J. Hickling (G3GCS), 33 Chestnut Road, Botley.

SLADE RADIO SOCIETY: Mr. G. Nicholson (G3HKC), Flat 4, 109 Eachelhurst Road, Erdington, Birmingham 24.

STOCKPORT RADIO SOCIETY: Mr. A. Smith (G3AYT), 27 Redgate, Hyde, Cheshire.

WEST KENT AMATEUR RADIO SOCIETY: Mr. M. Hallett (G3MDR), 5 Chestnut Avenue, Southborough, Tunbridge Wells, Kent.

General Rules for R.S.G.B. Contests

IN future, the following rules will apply to all R.S.G.B. Contests and should be read in conjunction with the details for each individual contest published in the R.S.G.B. BULLETIN.

Rule 1. Entrants must operate in accordance with the terms of their licences.

Rule 2. Contacts with unlicensed stations will not count for points. Proof of contact may be required.

Rule 3. An exchange of RST or RS reports followed by a three figure serial number starting with 001 for the first contact and increasing by one for each successive contact (i.e. 559001 or 58001) must be made before points can be claimed. In the case of v.h.f./u.h.f. contests, the location and band identification letter (A for 144 Mc/s, B for 420 Mc/s and C for 1250 Mc/s) must also be exchanged. The location must be in distance and direction from the nearest town easily found on a map (i.e. 559A001 10E Oxford or 56A001 10W Cambridge). All reports must be acknowledged.

Rule 4. Only one contact on each band may be made with a specific station, whether fixed, portable, mobile or alternate address. Duplicate contacts must be logged and clearly marked as duplicates without claim for points. Cross-band contacts may not be claimed. (This rule may be subject to variation in certain contests and reference should be made to the published details.)

Rule 5. Entries must be clearly written or typed ON ONE SIDE ONLY of foolscap or quarto paper and must be set out in the form prescribed in the published details for the contest concerned. The first sheet of an entry must be made out in the following form and all the information filled in:

Contest.....Section (if any).....Claimed Score.....
Date..... Call-sign.....
Name
Home address
Address of Station or Portable Location.....
National Grid Six Figure Reference
(or Lat. and Long. or County Code number)
(see contest details)
Transmitter.....Power input.....watts
Receiver..... Aerial(s).....

DECLARATION: I declare that this station was operated strictly in accordance with the rules and spirit of the contest, and I agree that the decision of the Council of the R.S.G.B. shall be final in all cases of dispute. I certify that the maximum input to the final stage of the transmitter was.....watts.

Date..... Signed

Failure to sign the declaration may involve disqualification of the entry.

Rule 6. Entries must be addressed to the Contests Committee, Radio Society of Great Britain, New Ruskin House, 28-30 Little Russell Street, London, W.C.1, England, and must be post-marked not later than the date stated in the published details governing the contest concerned. The name of the contest must be clearly shown at the top left-hand corner of the envelope.

Rule 7. In those contests where multiple-operator entries are accepted, such entries will only be accepted provided that:

- The call-sign and signature of the operator concerned is recorded for each contact.
- The declaration is signed by only one operator who will be regarded as the entrant.

Rule 8. All entries become the property of the Radio Society of Great Britain.

Rule 9. Portable stations must operate from the same site for the duration of a contest. Power must not be derived from public or private supply mains. No apparatus may be erected on the site prior to the day of the event. For the purposes of R.S.G.B. contests, mobile stations are stations installed in motor vehicles or vessels on inland waterways and so equipped that they are capable of operation in motion without any alteration.

Rule 10. The details relating to specific contests published in the R.S.G.B. Bulletin shall be regarded together with these general rules as the rules of the contest.

Rule 11. In the event of any dispute, the ruling of the Council of the Radio Society of Great Britain shall be final.

