R S G B

APRIL, 1959

BULLETIN

2/6 Monthly

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

VOL. 34, NO. 10

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R.S.G.B. BULLETIN

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EDITOR:
John Clarricoats, O.B.E., G6CL

ASSISTANT EDITOR:
John A. Rouse, G2AHL

EDITORIAL OFFICE:
R.S.G.B. Headquarters, New Ruskin House, Little Russell Street, London, W.C.1
Telephone: HOLborn 7373

ADVERTISEMENT MANAGER:
Horace Freeman, The National Publicity Co. Ltd., 20-21 Red Lion Court, Fleet Street, London, E.C.4
Telephone: FLEet Street 0473-6

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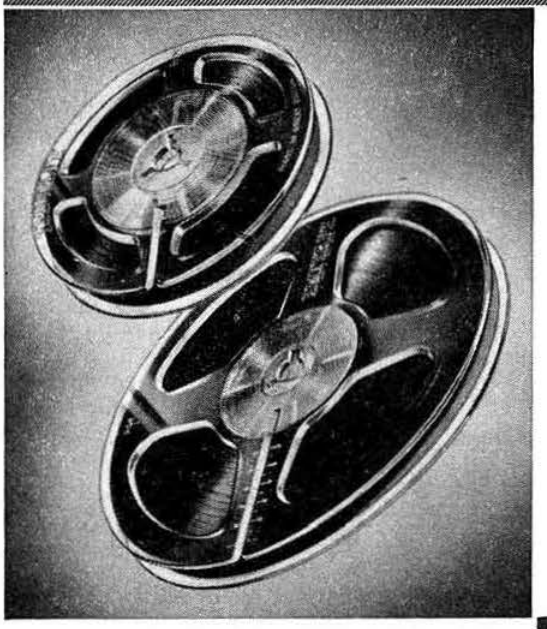

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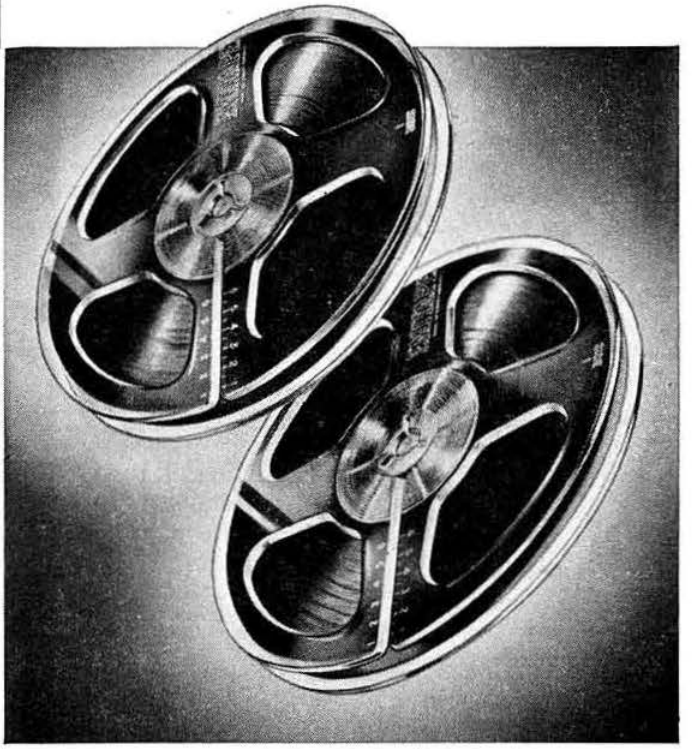

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Current Comment

discusses topics of the day

Not a Shared Band

TO remove any doubts that may exist in the minds of readers it is necessary once again to emphasize that Top Band is *not* a shared band insofar as the Amateur Service is concerned in the United Kingdom. Eighty metres is a shared band—160 metres is not.

By virtue of a footnote appended to the Atlantic City Frequency Table the United Kingdom may assign up to 200 kc/s between 1715 and 2000 kc/s to the Amateur Service provided that no harmful interference is caused to the authorized services of other countries. The authorized services of other countries, as well as of our own, are the Fixed and Mobile (other than Air Mobile) Services.

The concession which allows the United Kingdom and four other administrations in Europe to assign frequencies in Top Band to amateurs was hard won at the Atlantic City Conference—but make no mistake about it the facility could be withdrawn at any time if the Post Office had good reason to think that harmful interference *was* being caused to the Fixed and Mobile Services of our own and other administrations. It will get us nowhere to argue that a state of affairs that is good enough for British Coast stations ought to be accepted by the Marine services of other countries.

The fact remains that European amateurs, with very few exceptions, are not allowed to use Top Band frequencies. Why? Because their respective administrations fear that amateur transmissions will interfere with vital services.

At a meeting of the I.A.R.U. Region I Executive Committee held in Copenhagen last month, it was made abundantly clear that the vast majority of amateurs on the continent of Europe are not even remotely interested in Top Band work, which means that the support from European administrations at the forthcoming Radio Conference in Geneva for the inclusion of the Amateur Service as one of the services which may share Top Band frequencies as of right, is likely to be negligible.

Instead of attempting to argue that the Danish Administration is making mountains out of molehills we would do well to recognize the fact that Top Band is our most vulnerable frequency allocation.

Queen Sugar Baker

WE are not the first and we shall certainly not be the last to draw attention to the strange practices which seem to be the prerogative of certain Amateur Radio phone operators. The limit of absurdity was surely reached one evening recently when a European amateur was heard explaining to another that his signals were fading. But instead of using the simple word—or even QSB—he began laboriously to spell out, in phonetics, the 15 letters of the three words Queen Sugar Baker—Q—Queen, U—Uncle, E—Easy, E—Easy, N—Nan, *ad nauseum.*

The insistent demand for a " handle " is a further example of the way in which some amateurs spoil themselves on the air whilst the royal " we " becomes irritating to the last degree when it is repeated *ad lib.*

Those of us who recognize English as our Mother Tongue would do well to pay particular attention to what we say and how we say it, especially in our contacts with foreign amateurs. Catch phrases are all very well in their way but imagine the confusion that must arise in the mind of a young foreigner when he hears an Englishman talking about " soup going up the spout."

Ignore Rumours

FROM time to time information reaches R.S.G.B. Headquarters that rumours are being circulated by misguided persons to the effect that certain frequency bands currently available to radio amateurs in the United Kingdom are about to be curtailed or withdrawn. The Council of the Society wishes it to be clearly understood that there is no justification whatsoever for such rumours. No amateur allocations are at present in jeopardy, neither is there any indication that the position will be changed as the result of the forthcoming Geneva Radio Conference.

At the time of the Atlantic City Radio Conference in 1947 members were advised to ignore rumours. That advice is repeated again today.

A Cubical Quad Array for the 144 Mc/s Band

By R. C. HILLS B.Sc. (Eng.) (G3HRH)* and P. M. ELTON (G3GOZ)†

IN view of the popularity enjoyed by the cubical quad aerial system, notably on the 28 Mc/s band, and the success obtained by stations using this type of aerial on 145 Mc/s, it seemed to the writers that the basic quad could well form a unit of a large array for use at v.h.f. From a study of the various articles which have been published in the technical press, it appeared that while different methods were employed for resonating the reflector the dimensions quoted were generally based on an article in the January 1955 issue of *QST* [1]. Inspection of these dimensions revealed that the sides of the quad were neither half the size of a conventional dipole nor a quarter wavelength in free space. It was therefore decided to carry out some independent experiments both on a single quad as well as on stacked units.

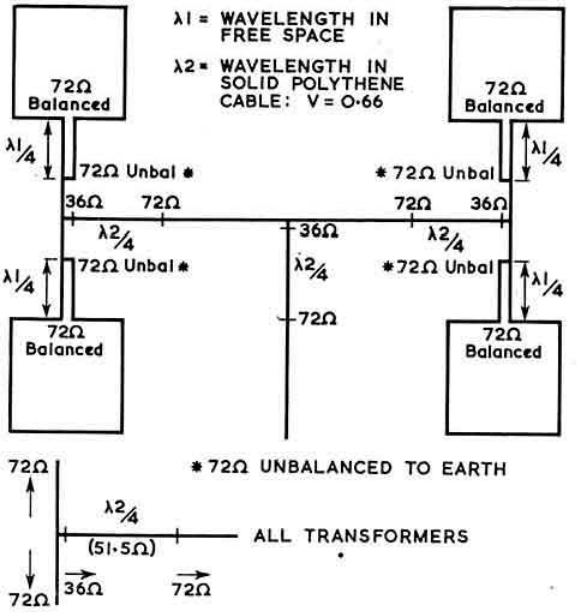


Fig. 1. The complete electrical system of the cubical quad array described.

Before proceeding, it was decided that the following conditions should be met in the design of all the quads that were to be constructed:

(*a*) They would be of the " square " and not " diamond " pattern, so that by feeding each " element " in the centre of one horizontal side, horizontal polarity could be achieved, which was necessary in view of current v.h.f. practice in this country.

(*b*) They would be constructed of ¼ in. brass tubing. This permitted the design of an aerial with intrinsic mechanical strength which in turn enabled the number of supporting points per element to be reduced to two, i.e., at the two voltage minimums in each loop.

(*c*) Coaxial cable would be used as a feeder throughout, which in turn dictated the use of a balun. In the opinion of the writers, it is most undesirable to feed a balanced aerial system with unbalanced feeder unless some form of compensating transformer is used. This is particularly important when stacked arrays are considered.