Contests Diary

1958

- | | |
|----------------|--|
| March 22-23 | - A.R.R.L. DX Contest (C.W.) ¹ |
| April 13-14 | - R.E.F. Contest (C.W. Section) ² |
| May 4 | - D/F Qualifying Event (Oxford) |
| May 4 | - First 144 Mc/s Field Day ³ |
| May 10-11 | - Boy Scout International Jamboree-on-the-Air ⁴ |
| May 18 | - 420 Mc/s Open Contest |
| June 1 | - D/F Qualifying Event (High Wycombe) |
| June 7-8 | - National Field Day ⁵ |
| June 21-22 | - First 70 Mc/s Contest |
| June 22 | - D/F Qualifying Event (B.T.H.—Rugby) |
| July 6 | - Second 144 Mc/s Field Day |
| July 13 | - D/F Qualifying Event (South Manchester) |
| September 6-7 | - European V.H.F. Contest and National V.H.F. Contest (both under Region I I.A.R.U. Rules) |
| September 6-7 | - 420 Mc/s Contest |
| September 6-7 | - 1250 Mc/s Tests |
| September 7 | - D/F National Final (organised by Slade Radio Society) |
| September 14 | - Low Power Field Day |
| September 28 | - R.A.E.N. Rally |
| October 4-5 | - Low Power Contest |
| November 8-9 | - Second 1.8 Mc/s Contest |
| November 15-16 | - Second 70 Mc/s Contest |
| November 22-23 | - 21-28 Mc/s Telephony Contest |

¹ See page 338, R.S.G.B. Bulletin, January 1958.

² See page 367, R.S.G.B. Bulletin, February 1958.

³ See page 437, R.S.G.B. Bulletin, March 1958.

⁴ See page 369, R.S.G.B. Bulletin, February 1958.

⁵ See page 287, R.S.G.B. Bulletin, December 1957.

First 144 Mc/s Field Day, May 4, 1958

R.S.G.B. members throughout Europe are again invited to take part in this contest, the details of which are as follows.

When: 10.00 G.M.T. to 19.00 G.M.T. on Sunday, May 4, 1958.

Sections: (a) Portables must operate from the same site throughout the contest.

(b) Mobiles must quote the location from which each contact is made.

Eligible Entrants: All fully paid-up members of the R.S.G.B. resident in Europe. Multiple-operator entries will be accepted provided only one call-sign is used.

Contacts: May be made on A1, A2 or A3 with an input not exceeding 25 watts to any stage in the transmitter.

Scoring: Points will be scored on the basis of one point per mile for contacts with fixed stations and two points for contacts with other portables or mobiles.

Contest Exchanges: RST (RS) reports followed by the band identification letter A and the contact number and location (e.g. RST559A001 SNE Luton).

Logs: (a) Must be tabulated in columns headed (in this order) "Date," "Time (G.M.T.)," "Call-sign of Station Contacted," "My Report on his signals and Serial Number sent," "His report on my signals and Serial Number received," "Location of Station Contacted," "Distance," "Points Claimed."

(b) The cover sheet must be made out in accordance with R.S.G.B. Contests Rule 5 and the declaration signed.

(c) Entries must be postmarked not later than Monday, May 19, 1958.

Awards: At the discretion of the Council, a miniature cup will be awarded to the winner and certificates of merit to the runner-up and to the leading mobile station.

The General Rules for R.S.G.B. Contests published on this page apply to the contest.

Forthcoming Events

Details for inclusion in this feature should reach the appropriate Regional Representatives not later than the 18th of the month preceding publication. T.R.s and club secretaries are reminded that the information submitted must include the date, time, venue of meeting, name of lecturer or details of any other special event being arranged.

REGION 1

Bury (B.R.S.)—April 8, 8 p.m., George Hotel, Kay Gardens. (Lecture by H. Whalley, G2HW.)

Chester (C. & D.A.R.S.)—March 18 ("D.C. Power Supplies" (Part 1), C. Rich); 25 ("Double Superhets," B. Swanson); April 1 ("Top Band Net"); 8 ("D.C. Power Supplies" (Part 2)); 15 ("Aerial Systems" (Part 1), H. Morris, G3ATZ), 8 p.m., Tarran Hut, Y.M.C.A.

Liverpool (L. & D.A.R.S.)—March 25 ("Valves and their functions," W. D. Wither, G3DVI); April 15 ("More Aerials," B. Meaden, G3BHT), 8 p.m., Room A, Watertree Community Centre, Penny Lane, Liverpool 18.

Manchester (M. & D.R.S.)—April 14, 7.30 p.m. ("Mobile Operation," D. Barber, G2AKR), Brunswick Hotel, Piccadilly, Manchester.

Stockport (S.R.S.)—March 26, 8 p.m. (A.G.M.), Blossoms Hotel, Buxton Road, Stockport.