(*d*) The inductive stubs normally used to resonate the reflector in this type of aerial would, in the interests of mechanical simplicity, be omitted. This meant that two sides of the reflector had to be increased in length *pro rata* to provide the correct phase relationship between the current in the driven element and that induced in the reflector. The principle here is exactly the same as in Yagi-type aerials.

With these points in mind several quads were constructed out of lengths of brass tubing, mitred and silver-soldered at the corners. To ensure the necessary mechanical strength it is important that ordinary soft solder is not used for the purpose. The original dimensions were based on existing commercial designs and were 19¾ in. by 19¾ in. for the driven element and 21¾ in. by 19¾ in. for the reflector. From these figures it is clear that one dimension of each side was made the same to simplify the mechanical fixing on the main frame. The Pawsey stub was adopted as the most satisfactory balun and, again to preserve mechanical rigidity, the single arm of the line was silver soldered on to one side of the feed point and was constructed of the same tube as that used in the quad elements.

The complete electrical system is shown in Fig. 1. The unbalanced feeds of 72 ohms from the two vertical quads are paralleled through a quarterwave transformer of 51·5 ohm cable to give an output impedance again of 72 ohms for half of the system. The two outputs from the " double quads " are paralleled in a similar way so that the complete aerial presents at its terminals an impedance of 72 ohms unbalanced to earth.

Physically, F. & E. coaxial fittings were used for the connections with U.R.1 cable for the 72 ohm sections and U.R.67 cable for the transformers. The physical arrangement is shown in Fig. 2.

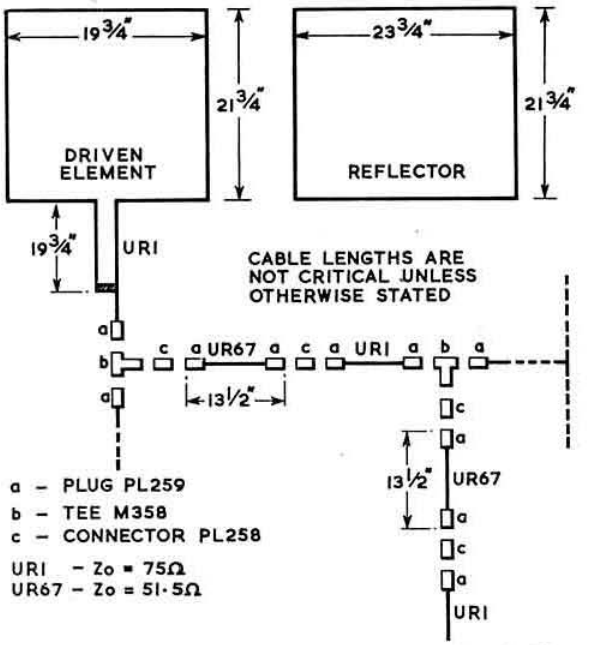


Fig. 2. Physical arrangement of the aerial system shown in Fig. 1.

*80 Longcroft Lane, Welwyn Garden City, Herts.
†82 Kenilworth Crescent, Enfield, Middlesex.

Initial Tests

All measurements on this aerial system were performed using a Marconi Instruments Signal Generator type TF995/A/2, a Wayne Kerr V.H.F. Admittance Bridge type B901 and an Eddystone receiver type 770R.

All measurements were taken out of doors with the test aerial at least one wavelength (7 ft.) above ground and from surrounding objects. The spacing of the two elements of a single quad was set at 0·2 of a wavelength: this figure was quoted in *QST* as giving an impedance of 72 ohms at the feed point.

metre band. Accordingly a " frequency run " was made with the test equipment and it was finally established that the quad, as constructed, resonated at 151 Mc/s, i.e., approximately 4 per cent high in frequency. This produced a minor dilemma as four quads had already been constructed to the dimensions originally quoted. However, it was finally decided on the grounds of economy and convenience to elongate all the vertical sections of the elements. This maintained the ease of mechanical construction referred to previously. It should be pointed out that electrically there is no objection to " squaring up " the dimensions of the

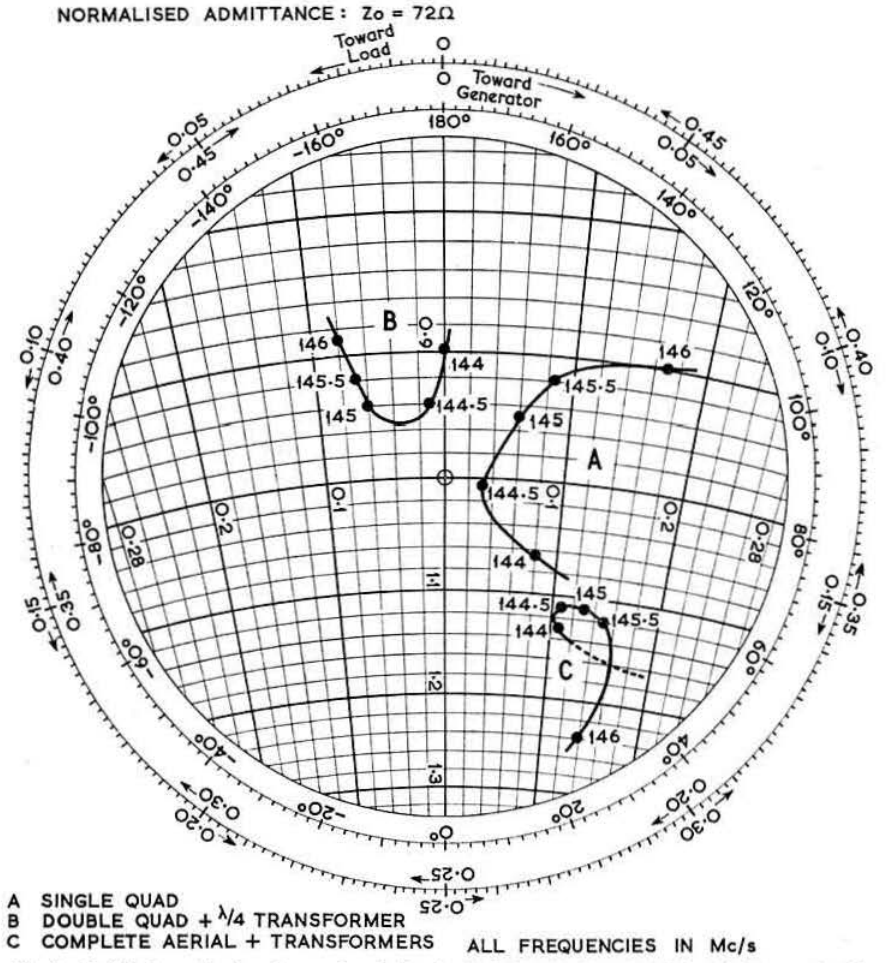


Fig. 3. Smith chart showing the results obtained with (A) a single quad, (B) a double quad with quarterwave transformer, and (C) the complete array of Fig. 1 with transformers.

Two features were revealed by the initial measurements: (i) The aerial was resonating at a frequency higher than 145 Mc/s. (This was revealed by the scatter of ½ Mc/s points on an admittance plot;) (ii) The impedance of the aerial was higher than that of the cable. (Although reference is made from time to time to impedance, in fact all measurements taken were those of admittance at the terminals of the aerial under test.)

The high impedance feature was easily overcome by progressively moving the two elements closer together until the s.w.r. had been brought down to a more desirable point. However, the quad was still not resonating on the two driven element and adjusting the ratio of the reflector sides accordingly.

Data for One Quad Aerial

The final dimensions of the quad are as shown in Fig. 2. Taking the " squared up " figure of 20¾ in. for each side of the driven element it will be seen that this approximates to 0·255 of a wavelength in free space at 145 Mc/s. The spacing between the two elements *on a single unit only* (see below) to provide a correct match into the 72 ohm feeder was found to be 7 in., which approximates to 0·08 of a wavelength. The spacing between the elements had a

markedly critical effect on the s.w.r. although the forward gain of the aerial was not affected in so drastic a manner.

With the spacing set at 7 in. a frequency run was taken and the results are tabulated in Table 1; the locus of input admittance was plotted on a Smith chart (Fig. 3). From these results it was clear that the single quad is a poorly compensated aerial in terms of bandwidth and could, in theory, be improved by tapping across the quad output terminals a quarterwave short circuited line of fairly low characteristic impedance, say 30-40 ohms. Again it should be stressed that all the admittance figures are those occurring at the actual aerial terminals and have been normalized to 13·95 mmhos: this corresponds to a terminal impedance of 72 ohms.

The signal generator and receiver were then used to measure the performance of the aerial which was found to have a forward gain of 5db over a halfwave dipole and a back-to-front ratio of better than 20db.

In view of the varying claims for cubical quad aerials [2], it is felt that it should be explained that the figures quoted above were obtained using the signal generator with its calibrated attenuator in conjunction with the receiver in a substitution system. The receiver was run at a constant signal level and a constant test signal was radiated from (i) the reference dipole, and (ii) the quad when occupying the same physical position as the dipole. (This was conveniently obtained from a low power 144 Mc/s transmitter.) When the signal level meter readings on the receiver for each aerial had been recorded, the signal generator was substituted for the aerial and adjusted in each case to give the same meter reading as the aerial under test. Direct subtraction of the signal generator attenuator readings gave the gain of the quad aerial. This method was used for obtaining all the performance figures.