Wirral (W.A.R.S.)—March 21 ("Home Built Panadaptor," B. O'Brien, G2AMV); April 11 (Component display), 7.45 p.m., No. 4 Hamilton Square, Birkenhead, April 18 (Seventh Annual Dinner), at "Coach & Horses" Moreton, Wirral.

REGION 2

Barnsley (B. & D.A.R.C.)—March 28 ("Valve Characteristics," W. Lee, G6LZ); April 11 ("Oscillators and V.F.O.s," P. Carbutt, G2AFV), 7.30 p.m., King George Hotel, Peel Street.

REGION 3

Birmingham (M.A.R.S.)—March 18, 7.30 p.m. ("Two Metre Mobile," Trevor Tallboys, G2ATK and Presentation of the Calcutta Key to Allan Dennis, G3CNV.) April 15, 7.30 p.m. "Your Receiver," George Brown, G5BJ.) Midland Institute, Paradise Street.

Coventry (C.A.R.S.)—March 24, 7.45 p.m., 9

Queens Road, Coventry. ("Plastics," by W. Grimbaldston, G6WH.)

Stourbridge and District—April 2, 8 p.m., Brotherhood Hall, Scotts Road. ("Eddystone 888," by J. Walker, G5JU.)

REGION 4

Derby (D. & D.A.R.S.)—March 19 (Recorded Lecture on "Aerials"); March 26 (N.F.D. Discussion); April 2 (Junk Sale); April 9 (Open Evening); April 16 (Telephone Exchange Visit), 7.30 p.m., Room 4, 119 Green Lane, Derby.

REGION 5

Cambridge (C. & D.A.R.C.)—March 21, 7.45 p.m., "The Jolly Waterman," Chesterton Road, Cambridge (A.G.M.).

REGION 6

Cheltenham (C.A.R.S.)—March 19, 8 p.m., Club Room, St. Marks Community Centre, Brooklyn Road (Recorded Lecture on "Receivers," G2IG).

REGION 7

Bexleyheath (N.K.R.S.)—March 27, 7.30 p.m. (Business Meeting—Revision of Rules, followed by "Any Questions?"); April 10, 7.30 p.m. ("An Approach to Aerials for the Beginner," by C. J. Leal, G3ISX), Congregational Hall, Chapel Road, Bexleyheath.

Coulson—April 9, 8 p.m. (Planning for N.F.D.), Small Hall, Railwaymen's Hall, Whytecliffe Road, Purley, Surrey (near Purley Station).

Croydon (S.R.C.C.)—April 8, 7.30 p.m. (A.G.M.), "Blacksmiths Arms," 1 South End, Croydon.

East London—March 16 ("Organization and Administration of the R.S.G.B.," G3BZG), April 27 ("Beam Antennae," G4ZU), 2.30 p.m., Lambourne Room, Town Hall, Ilford.

East Molesey (T.V.A.R.T.S.)—April 2 ("Modulation," by J. Hill, B.Sc., G3JIP), Carnarvon Castle Hotel, Hampton Court.

Holloway (G.R.S.)—Mondays and Wednesdays (R.A.E. & Morse), 7 p.m.; Fridays (Club) 7 p.m., March 28 ("V.H.F. Questions and Answers," by F. G. Lambeth, G2AIW), Montem School (ex Isledon School), Hornsey Road, N.7.

Norwood and South London—March 15 ("Power Packs," by A. J. Worrall, G3IWA), April 1 ("R.F. Amplifiers"), April 19 (Film Show), 7.30 p.m., Windermere House, Westow Street, Crystal Palace.

Science Museum R.S.—April 15, 6 p.m. (Lecture Demonstration of Amateur Television), Lecture Theatre, Science Museum, South Kensington, S.W.7.

Slough—April 7 (N.F.D. Arrangements), Stag Hotel, Wexham Street, Slough.

Welwyn Garden City—April 10 ("Latest Developments in Mobile Radio," by R. W. Newton, I.C.I. Recreation Club, Black Fan Road, Welwyn Garden City).

REGION 8

Brighton (B. & D.R.C.)—March 18 ("Getting Started," T. Henley); March 25 (N.F.D. Discussion), "The Eagle Inn," Gloucester Road, Brighton 1.

REGION 9

Bath—April 14, 7.30 p.m., 12 James Street West (Recorded Lecture).