TABLE 1

Frequency (Mc/s)	Gn	Bn	S.W.R.
144	1·065	+0·08	1·105
144·5	1·008	+0·035	1·035
145	0·95	+0·06	1·084
145·5	0·92	+0·083	1·13
146	0·9	+0·17	1·23

TABLE 2

144	0·9	0	1·11
144·5	0·94	−0·01	1·068
145	0·94	−0·06	1·095
145·5	0·92	−0·066	1·12
146	0·89	−0·08	1·16

TABLE 3

144	1·13	+0·11	1·175
144·5	1·11	+0·11	1·16
145	1·11	+0·13	1·175
145·5	1·12	+0·15	1·20
146	1·24	+0·14	1·28

Gn = normalized conductance
Bn = normalized susceptance
S.W.R. = standing wave ratio on 72 ohm feeder

Double Quad

Following the tests of the single quad, two units were then stacked one above the other, the vertical centre-to-centre spacing being set at 65 in. (i.e., ⅝ of a wavelength in free space). This dimension was a compromise between mechanical considerations, i.e., to limit the torsional loading of the transverse supporting boom, and optimum electrical spacing which approaches one wavelength in free space. The two quads were measured when paralleled through a single quarterwave 51·5 ohm transformer. The performance figures of this type of aerial proved to be 8·2db over a half-wave dipole with a back-to-front ratio of better than 10db at 145 Mc/s. The locus of input admittance is tabulated in Table 2 and plotted on the Smith chart (Fig. 3). It will be seen that the two aerials are to a first order dual-compensating and the bandwidth has improved slightly. To obtain the 72 ohm input impedance for the double system it was found necessary to open out the spacing of the reflectors from the driven element on both quads to 9 in. This is necessitated by the fall in input impedance on a single quad due to the mutual coupling of the pair.

Four Quads

The final form of the aerial, shown in Figs. 1 and 2 and in the photograph, is at present in use at G3GOZ. The layout used was adopted because of the ease with which the feeder cable could be run and also to avoid a long length of unguyed mast. The spacing between the elements is 9 in. as in the case of the double quad while the vertical spacing between quads is 65 in. In the absence of the torsional loading problem, the horizontal spacing was set at 81½ in. centre-to-centre, i.e., a full wavelength in free space.

The measurements are set out in Table 3 and again

(continued on page 499)

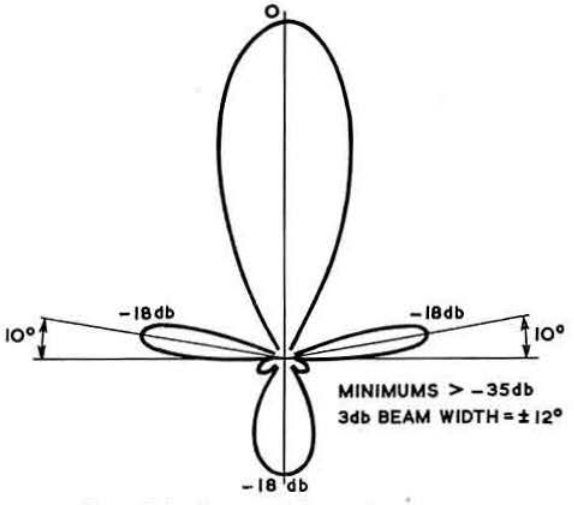
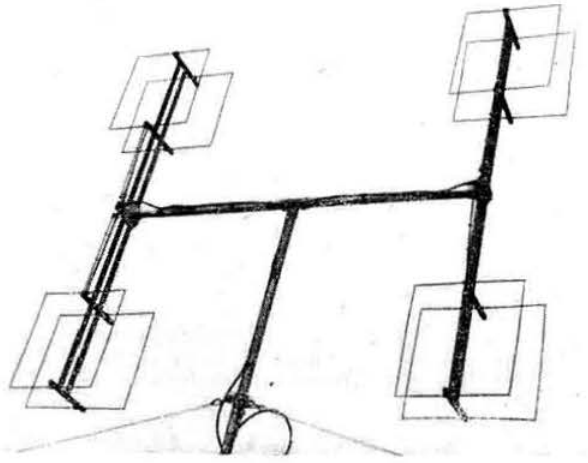


Fig. 4. Polar diagram of the complete array.



The 144 Mc/s cubical quad array at G3GOZ.

Fidelity Sound Reproduction Performance and Components

By F. C. JUDD, A.Inst.E. (G2BCX)*

ONE of the major problems faced by the enthusiast for fidelity sound reproduction is that of measuring the performance of his equipment. He must either rely on components and design specifications and accept assurance from these that the overall performance is what he hopes it is, resort to buying or building expensive test gear and find out for himself, or simply judge results by listening and forming his own but probably still doubtful opinion. Circuit designs issued by competent engineers, and the component specifications of most manufacturers, can generally be accepted as reliable, especially when backed by recommendation arising from independent but accurate tests or observation of performance. Those blessed with an audio signal generator and an oscilloscope are in the slightly more favourable position of being able to check things for themselves.

The fidelity of electrically reproduced sound can be no better than the equipment or its acoustic environment will allow and it is well known that some forms of distortion cannot be detected even by a so-called " trained ear." Frequent listening, comparison with the original sound source or equipment with performance known to be above reproach, plus some knowledge of an otherwise highly specialised subject, does, however, enable a fair assessment of the faithfulness of reproduction to be made.

The requirements for high fidelity are now generally established and most manufacturers of audio equipment are concerned with meeting the demand of the public for complete and expensively furnitured equipment. A few firms, who have not forgotten the amateur with his attendant needs for home construction, are producing component parts and units, as well as excellent circuit designs for quality amplifiers and radio tuners. Modifications to the writer's equipment described in " Stereophonic Recording and Reproduction " (R.S.G.B. BULLETIN September and October 1958) has involved using some new components and circuits. It is hoped, therefore, that the following notes may be helpful.

Stereophonic Recording and Playback

It was mentioned in the earlier articles that a satisfactory method of stereo recording and playback had been devised using separate and spaced tape-heads, one for each half track, but that the use of a stacked in-line head would standardize the system for playing pre-recorded commercial stereo tape such as those produced by E.M.I. The problem was solved by using the Truvox type TR.2049 stereo tape head, which with little modification to the deck could be fitted to many existing types. Prospective users are advised to obtain fixing details and dimensions which are available from the makers. The technical specification, which agrees favourably with recommended standards is as follows:

(i) Two channel heads suitable for quarter-inch magnetic tape.
(ii) Gap: Beryllium copper 0·00025 in.
(iii) Output voltage: 1-3 mV.
(iv) Impedance: 50,000 ohms approximately at 10,000 c/s.
(v) Frequency Response: 50-15,000 c/s with suitable amplifiers.
(v) Cross-talk better than 45db.
(vi) Bias for recording 120 V r.m.s.
(vii) Recording current: 0·1 mA approximately.

An in-line erase head is at present unavailable so that two separate and spaced heads would have to be used if automatic erasure of old recordings is contemplated.

Excellent recording and playback with a performance quite up to the makers' specification has been obtained, in fact the response at the higher frequencies is so good that h.f. pre-emphasis in the recording amplifiers had to be reduced quite considerably. This is a favourable condition and brings about a reduction in hiss and distortion often due to the high level of emphasis required for frequencies above about 3 kc/s. Hum pick-up from the tape drive motors was negligible with full playback amplifier gain but some additional screening might be required if the head is used in close proximity to a mains transformer. Tests with an audio signal generator and output meter proved the equality of output and response from both sections of the head; an essential feature for stereo operation. No provision is made for azimuth alignment as the head was originally intended for fitting to a Truvox deck which in all probability incorporates this facility. However, a simple mounting platform with a screw adjustment for vertical alignment of the head

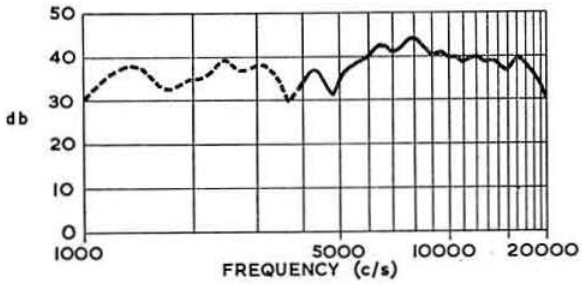


Fig. 1. Frequency response of the Elac tweeter unit.

was constructed without much difficulty. The base of the tape head is already provided with fixing holes, drilled and tapped 8B.A. The head was also tested with an E.M.I. " Stereosonic " pre-recorded tape, the stereo effect and reproduction being first class.

Whilst on the subject of stereo it has been announced that, in addition to the experimental transmissions with the a.m./f.m./TV combination as before, the B.B.C., in conjunction with E.M.I., are investigating a compatible system permitting the transmission of directional information for the stereophonic effect over a single f.m. channel. Known as the E.M.I.-Percival system it will still permit normal f.m. reception of monaural signals. In the complementary stereophonic f.m. receiver a sub-carrier will have to be separated from the main frequency signal and demodulated. The signal for one loudspeaker will be obtained from the product of the two signals, and for the other, by subtracting this product from the combined compatible system. It is to be hoped that by the time this system comes into full operation, if it ever does, the B.B.C. will have put away their trains and racing motors!

Loudspeakers

An improvement in the h.f. response of one of the writer's loudspeaker systems called for a tweeter unit with a frequency response more or less flat between 5 and 18 kc/s. This was catered for by an Elac 4 in. tweeter speaker which incidentally is one of the four speakers included in the Elac high fidelity system which is available in kit form for home construction. A complete kit comprises two 10 in. units (connected in parallel), a mid-frequency speaker of the elliptical type, the 4 in. tweeter mentioned above and the necessary crossover network. The makers claim an even frequency response over the range 40-17,000 c/s. The kits

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

are available for 7·5 or 15 ohm outputs. The response of the tweeter unit after the recommended crossover at 5 kc/s is reasonably flat to 17 kc/s falling by about 7db at 20 kc/s (Fig. 1).

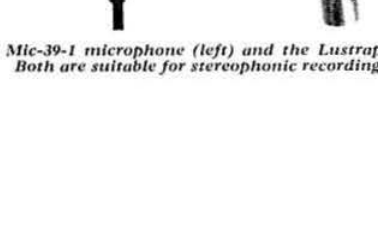
The Elac tweeter unit.

Microphones

Stereophonic recording of a more satisfactory nature than that provided by the use of spaced microphones requires two ribbon instruments. These are normally expensive items but the Lustraphone type VR.64 is a ribbon microphone rather less expensive than most and ideal for quality tape recording. Two of these microphones would be required for stereo recording where the co-sine law characteristic is suitable for the production of left and right hand outputs to the recording channels. For this mode of operation the microphones are arranged as in Figs. 2 and 3, so that the figure-of-eight patterns are at an angle of 90° to each other. The polar characteristics of microphones are used very extensively in professional recording, especially in stereo techniques where instruments with omni-directional, co-sine law (figure-of-eight) and cardioid patterns are used to provide control over the " width " of the sound source and the " presence " of central artists.

Known as the " Ribbonette " the Lustraphone instrument has a built-in matching transformer and can therefore be connected directly to a high impedance input circuit making it interchangeable with other high impedance microphones. The frequency response is claimed by the makers as being substantially flat between 50 and 13,000 c/s. Sensitivity is high, no additional gain being required from a conventional recording amplifier to provide full output on playback. This instrument has, of course, the co-sine law polar characteristics.

Another excellent microphone but one with an omni-directional polar response is the " Acos " high fidelity crystal microphone referred to by the makers as the " stick " microphone or Mic-39-1. A frequency response from 50 to over 10,000 c/s is claimed and the response curve shows the output as being flat up to 5000 c/s with a rising characteristic to plus 5db at 10,000 c/s. Two of these microphones used with an artificial head have produced quite good stereo effect and excellent quality of reproduction. The Mic-39-1 can be held without the booming and rustling noise usually associated with sensitive microphones and is not prone to pick-up due to stray magnetic fields.



The Acos Mic-39-1 microphone (left) and the Lustraphone VR.64. Both are suitable for stereophonic recording.

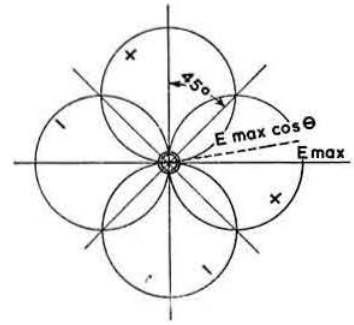


Fig. 2. Polar characteristics of two velocity microphones at 90°. (The microphones are placed in the same vertical axis.)

New Circuits

Most high fidelity enthusiasts will no doubt be familiar with the Mullard booklet entitled *Circuits for Tape Recorders*. It might be mentioned, however, for those who have not seen this booklet and its supplement which describes modifications to the equalizer circuits that both can be obtained free of charge from Mullard Limited (Publications Department). Other useful circuits include a *Two valve Pre-amplifier* for use with magnetic and crystal pick-ups, microphone and radio inputs and tape recorder playback heads, and a *Four Channel Input Mixing Amplifier* suitable for use with the Mullard 5-10 quality amplifier. Supplementary information to *High Quality Sound Reproduction* (another Mullard publication)

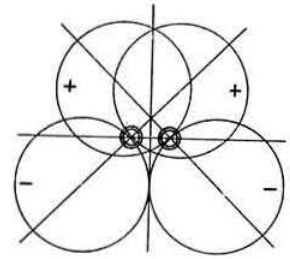


Fig. 3. The effect of spacing two velocity microphones by a small amount.

which describes modifications to the 5-10 circuit for ultra-linear operation is also available. All these leaflets may be obtained by writing to Mullard Ltd.

Suitable circuits for stereophonic tape amplifier h.f. pre-emphasis and a balance control for " Stereosonic " reproduction, as well as a mine of other information on high fidelity amplifiers, loudspeakers, record reproduction, tape recording, radio tuners, etc., may be found in a new book published by George Newnes Ltd., entitled *High Fidelity Sound Reproduction*. The book was written by a panel of experts and edited by E. Molloy.

Technical Topics

By Pat Hawker (G3VA)

Semi-conductor Devices—Oscillator Keying—Simple Band Pass Filters —High Efficiency Power Amplifier

THE development of semi-conductor devices has almost certainly been the most important event in the recent history of radio engineering. Yet, the number of semi-conductors actually in use in amateur stations remains an insignificant fraction of the number of valves. How long will this remain true? In what directions are we most likely to see a breakthrough of the semi-conductor?

Despite a number of articles on transistorized communications receivers (a good example is the complete high-performance receiver with a mechanical filter described in *QST* February, 1959), it seems unlikely that there will be any widespread changeover in this direction—at least for normal domestic operation—within the next few years. We are all inherently lazy and seldom anxious to exchange existing techniques and habits unless we can see clearly the immediate practical advantages of so doing. Apart from miniaturization, lack of warming-up drift and the power advantages for portable work, no one has yet claimed that they can build a transistorized h.f. receiver that gives better results than can be achieved with valves. Similarly, in transmitters we could already begin to replace some valves with transistors but we are still waiting for the h.f. power transistor which would allow us to build a completely transistorized station of useful power output (transistors capable of about 5 watts output at 10 Mc/s are under development). So our valves will probably be retained for some time to come in our main equipment.

But already several commercial s.s.b. transmitters use transistors for the entire s.s.b. generation section (see for example the article on the "Third Method" of s.s.b. in January, 1959 *Wireless World*).

On the other hand, in the field of measuring and test equipment—grid dip meters, transistorized "valve" voltmeters, harmonic indicators, and even oscilloscopes—the advantages of compactness, low cost of battery consumption and freedom from mains connections offer real benefits, and from now on anyone starting to build such equipment should seriously consider whether it would be worth using transistors.

Then again for mobile and portable work, the transistor d.c. converter is rapidly outstripping vibrators and rotary converters as an ideal means of providing the necessary h.t. from a low voltage supply. As indicated in recent BULLETIN articles, transistors can also with advantage take over all the a.f. and modulator stages in a mobile rig. A simple transistor converter, feeding into a standard car radio, can look after the receiving side. Without straying too far into G2AHL's column we can say then that all mobile operators should mind their "P's and N's."

Several articles on high power transistorized d.c. converters appear in the April, 1959 *Electronic and Radio Engineer*.

The fact that the capacitance across a junction diode decreases with a rise in the reverse voltage placed across it makes possible some very interesting circuit applications: a junction diode will act as a variable trimmer (say 3-20pF) of moderate *Q* tuned entirely by changing a d.c. potential. Already it has been shown that this principle can be used to produce an f.m. signal very simply, or to act as an automatic frequency control for v.h.f./f.m. and television receivers (see *Wireless World*, August, 1956 "Junction Diode A.F.C. circuit" or *Mullard Technical Communications*, November, 1958 "A.F.C. in Band II F.M. receivers"). In another field, this property is used in the remarkable parametric low-noise v.h.f. amplifiers (for an introduction to those revolutionary devices see a series of articles "New Thresholds in v.h.f. and u.h.f. reception" by W4AO and W4LTU in *QST* December, 1958 - March, 1959). Then again these "capacitors" can be used for remote tuning of v.f.o.'s with the external leads carrying only d.c. and with a variable resistor as the tuning control. Yes, almost certainly this property of junction diodes is going to interest amateurs a lot.

Finally, one comes to what may prove to be the field in which the semi-conductor will first establish its ascendency over all other rivals: power rectification. Probably most of us have by now seen the small germanium junction rectifiers capable of handling currents of tens and even hundreds of amperes. But it is interesting to note that already in the United States, silicon junction rectifiers, though a shade less efficient than germanium types but with a wider temperature range, are already being widely used for the provision of h.t. supplies in domestic television receivers and are finding their way into an increasing number of amateur transmitter designs. A typical silicon rectifier having a current rating of 200 mA or more may occupy little more space than a ½-watt resistor. The voltage drop across a junction diode is only about one-tenth of that across a conventional rectifier, and the very low forward resistance which gives rise to this high efficiency does not increase with age as so often happens with other types of rectifiers. The absence of heaters makes the use of these rectifiers in voltage doubling bridge circuits particularly attractive. Silicon rectifiers are already marketed by a number of U.K. firms though prices, as yet, seem higher than those ruling in the States. Let us hope that increasing demand will soon bring the prices of these and all other semi-conductor devices down to a figure truly competitive with valves. This is said to be already happening in Japan where there is a thriving transistor industry.