Bristol—March 21, 7.15 p.m., Carwardine's Restaurant, Baldwin Street ("Safety and Protective Devices in Power Supplies, G6GN). Exeter—April 10, 7.30 p.m., Heavitree Social Centre (Auction Sale).

Falmouth (C.R. & T.C.)—April 2, 7.30 p.m., Y.M.C.A., Bar Road, Falmouth (A.G.M.). Torquay (T.A.R.S.)—April 12, 7.30 p.m., Y.M.C.A., Castle Road (A.G.M.).

REGION 10

Cardiff—April 14, 7.30 p.m., "The British Volunteer," The Hayes (Discussion on N.F.D.).

Port Talbot—April 1 (GW5VX on the T.C.S.12); April 15 (GW2FRB on Radio for the Post Office Examination), 7.30 p.m., 14 Holland St.

REGION 11

Prestatyn—March 31, 7.30 p.m., Railway Hotel ("Single Sideband," by Bob Thompson, GW3ELM).

REGION 12

Aberdeen (A.A.R.S.)—March 21 ("Metalwork for the Radio Amateur"), March 28 ("Interplanetary Space"), 7.30 p.m., 6 Blenheim Lane, Aberdeen.

REGION 14

Glasgow—March 28, 7.15 p.m., Christian Institute, 70 Bothwell Street, Glasgow, C.2. ("Aircraft Radar and Communications," by J. W. Kyle, G6MWL.)

REGION 15

Belfast—March 24, 7.30 p.m., 73 Lisburn Road (N.F.D. Discussion).

Slow Morse Practice Transmissions

G.M.T.	Call-sign	kc/s	Town
Sundays			
09.00	G3GYV	1900	Hartford, near
09.30	G3BKE	1900	Northwich
10.15	G3FBA	1910	Newcastle-on-Tyne
10.30	G3GZB	1930	Bath
11.00	G2FXA	1900	North London
12.00	G3LP	1850	Stockton-on-Tees
12.00	G3KAN	1850	Cheltenham
12.00	G3IUR	1860	Northampton
15.00	G3LKG	1850	Belfast
20.30	G3HTA	1850	Ilkeston, Derby
21.00	G2FIX	1812	Exeter
Mondays			
18.30	G3NC	1825	near Salisbur
19.00	G3KTP	1850	Swindon
19.00	G3LMT	1850	Heanor, Derby
20.30	G3LSF	1900	Exeter
Tuesdays			
18.30	G2FXA	1900	Southport
20.00	G2FCI	1850	Stockton-on-Tee
21.00	G3EFA	1855	Exeter
21.45	G3ETP	1875	Southport
Wednesdays			
18.30	G3GCV	1830	Lowestoft
19.00	G3HUB/A	1902	R.A.F., Dishfort
19.00	G8RQ	1850	Chelmsford
21.00	G3HWI	1947	Cherterfield
21.00	G3LNS	1900	Blackburn, Lancs
22.00	G3JJC	1990	Birmingham
Thursdays			
18.30	G3NC	1825	S.E. London
			Swindon

G.M.T.	Call-sign	kc/s	Town
Thursdays—contd.			
20.00	G2ABR	1919	Hull, Yorks
21.00	G3FCY	...	...
	G3GWT	...	...
	G3KTO	...	...
20.30	G3GDZ	1910	Kingsbury, N.W.9
20.30	G3JQM	1878	Barwick, Yeovil
21.30	G3HMY	1850	Exeter
22.00	G3JIT	1990	S.E. London
Fridays			
19.30	G3FUA	1850	Kilburn, Derby
	G2FNI	1875	Wirral
20.00	G3EGX	...	...
	G3ERB	...	...
20.30	G3ICX	1915	Sutton Coldfield
	G3KLZ	1900	Bradford
21.30	G3INW (or G3KSS)	...	Bradford
	G3KEP	...	Bingley
22.00	G3KYU	1859	Bournemouth
Saturdays			
13.00	G2FXA	1900	Stockton-on-Tees
14.00	G3LZX	1830	Heanor, Derby
21.00	G3HWI	1987	Blackburn, Lancs
	† Alternately.		

Slow Morse transmissions are organized by Mr. C. H. L. Edwards (G8TL), 28 Morgan Crescent, Theydon Bois, Essex. Members using the service are requested to send listener-reports to the station concerned.