New Oscillator Keying Circuit

For years, whenever the subject of oscillator keying cropped up, the stock answer of the pundits has been "Don't." The difficulty, of course, is the frequency shift that occurs when a valve goes into and out of oscillation; this appears on a keyed signal as an unpleasant form of "click" which cannot be eliminated by a conventional lag filter. Nevertheless, there have always been some amateurs who have been able to put out good quality signals with a keyed oscillator (the inclusion of a lag choke

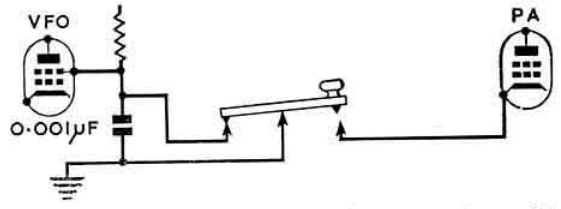


Fig. 1. "Sequence" keying by use of back contacts. A normal key click filter must be connected across the p.a. keying contacts. Short-circuiting the screen voltage to chassis is one of the best methods of keying an oscillator.

capable of withstanding high peak voltages in the p.a. anode circuit is one dodge for reducing the turning-on "clicks").

Then came the re-emergence of sequence keying with various methods, simple and complex, of turning on the final stage a moment after the oscillator and turning it off a moment before; oscillator keying once again became respectable. Incidentally, if you use a straight key one of the simplest ways of obtaining sequence keying is to use the back contacts to key the oscillator and the front contacts to key the p.a.—the time taken to traverse the gap will automatically produce the required delay. Fig. 1 shows one of the many possible ways in which this can be done.

A new circuit for oscillator keying was described by W6NRW in *CQ*, February, 1959 under the title "Vacuum Tube Keyed Oscillator." The circuit is shown in Fig. 2 from which it will be seen that V1A forms a conventional oscillator while the effect of V1B is to place a variable resistance between the cathode of V1A and earth. This is due to the change of input resistance of a grounded grid amplifier which occurs with small changes of bias. V1B in fact functions as a grounded grid amplifier isolator stage, although the gain is low owing to the low value of the anode resistor. The keying constants will be determined by the values of the three components in the grid circuit of V1B. The value of Cx may require adjustment if there is difficulty in obtaining keying within the bias range indicated.

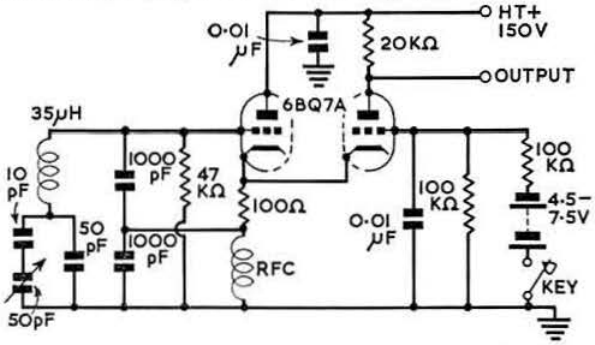
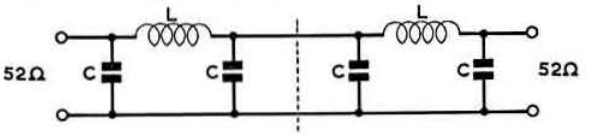


Fig. 2. W6NRW's combined oscillator and valve keyer originally described in CQ Magazine. The principles could be adapted for use with other oscillator circuits.

"Harmonikers"

For almost a decade, a useful piece of ammunition in the anti-TVI struggle has been the simple band-pass filters—called "harmonikers"—originally described in the American *G.E. Ham News* for November/December 1949. These filters are in many ways simpler to build and adjust than the standard type of low pass filter used by many amateurs.



BAND	C (pF)	L (μH)	TURNS	DIAMETER (in)	T. P. I.
3·5	800	2·3	12	1	8
7	500	1	11	5/8"	8
14	220	0·55	10	1/2"	8
21	150	0·37	7	5/8"	4
28	110	0·28	5	5/8"	4

Fig. 3. The "Harmoniker" band-pass filter for connection in coaxial lines.

Harmonic suppression, however, is not likely to be quite so good as with a correctly adjusted l.p. filter, but impedance matching problems, which can be very difficult to straighten out with some l.p. filters, are less likely to arise. The snag is that a separate filter is needed for each operating band and the filter must be changed when switching bands. Recently, with the growing popularity of multi-band aerials, these filters have been enjoying a new wave of popularity not only as a means of combating TVI but also to reduce radiation on bands other than that to which the p.a. is tuned. The fixed capacitors, which can be disc ceramics, are all common values. Construction should follow usual filter practice.

Fig. 3 shows the circuit of the "harmoniker" with values for various bands.

High Efficiency Power Amplifier

"M.B." has already drawn attention* to the new high-efficiency high power amplifier system described by V. J. Tyler, B.Sc., A.M.I.E.E. in the *Marconi Review* (third quarter, 1958). This amplifier, which is covered by patents, is capable of efficiencies of 90-95 per cent compared with a practical limit of about 70 per cent for conventional class C circuits. The system uses complex tank circuits and a near square-wave drive waveform. Possibly an even more attractive feature, from an amateur viewpoint, is that in this amplifier some valves can be made to give up to 400 per cent more power than in a normal amplifier; for example, a KT45 line output valve has been made to provide up to 200 watts output at 1 Mc/s.

The prospects for amateurs seemed at first sight so glowing that it was felt that some further information should be obtained. Mr. Tyler has been kind enough to answer some questions on this amplifier. He states:

"I do not think it is likely that an amateur could set up an H.E. amplifier by guesswork in the absence of a calculated design. The attainment of the proper drive waveform is not something which normally responds to trial and error, and even the anode circuits require the ability to calculate energy storage and throughput. Although the circuits are not critical, they need to be within 2 to 1 of the optimum component values if any real advantage is to be gained. No circuit diagrams of amplifiers with actual values have been published since it is not expected by Marconi's Wireless Telegraph Co. that anyone will attempt to infringe the patent by making an H.E. amplifier."

Stereophonic Amplifiers

LEAFLETS giving information on stereophonic amplifiers using ECL82 valves may be obtained from R. Webb, Home Trade Sales Division, Mullard Ltd., Mullard House, Torrington Place, London, W.C.1. A 7 watt high quality circuit employs four ECL82 valves, one ECC83 and one EZ81. An inexpensive 2 watt version uses two ECL82s and one EZ80.

International Transistor Exhibition

TICKETS for the International Transistor Exhibition, promoted by the Institution of Electrical Engineers, may be obtained from Industrial and Trade Fairs Ltd., Drury House, Russell Street, London, W.C.2.

The Exhibition, which will be at Earls Court, London, from May 21-27, is being arranged in connection with the I.E.E. International Transistor Convention. About 2,000 scientists from all over the world are expected to attend.

* "New developments in Radio Communications," *R.S.G.B. Bulletin*, March, 1959.

General Specification for Amateur Transmitters

Guidance in the Selection and Design

WHILST discussing the reprint of extracts from the International Radio Regulations which were published in the September 1958 issue of the BULLETIN, the Society's Technical Committee came to the conclusion that it would be of considerable help to amateurs to have available a guide to the general technical characteristics desirable in a currently designed transmitter. It was further considered that such a guide could be used as a " yardstick " when assessing the capabilities of equipment in relation to the demands required by Regulation as well as Licence, and the need for improved technical standards to meet present-day operational trends.

The general specification which follows sets out a minimum technical standard for transmitters generally. It is not intended to cover every type of transmitter in detail. For instance, the special cases of television and single sideband will no doubt form an addenda to this specification at some later date. Additionally, the following should not be regarded as capable of satisfying the stringent demands for improved harmonic attenuation in cases where television and broadcast interference result from this cause alone.

General Specification

(1). The frequency stability of the radiated signal shall be to the standards prescribed in the current I.T.U. Radio Regulations, Appendix 3.

(2). The transmitter shall conform to the tolerances required in (1) above without adjustment, during sending periods, regardless of the variation in aerial impedance or other loads to which the transmitter may be connected

(3). The transmitter shall, moreover, satisfy the requirements in (1) above, during variations in supply voltages up to a value of ± 10 per cent of the nominal.

(4). Harmonic and spurious emissions shall be within the values prescribed in the current I.T.U. Radio Regulations, Appendix 4.

(5). Emissions at any frequency, other than that of the carrier and/or sidebands comprising the modulation envelope specified, shall be considered as spurious, irrespective of whether radiation takes place via the aerial or by direct radiation from circuit components and wiring.

(6). With the master oscillator either open-circuited or short-circuited, any residual emission shall be not greater than specified in para. 4 above.

(7). The bandwidths of the various types of emissions which the equipment is designed to use shall be within the figures prescribed in the current I.T.U. Radio Regulations, Appendix 5.

(8). The modulation due to noise and hum shall be at least 30db below full modulation.

(9). When employing amplitude modulation (waves of type A3 and variants), the transmitter shall be capable of delivering 100 per cent modulation, and should be provided with a readily accessible control, permitting a reduction below this level.

(10). The design shall be such as to reduce to a minimum the effects of frequency pulling when tuning up. In no case shall the mean carrier frequency-change from this cause exceed the following:

(*a*) Up to 30 Mc/s. 25 parts in 10^6.
(*b*) 30 Mc/s to 500 Mc/s. 100 parts in 10^6.
(*c*) Above 500 Mc/s. 3,750 parts in 10^6.

(11). In all respects the mechanical construction and finish shall conform to good standards of engineering practice and the design shall be such that all parts of the equipment are readily accessible for servicing.