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road,

at 12.30 p.m. on Fridays, March 21 and April 18, 1958

Telephone table reservations to HOL 7373 prior to day of luncheon. Visiting amateurs especially welcome.

Letters to the Editor...

Neither the Editor nor the Council of the Radio Society of Great Britain can accept responsibility for views expressed by correspondents.

W3FIU Replies to G3BTM

DEAR SIR.—G3BTM in his Letter to the Editor which appeared in the January issue of the BULLETIN submitted certain criticisms on my article *The W3FIU Single Sideband Exciter*. In fairness to anyone who proposes to utilize this article either to duplicate the exciter or to add to his knowledge of single sideband techniques, I shall endeavour to answer the questions raised.

Referring to the last paragraph first, it was presupposed by the writer, and also I believe by the editorial staff of the BULLETIN, that no "beginner" would want to attempt single sideband construction or operation, but that the interested reader might be an amateur with some experience building simple amateur radio equipment and possessed of a basic knowledge of radio and electronics theory.

The point is well taken that the i.f. transformers (T6 and T7) used in the crystal band pass filter might not tune to the pass band frequency if the crystals chosen were near the extremes of 400-500 kc/s range suggested in the article. If this should be the case, alteration of the value of Cx would of course be a solution. Note that the text suggests specifically that a grid dip oscillator be used for "checking all tuned circuits to ensure that they cover the required frequency range." This is good advice for any constructor of radio equipment if he does not want to grope in the dark, so to speak.

Slug-tuned i.f. transformers are inherently better balanced to earth than condenser-tuned transformers because the construction of the variable tuning capacitor is usually unbalanced to earth and therefore tends to unbalance the circuit to a degree where a symmetrical band pass curve is difficult to achieve.

The crystal filter characteristic curve of Fig. 3 is for the actual filter described and illustrated in the article, carefully adjusted for optimum performance. It was drawn from decibel readings from the S meter of an amateur communication receiver utilized as a sensitive r.f. voltmeter and from frequency readings from the calibrated dial of the carrier oscillator tuning condenser C3.

My estimate is that this curve is accurate to within 2db from 0db to -20db, within 10db in the region below -60db; and within 0.1 kc/s in relative frequency although the absolute frequency readings may be in error as much as 0.5 kc/s.

In any case, it is not at all necessary that this curve be exactly reproduced. If its shape is approximated, at least in that portion extending from 0db down to about -50db, the filter will reject the unwanted sideband and high order intermodulation products by at least 50db, which will produce an s.s.b. signal of more than adequate quality judged by present day amateur standards.

I make no apology for my suggestion that a receiver tuned to a harmonic be utilized as a test of stable operation. Possibly I should have qualified the receiver as a reasonably stable one and that it should have been turned on long enough to have attained its operating temperature, but what better means does the average amateur have on hand for this purpose? If a 450 kc/s oscillator is well and solidly constructed of good quality components as called for in the text, its stability will be well within the tolerance required for this application.

How to adjust the carrier to a point corresponding to about 25db down the side slope of the filter characteristic using only the r.f. indicator shown in Fig. 6? After completion of the preliminary tuning of all stages of the exciter, connect the r.f. indicator to the output terminal P1 loaded with a dummy load of about 75 ohms. Tune all stages for maximum reading with R1 hard over in either direction (thus unbalancing the modulator and allowing an appreciable portion of the carrier frequency voltage to reach the filter). Vary the carrier frequency by means of C3 for maximum reading on the r.f. indicator; this should be at the frequency of the higher of the two approximately equal humps forming the top of the curve. Now adjust the carrier frequency so that the r.f. voltage indicator reads 25db lower. (For example, if the output indicator should read 1mA, 25db

down from that would be 0.056 mA.) There will of course be two such frequencies, one for transmission of the upper sideband, the other for transmission of the lower; record these two dial readings for future use. Detuning of C6 will allow a convenient peak level reading to be adjusted on the meter.

Strictly speaking, Mr. Shires is correct in stating that "too much audio gain will degrade the signal," but, for all practical purposes I believe it to be a fact that "a little too much audio gain will not degrade the signal because the crystal filter will not pass the spurious sidebands caused by the overmodulation of the carrier." This is all a matter of degree.