Additional Facilities. Desirable but not necessarily essential

(1). A power reduction switch for use when tuning up.

(2). Where a master oscillator is the primary frequency determining circuit, crystal control in lieu is advantageous.

(3). Single switch or relay control for changing from " receive " to " net " to " transmit," together with provision of spare ways for " receiver-muting," etc.

(4). Input sockets for connecting external modulator and power supplies where these are not an integral part of the transmitter.

(5). " Listening-through " facilities for use on two-way telegraph communications.

(6). V.O.R. facilities for telephony.

(7). Meters for adjusting and checking the performance of the transmitter, in particular, a final grid and anode current meter (or meters) and r.f. output indicating device.

(8). Provision shall be made by means of fuses, overload relays, etc., to protect the equipment from the effects of excessive current or voltage.

(9). The act of short-circuiting or open-circuiting the aerial under nominal full input conditions shall not damage the equipment or the valves in use.

(10). The equipment shall fulfill all the operational requirements of this specification at least up to ambient temperatures in the region of 40° C. (A higher figure may be required for tropical operation.)

Appendix 3.—Table of Frequency Tolerances

Frequencies	Fixed stations		Land mobile stations
	Under 200 watts (per cent)	Over 200 watts (per cent)	
Up to 30 Mc/s	0·005	0·01	0·02
30 Mc/s to 100 Mc/s ..	0·02	0·02	0·02
100 Mc/s to 500 Mc/s ..	0·01	0·01	0·01
500 Mc/s to 10,500 Mc/s..	0·75*	0·75*	0·75*

* Until C.C.I.R. publish new figures no closer tolerances can be specified.

Appendix 4.—Table of Tolerances for the Intensity of Harmonic and Parasitic Emissions.—10 to 30,000 kc/s. The power(1) of a harmonic emission must be at least 40db below the power of the fundamental and in no case shall it be above 200 milliwatts.

(1) The power here refers to power supplied to the aerial on the frequency of the harmonic or parasitic emission.

Appendix 5.—Band of Frequencies Required for Certain Types of Radiocommunication.—Note: Four pages of tables appear in the I.T.U. Radio Regulations. These have not been reprinted owing to the amount of space they would occupy, but relevant extracts can be made available on application to the Society.

Can You Help?

● Rev. C. H. Bondreau (VE1HY), 69 Normandy Drive, Halifax, Nova Scotia, Canada, who requires the circuit diagram of the Transceiver X42A, Cat. ZA14684?

● J. G. Clewes, School House, North Rode, near Congleton, Cheshire, who requires information on the U.S. Navy I.F./A.F. Amplifier No. CZC50198 of RD?

THE MONTH ON THE AIR

By J. DOUGLAS KAY (G3AAE)*

As a result of continued indisposition, Mr. S. A. Herbert (G3ATU) has relinquished responsibility for production of *The Month on the Air* which he contributed to the BULLETIN continuously from December 1953 to February 1959. G3ATU is succeeded by another well-known DX-man, G3AAE, who will be writing future commentaries on h.f. band activities.

Reports for the May issue should be posted to Mr. Kay at 18 Fairfield Way, Barnet, Herts, to arrive not later than April 18, 1959.

YOU have a new scribe starting this month, and perhaps a fitting introduction to the new series would be a few personal notes. G3AAE graduated from B.R.S.3789 in 1946, and had the somewhat doubtful distinction of being the first British amateur ever to have a letter "E" in his call-sign. The first rig consisted of a transmitter with an 807 in the final, an HRO receiver and a 67 ft. Zepp antenna: there are now two 807s in the final, but apart from that the rig is very similar to what it was in 1946. Many receivers have been tried, but the HRO is still top favourite where c.w. is the most popular mode of operation, while the 807 still takes a lot of beating for reliability and cheapness, where 150 watts is the legal and actual power limit. Because of space limitations beams are out of the question at this QTH, but the Zepp has always performed well, and has radiated to the tune of 241 countries (238 confirmed), WAZ, EDXC, WAE1, etc.

The formalities completed, let us get down to the DX bands and take them seriatim from 80m to 10m.

Right up to the last week of March propagation conditions have been extremely good, but just as the Easter weekend started a very large sunspot caused a severe ionospheric storm, which left all the DX bands pretty threadbare. However, on the whole, there has been a great deal of activity on most bands with some really succulent DX reported.

3·5 Mc/s

The sole report on this band comes from **B.R.S.20317** (Bromley), who reports hearing CT2AI (07.15 3·503), KZ5LC (07.25 3·512), UA4, UA9, VP7BT (07.30 3·515) and ZL3QX (07.20 3·510).

7 Mc/s

B.R.S.20317 is again the only source of information on this band, but the quality of DX reported should encourage more of the fraternity to give it their consideration. Bill reports the following: CE3AG, CO2SW, HK0AI (01.00, 7·010), HL9KS (16.26 '040), JA6AK (16.29), KZ5LC, OX3RH (04.00 '040), VE4RO, VK7JB (09.00), VP2KR (02.30 '035), VP7BT, VP9BO (04.00 '005), while **G3AAE** worked 9K2AN at 00.30 on 7·065.

14 Mc/s

Still the best band for the rarer class of DX twenty metres has produced a crop of little gems this month—particularly on c.w.

G2HDR (Bristol) has been concentrating on this band and reports FO8AC, UH8KAA, CR4AH and OR4RW of the Belgian Antarctic, while **G3KAA** (Luton) found UA0OM (23.30), LA2TD/P Spitzbergen (12.00), HK0AI (23.00) and a character signing AL5RR, who said that he was in the French Foreign Legion so cannot QSL or state his QTH!

G2ZR (Bath) reports ZK2AD (07.40 '050), and says that he is looking for Nevada and Vermont to complete W.A.S. Suggest you look out for W7YKQ in Nevada, who is often active on 14·080 between 08.00 and 09.00 G.M.T. A welcome new contributor is **G4QK** (Croydon) who has just returned to the air after a long period of inactivity, and is now running 25 watts to a 138 ft. end fed antenna. John has been getting around North and South America, and hopes for big things when he gets a cubicle quad in the air.

Another one band specialist is **G6FB** (Fareham) who has worked 152 countries using only 25-35 watts to a random length long wire 18 ft. high. Ted has recently worked the following on c.w.: EL1X, FF8AJ, KR6AK, OY1J, PZ1AP, 9G1CX, ZD2GUP, VQ3CF and HD, VS1FJ and JF, VU2DR, ZK1AK, ZP5AY, and SM5WN/LA/P. **G3LKZ** (Sunderland) has been getting around to the tune of VS1JP, 6DX and EF, MP4BCN, 9K2, OD5, PZ1 and W7KGP in Utah (19.48 '040). **G3AAE** found PY7AFN Fernando de Noronha (08.15 '060), 11EZZ/M1 an s.s.b. DXpedition (08.30 '305), VQ6LQ (22.45 '065), VP8EP (00.30 '005), ZK1AK (08.30 '019), LA4PF/P (09.45 '080), ZS3OW (19.10 '025), HK0AI (22.30 '028), ET2VB (16.30 '052), XE1RY (09.00 '092), KX6CO (13.15 '005), KS4BB Serrana Bank (08.10 '050), FG7XC (21.45/22.45 '038), VP2GDW Danny (22.45 '075) and EA0AF (17.40 '054).

Our listening colleagues have been hard at it and **B.R.S. 20104** hears that VK2FR (Lord Howe Island) has a 14,060 crystal, and that VR2DG may visit ZM7, while VK3IB will soon be a VR1 for a year or two. **A.1580** (Bristol) has hears SU1MS on c.w., and KG4AL, SV0WB Rhodes, 9G1CT and HV1CN on phone.

B.R.S.2292 (Hounslow) found HK7LX and TG9AL on phone, and CE8AA, CR4AV, CR5AR, HC1FG, FF8CK, PZ1AP, UI8, UL7, VE0NI, VP6PV, VP9CX and EP on c.w. **B.R.S.20317** says that KC6JC (Truk) is rock bound on 14·015 and can generally be found between 09.00 and 12.00—he will leave the island in June. KX6CO has been heard on 14·077 between 17.00 and 19.00. Bill logged CR5AC (20.00 '060), CR9AH, FB8XX, FM7WP (21.10 '040), FY7YI, HS1C, Fernando de Noronha's PY7SC (23.45 '050), SU1MS, UM8KAB (23.45 '060), VK9XK (20.45), VP5AR, VQ8AQ (19.50 '011), XE1AD and XW8A1 (20.15).

21 Mc/s

Apart from the very peculiar noises which, at certain times of the day, make working this band a little trying on the ear drums, a good selection of DX has been reported this month.

G3JAF (Hordle) connected with ZD1EO (19.30), VP8EP, CV, DG, DL, CW all between 19.00 and 20.00, VK7RY (21.00), ZD7SA (07.15), VR2DE (07.30), VR2AZ (20.00), YS1IM (19.45), XW8AL (14.30), 9M2DW (15.45), 9M2CA (16.30), VQ5EZ (14.00), VK9AD (08.00), VP4LG (19.50),

*18 Fairfield Way, Barnet, Herts.

VP4LP (20.00), VS1HX (08.00) via the long path, VS1JO (15.00), VS1GZ (16.00), and CE0ZA (19.30). A really choice bunch Art. **G3BHJ** (Norwich) talked to CT3AN, DU1FR, EL2N, EA6AY, KR6QB, MP4BCL, VP5AK, ZP5JP and 9G1AA, while **G3GMY** (Potters Bar) found KR6EC (12.30), 9G1AA and EA8BB on phone. Frank has just applied for DXCC membership.

G3NAC (Yatesbury) was fortunate with 9M2GA (17.00 '332), OQ0PD (17.15 '235), ZD1EO (17.30 '195) and CN9CJ (15.30 '145), while HS1E was a got-away. **G3AAE** found LU3ZX Belgrano (23.15 '075), CP1CC (22.45 '225), VP8DG (23.15 '215), and SV0WB Rhodes (13.30 '245).

The ever watchful **B.R.S.20317** listened to BV1USB (13.00 '050), CR5AR (21.30 '050), FB8XX (15.30 '080), FQ8HF, HC1ET (19.25), VP2LO and SW, VP5FP (19.10 '005), 7BT, 8EG and 8EP (23.20) all on the key, while KA0IJ Iwo Jima (12.15 '120) was smothered with QRM. In Harrow **A.1743** heard FB8XX (15.40) on c.w., and HZ1AB, ZD6DT, SV0WT, VQ3DQ and OY5S on phone, while **A.1583** (Penryn) logged VR2AZ (08.05), VP2DA (19.49), EA9EI (19.25), ZD6DT (19.32), and OQ5EN (17.55) on phone; he uses a CR100 and an 80 ft. long wire.

B.R.S.2292 succeeded with CR6BX (06.50), HC1RY, HK3QV, on phone, and CR5AR, CR7BS, PJ2ME, and 9G1CS on c.w. In Nottingham **A.1691** heard VP8EP (17.30), CN9CJ (17.30), SV0WE Rhodes (14.10), 9M2GA (14.40), HZ1AB (18.15), OY2AB (09.28), HL9KS (09.55), SV0WN (19.10), HI8GA (20.55), HR3AC (21.09), VR2DE (08.18) and CE3AGI (07.20) all on phone except the VP8.

G5RZ (Leighton Buzzard) writes to say that a person calling himself Fred and working lots of American and Canadian stations is pirating his call on 15m. Alan himself is active on 160 and 2m only.

28 Mc/s

Making the most of the good conditions before the summer rot sets in, this band has really seen some action in the past few weeks, but even so it still does not seem to be as consistently steady as during the last sunspot peak.

VO1FB talked to CO, CX, HC1OW, HH2Z, HK4AQ, HP1AC, PJ2AL, TF3KA, VP1EE, VP3HAG VP6SS, XE1, 2 and 3, YN and heard CE0, LX, PX and YS—pretty good for an indoor dipole.

G3BHJ managed BV1US, CR9AI, HI8CJY, HP1CC, HP1EA, TG9AD, VP5FR, VS6AE, XW8AL, ZD6RM and 9K2AP on phone, while **G3GMY** hooked up with the same 9K2, ZE2JA (10.50), VS9ANS (10.00), and CX2BT amongst others. Up in the land of the haggis **GM3KGK** found W7FIN (Montana), HP3DA, CR4AV, CR7OG and CX2BT on the mike. Michael is another indoor aerial user.

G5JR (Reading) worked VP6FR, VQ2BK and DR, ZD6RM, ZD2CKH, ZD1FG, 9G1BA, 9K2AP, CR7LU, PJ3AD (good one for prefix chasers), OQ5DD and FV. Buck bemoans the escape of KR6DB, CA, OA4GY, CR6CA, BX, VP8DW and FQ8AT. G3AAE lists CR4AP (12.15 '216), FM7WU (13.30 '330), KW6CM (10.30 '550), FQ8AT Tchad (12.30 '176), VE3EGD/SU (12.40 '208) and SV0WB Rhodes (13.30 '332) all on phone.

A.1743 really went to town with ZD2CKH and GUP, MP4BCC, EL1G, VP2AB, FQ8AT, XE2DO, PJ2AF, ZD3E, TF3KA, CT2AC, CT3AF, AI, VQ5EK, 9G1CH, AB, CX1AK, ZP5MQ, CF, YV5ED, OA2A, 4II, and HC1FO on phone, while **A.1580** found VU2PS (17.16), HP3DA, FB8AR, HI8BC and KA8NI also on phone. **B.R.S.20817** reports hearing HP1CC, LU5XE (Patagonia), OA6Q, VP8DW (Falklands), VS6CL, XE2BM and YS1IM on phone, while on c.w. he heard CR7BS, CT2AI, FQ8AP (09.50 '050), JA1BF, KH6IJ (18.15), W9KLD/KL7 (18.30), VP7BT and 9K2AN (13.20 '105).

A.1657 located VP6SS, HZ1AB, YS1IM, HC1AT, VQ2RB, VP8BN, ZS8I, FQ8AS and KL7CZW on phone, while **A.1583** heard VQ3EK (19.45), CT3AN (19.30) and HZ1AB (14.30). **B.R.S.2292** switched on the b.f.o. for CE4AT, JA8AQ, KL7BZO and OOT, OQ5IG and JW, VP6PV and ZL1AOD, while on phone he got CR6BX, CZ and DA, FQ8AG, HC1DA and RY, HK7LX, HZ1AB, OD5BN, VE3EGD/SU in the Gaza Strip, VP5RD, VP7NM, ZD6DT, 9G1CH and CP and 9K2AZ. Finally to **A.1691** who records KZ5KC, HC1ET (08.35), HI8CJY (08.35) and VQ5FS (08.40).

News from Overseas

Sudan. ST2KO (G3JKO) has now left the Sudan, but expects to be sent to another cotton growing area before long. This means that he may appear using any one of these prefixes: VP2, ZD2, VQ3, 4, 5 or VS9. Michael says that he worked 53 countries before leaving ST2 activities in the

Frequency Predictions for May 1959

BAND	NORTH AMERICA East Coast	NORTH AMERICA West Coast	CENTRAL AMERICA	SOUTH AMERICA	SOUTH AFRICA	NEAR EAST	MIDDLE EAST	FAR EAST	AUSTRALIA
M.U.F.	23 Mc/s 2100	20 Mc/s 2000	27·5 Mc/s 1830	31 Mc/s 1630	34·5 Mc/s 1400	29·5 Mc/s 1500	28 Mc/s 1530	24·5 Mc/s 1600	25 Mc/s 2100 LP
28 Mc/s	2100	2000	1830	1200/1930	0900/1930	1000/1700	1530	1600	2100 LP
21 Mcs	1300/2330	2000	0730/0200	0945/1100 1700/0430	0600/0830 1300/0000	0400/0000	0400/2200	1130/2000	0900/1400 SP 0600/0930 LP 2100/0230 LP
14 Mc/s	1600/1100	0100/1130	2200/1030	2200/0900	1700/0300	1330/0930	1530/0300	1700/2230	1430/2100 SP
7 Mc/s	0400	0300	0200	0200	0000	1900/0430	2200	2000	1600 SP
3·5 Mc/s	0400	0300	0200	0200	0000	0000	2200	2000	1600 SP

These predictions are based on information provided by the Engineer-in-Chief of the Post Office. Times are GMT.

able hands of ST2AR, who is using the temporary licence hold-down to complete a transmitter rebuild.

South Orkneys. Leslie Hill, G8KS, has agreed to take over the QSL duties of **VP8EG,** Signy Island, South Orkneys, who is active on both 14 and 21 Mc/s c.w. Ron will transmit his log during a weekly sked, and is mailing his log to date on a ship which calls at Signy Island next month: the last one until April 1960! VP8EG is a newcomer to Amateur Radio, but he has been well briefed in anti-wolf pack techniques by Les, and will not answer stations calling on his own frequency. Cards will be sent direct if S.A.E.'s or I.R.C.'s accompany QSLs, but will otherwise be cleared via the R.S.G.B. Bureau.

Greenland. In a letter to G3GCD, **KG1CK** advises that he is now home and operating from W0UBT, 55 Main Street, Anoka, Minnesota. He has the KG1CK log for the period March 8 to December 31, 1958, and offers to send duplicate QSLs to anyone who worked him, but has not received his card.

Fanning Island. Raymond Baty, **ex-VR3A,** writes to say that having broken his leg he was last year invalided home, whence he is now operating as VK2ANB. Ray says that he has QSLed 100 per cent, but that if anyone has not received his card they should write to him at 41 Lawson Parade, St. Ives, N.S.W., when he will be pleased to send a duplicate card.

Pakistan. B.R.S.2036, who has himself just returned home after four years in Pakistan, says that **AP2L** is active on 21 Mc/s between 09.00 and 12.00 G.M.T. His QTH is Sgt. Nabi, Wireless Fitter, PAF School of Electronics, Malin Cantt, Karachi, 26. Incidentally, it appears that the **AP5B** now active is not G3HS, who is still in England; the call-sign must have been re-issued.

Newfoundland. VO1FB (ex-G3LMD) writes to say that he has seen no contributions to *M.O.T.A.* from Newfoundland for a very long time. After passing the Canadian equivalent of R.A.E., Doc has been active since April 1958, and can be found on 21 Mc/s c.w. using a DX100 to an indoor dipole. British QSOs are particularly welcome.

Canal Zone. KZ5LC is gunning for the W.A.B.C. award, and hopes to collect the sheepskin in person when he comes over to England in 1962. Don't forget to come along to the London Members' Luncheon Club, Leonard.