In so far as objectionable emissions outside the 3 kc/s band occupied by an s.s.b. signal are concerned, my statement is correct. In so far as intermodulation (distortion) products within this band are concerned, suffice it to say that the intelligibility of speech will not appreciably suffer even though the audio voltage be twice optimum, which audio level I would consider to be outside the limits of my previously stated "a little too much audio gain." Incidentally, a circuit much used and accepted as good practice in commercial as well as amateur radio-telephony is the speech clipper-filter. In its functioning, this device produces substantial distortion products within the pass band of its filter in a manner closely analogous to our s.s.b. modulator-filter, but nevertheless acceptably intelligible speech results even when the input is as high as 15db over the level where clipping (distortion) begins.

Let me thank G3BTM for pointing out some aspects of my article which needed clarification, as well as others which might be open to argument.

Again referring to my previously mentioned article, it has been recently called to my attention that crystals in the 400-500 kc/s range bought on the surplus market are not all of good quality. It is therefore advisable to test all crystals before use in the filter by some such means as placing them in a triode test oscillator and measuring the grid current. Those which oscillate and which show the highest grid current should be selected. Although all crystals need not be of exactly the same activity, the activity of each XL (as measured by the grid current of the oscillator) should be as close as possible to that of the XH connected to the same i.f.t.

Also, as implied in the text but inadvertently not so drawn in Fig. 1, the primary of T2 is tunable either by a slug or by a trimmer condenser, and should of course tune to the band-pass centre frequency of the crystal filter.

Yours faithfully,

New York 7, U.S.A.

F. C. B. JORDAN (W3FIU).

Points from Letters...

Good Taste was discussed on a recent B.B.C. Television Brains Trust, where it was generally agreed to be difficult to define yet was understood by the vast majority.

I was appalled by a recent R.A.E.N. effort—a very serious matter of the train crash at Dagenham. I should have thought that by now R.A.E.N. would have worked out a procedure. Instead it was similar to the terrible treatment accorded to some rare DX station—everybody seemed to want to crash in; here's a chance to get one's photo in the papers, was the impression given to the listener. One operator was chewing sweets and every other word was punctuated with a slobber or crunching sound. What on earth must the "International" Society, with whom they are co-operating, and the general public have thought?

And quite seriously the impression gained from some remarks were: "Pity the smash is not bigger and then we might have got a show." It is hoped that this may remind the few, who I am sure have only temporarily forgotten what they must have learned at their Mother's knee, of that which can be summed up as Good Taste.

W. H. MATTHEWS (G2CD)

Held Over

Due to pressure on space several Letters to the Editor have been held over.

Can You Help?

- E. W. Hunt (VS2CV), Federal Police H.Q., Kuala Lumpur, Malaya, who requires the manual for the ex-R.A.F. Oscilloscope type RWM81-B R.A.F. 110SB/54?
- N. Jones (G3JVI), The Stores, Moreton, near Ongar, Essex, who wishes to obtain the service manual for the Receiver type R1116A?

Silent Keys

JOHN CULLEN (G2AD)

By the death of John Cullen (G2AD), Liverpool, radio amateurs have lost one of their grand old timers. John had not enjoyed very good health in recent years but he was often busy in his shack either listening or, when able, making a QSO. He will be especially remembered for his 80 metre skeds. Originally licensed as G5OL about 30 years ago he constructed most of his own equipment.

Sympathies are extended to Mrs. Cullen and to her daughter, who greatly helped her father in his Amateur Radio work during the latter years of his life.

GROUP CAPTAIN A. F. JOHNSON, C.B.E., D.F.C. (G3JN)

It is with deep regret that we record the passing of G/Capt. A. F. Johnson, C.B.E., D.F.C. (Ret'd.), G3JN, of Potten End, Berkhamsted, Herts, on January 24, 1958, at the age of 49 years.

Since receiving the call-sign G3JN, before World War II, "Johnny" had at some time or other operated on all bands from 160 to 2 metres. As a serving officer he set up station in various parts of the U.K. and was at one time active under the call-sign SU1AF.

On retirement from the R.A.F. he joined the English Electric Company at Luton and continued to lead a full and active life until the end of last December when he was taken seriously ill and entered hospital.

His sudden death has come as a great shock to his many friends among the amateur fraternity, particularly those in the South Eastern area who, in recent years, knew "Johnny" so well as a keen "Top Band" and two metre devotee.

He is survived by his widow and one son to whom we extend our deepest sympathy in their bereavement. G3PV.

CYRIL JONES (GW3AZQ)

The sudden death of Cyril Jones (GW3AZQ) of Bargoed, Glamorganshire, has brought sadness to his many Amateur Radio friends who knew him personally or "over the air." His contributions to the Sunday sessions on Top Band will be greatly missed.

Sympathies are extended to his widow, son and daughter in their bereavement.

The Society was represented at the funeral by GW2BUF, GW3AJ, GW3DDY, GW3KYA, GW6BK and GW8CT.

G. A. J.

GILBERT TONKIN (G5RQ)

We record with deep regret the passing on February 6, 1958 at Stratton-on-the-Fosse, Somerset of Gilbert Tonkin, G5RQ, in his 69th year.

Well known by the Bristol Group for very many years he will be remembered as one of the real old timers, having been first licensed as far back as 1910 with the call TBX. Upon the resumption of Amateur Radio activities after the first World War he became the possessor of the call G5RQ under which he continued to operate to within a short time of his death.

A "ham" in every sense of the word, he took a delight in building his own apparatus wherever possible. His activities on the air ranged from DX on the higher frequencies to a good rag chew on Top Band. Recently he had been engaged on work in connection with the International Geophysical Year. During the second World War he gave unstintingly of his services in radio work of a specialized nature.

In these days of easy communication it is well to recall the immense difficulties encountered and surmounted by the early amateurs with the primitive apparatus available. Gilbert Tonkin was one of those early amateurs and we salute him as he passes on.

To his wife and two sons we offer our deepest sympathy. R.A.B.

Mrs. Nora Hollington

It is with much regret that we record the death, on February 11, 1958, after a long illness, of Mrs. Hollington, wife of Mr. J. Hollington (G4GA) of South Chingford. Nora, as she was known to local amateurs and to many others throughout the country, was noted for her kindness and hospitality. Though her home was almost a nightly meeting place, she was ever ready to offer a friendly welcome and did much to foster the spirit of Amateur Radio.

To her husband and his family we extend our sympathy and share with them their sad loss.

G3GFS, G8TL.

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THE QSL Bureau Manager states that as from February 17 the local Post Office was instructed to return to sender all packets of QSL cards addressed to the R.S.G.B. QSL Bureau on which excess postage is payable.

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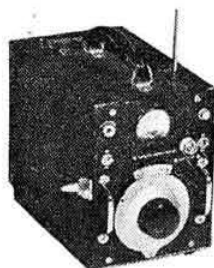
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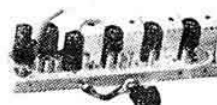
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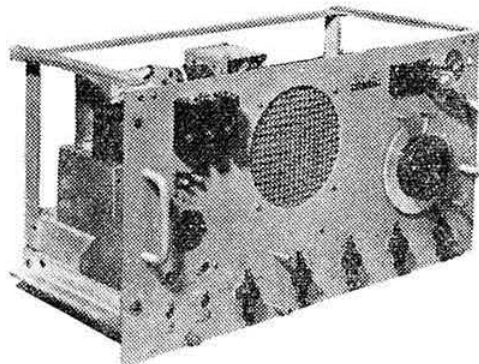
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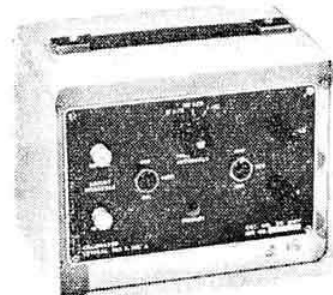


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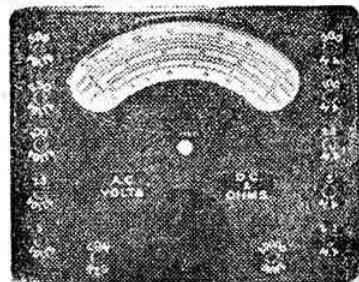
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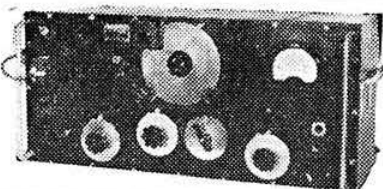
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(Continued on page 448)

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