Singapore. VS1EB has recently been licensed in Singapore, and is none other than ex-ZB1EB, G3IJU. Eric will shortly be active on all bands from 160 to 10m, phone and c.w., and will be looking for old friends. In sending a very interesting and mouth-watering list of DX heard in Singapore **B.E.R.S.976** says that he will very shortly be returning to the U.K. after nearly three years on the island.

Fiji Islands. Greg **VR2BC** has now arrived back home after his world tour, and is active on 21 and 28 Mc/s phone again. A hurricane last December brought down many of the VR2 beams, but the following are currently active: VR2AS, BC, BJ, CC, DA, DI and DK. Greg met many of the boys during his visit here and is looking for them on the air.

Antarctica. G3JAF writes to say that he is handling the QSL cards for **VP8EP** Halley Bay, who transmits his log to Art twice a week. VP8EP is pretty active on both 14 and 21 Mc/s and puts through a really potent signal from a rig running 450 watts into a rhombic beamed on the U.K.

Ceylon. Our 4S7 friends are back with us again, after an enforced absence of nearly a year. **4S7FJ** was heard to say on March 29 that licences had been re-issued two weeks previously.

DXpeditions

Revilla Gigedo Islands. XE1CV and XE1YJ brought forward the date for their visit to **Socorro Island (XE4),** and latest information is that they were scheduled to appear on 14, 21 and 28 Mc/s between March 28 and 31.

Roncador Cay and Serrana Bank. Not on the official list of A.R.R.L. countries yet, but likely to be in the near future, these islands are situated off the east coast of Nicaragua, and during the third week of March were visited by W4KVX and a posse of friends, using the call signs **KS4BA** and **KS4BB.** Yours truly found KS4BB one morning on 14 Mc/s c.w. with a terrific signal working stations all round the world with great speed and efficiency. He stated that QSLs should be sent via W4KVX. KS4BB/MM was also heard on the outward journey, and the operators spent a short time on 14 Mc/s operating from HK0AI, and said that they would revisit HK0AI on the return journey.

(Late Flash. Although KS4BA and BB were scheduled to commence operations on March 13, they were unable to locate the islands, and had to go back to the mainland to take on more fuel. They then returned, and finding Serrana Bank commenced operations on March 20, making several thousand contacts. It is believed that as a result of the delay in finding Serrana Bank they did not have time to put KS4BA into operation from Roncador Cay.—J.D.K.)

Monaco. ON4QX has been allotted the call-sign **3A2CZ** and will operate from Monaco between May 1 and 16. He will use 14,050 and 14,090 kc/s for c.w. and 14,200 for phone. QSLs should be sent to P.O. Box 331, Antwerp, Belgium.

Isle of Man. Between April 11 and 18 G3s CQE, IOR, LDI and MPN will be on all bands 3·5 to 28 Mc/s. They will use c.w., s.s.b. and a.m. probably operating two stations simultaneously: one signing GB3GD and the other their own call-signs plus the /A. QSLs should be sent either to G3LDI, 128 Drayton Road, Ipswich or via the R.S.G.B. Bureau. The usual S.A.E. or I.R.C. courtesy will be appreciated from those desiring a direct reply.

Albania. The start of the OK7 DXpedition has had to be postponed as one of the operators has suffered a broken leg and has spent a lengthy period in hospital. Latest information indicates that they should be on the air from Albania about the end of April or beginning of May.

Cocos (TI9) Island. B.R.S. 20317 says that VE3MR and TI2HP are visiting the Cocos Islands during the first two weeks in April and will sign **TI9SB** on s.s.b. and **TI9CW** on c.w., operating 14, 21 and 28 Mc/s. QSLs should be sent to TI2HP. This adventure may well be over by the time the BULLETIN reaches readers, but these expeditions have a habit of starting and finishing later than expected, so you may find them still on.

Tailpiece

G3LKZ points out that **W2CTN** is now looking after the QSL chores of the following DX stations: VK2AYY/LH, VK2FR, VR2DA, VR2DK, FK8AT, JZ0HA, KW6CU, VK9BW, VK9NT, VQ3CF, 9G1BQ, ZD2DCP, OX3RH and FM7WU. Wonder who receives the greater amount of mail W2CTN or KV4AA! Incidentally, does anyone know what Dick does with all the cards we send for Danny Weil contacts? They must amount to some 50,000 by now. G3LKZ also supplies the QTH of **KV4BO,** which is: KV4BO, Caneel Bay, St. John, U.S. Virgin Islands.

Following the DXpedition to Alderney last year, confirmations from 100 countries have now been received for **GC3AAE** QSOs, so there will shortly be another DXCC sheepskin on the wall.

It has been most interesting reading through your letters and turning all the information into the foregoing piece. However, it does seem a shame that so few of the several thousand amateurs licensed in the U.K. and active on the h.f. bands write in to report their DX news. Come on, chaps let us hear from you regularly! Contributions should be posted to arrive not later than April 18.

FOUR METRES AND DOWN

BY F. G. LAMBETH (G2AIW) *

New Two Metre Band Plan Well Received

THERE was an attendance of 37 at the Brabloch Hotel, Paisley, for the Scottish V.H.F. Convention on March 14. They comprised the majority of Scottish v.h.f. operators, with some G-DX in the persons of G3FZL, G3HBW, G3HWR and G2AIW who attended in his capacity as R.S.G.B. V.H.F. Manager. EI2W was warmly welcomed as the representative of I.R.T.S. EI2W also represented Ed Tilton (W1HDQ) who is currently President of the International V.H.F. Society. We were all sorry to hear that Jock Kyle (GM6WL) was still in hospital. A friendly message was dispatched to him, and verbal good wishes were also expressed by those present.

The Convention commenced with the screening of Mullard films on transistor receiver circuits, the operational principles of transistors and on the " ruggedization " of v.h.f. valves used in aircraft equipments liable to extreme vibration damage. A very informative talk on " J-Beam " 70cm 8-over-8 slot-fed aerials was given by Vic Hartopp (B.R.S.15304). One of the beams was added to the prizes in the valuable draw. After an excellent dinner, EI2W presented the Irish Perpetual Trophy (the Rose Bowl) to Clarke Bradford (GM3DIQ) for technical achievement in v.h.f. and the Millan Trophy to G2AIW. During the evening G2AIW explained the reasons for the new 2m Band Plan. The proceedings broke up eventually with a vote of thanks to the organizers. As members departed it was evident that they had all thoroughly enjoyed themselves.

FIFTH INTERNATIONAL V.H.F./U.H.F. CONVENTION

Prince of Wales Hotel, London

MAY 30, 1959

Tickets, price 22/6 including the Convention Dinner, are available from G2AIW

Organized by the R.S.G.B. V.H.F. Committee and the London U.H.F. Group

New Band Plan Well Received

Quite a number of 2m operators have already " taken up " their new positions in the Band Plan zones. There is ample evidence from the prompt action of those concerned that the new arrangements are to be given a good trial.

First comments seem to be generally favourable, although there has been a little adverse criticism which careful reading of the explanation in the March BULLETIN should fully answer. Crystal grinding is being carried out by those who will now work on higher frequencies, but it is hoped all will remember the " V.H.F. QSY " crystal exchange. The first offers appear in this issue.

As a result of the changes, requests have been received for lists of new frequencies. As far as space permits, new frequencies will be published, but the response to this offer will have to be more enthusiastic than on previous occasions if the lists are to be at all comprehensive.

* *21 Bridge Way, Whitton, Twickenham, Middlesex.*

G3HRH (Welwyn Garden City) thinks that the arrangement of the new zones will necessitate an extremely versatile aerial system in order intelligently to search the band, owing to the fact that the frequencies are not, he says, in reasonable sequence. It was stated last month why these frequency allocations have been made, and we urge all operators to give the new Plan a fair run.

C.W. Contests

G3EHY (Banwell) who comments on the remarks made last month about c.w. contests says that the lack of c.w. on the v.h.f. bands is to be deplored. In G3EHY's opinion, based on long experience, anyone can use phone when conditions are favourable but it takes a real c.w. operator to raise DX when the band appears dead—which it never is. PE1PL's long record of regular skeds in all kinds of conditions proves this. G3EHY is at present using an input of *one* watt. The best contact so far was with G4DC at something over 150 miles, and that *had* to be on c.w.!

Two Metres

G3MED (nr. Northwich) was pleased to see the revised Band Plan, and has reground a crystal for 145·35 Mc/s. The single sideband rig is now crystal controlled on about 144·4 Mc/s, but a v.f.o. is to be built. The transmitter will eventually be used for s.s.b. and for generating a carrier which can drive the p.a. to class C, so giving A3 and A3a with one v.f.o. controlled exciter. G3EVU and G3CCH have been heard on s.s.b. Although conditions were not good during the 144 Mc/s Open Contest on March 7-8, G3MED worked 85 stations in 24 counties. However, even the strongest stations in the south-east (G5MA, G3FZL and G3DVV) were only about S7/8 against their usual S9.

B.R.S. 20133 (Melton Mowbray) found conditions reasonable and some 30 stations were logged during the contest period, though for most of that time stations in the south were hardly audible; to the north and south-west conditions were better.

G3JGJ (Paignton) reports poor conditions generally for even GC2FZC has not been heard or worked many times lately. G3JGJ was moving to Moretonhampstead (Devon) on April 1. Although the QTH is over 600 ft. a.s.l. it is forecast as poor for v.h.f. with the Channel Isles and the north north-west the only reasonable directions except when the band is open. During the March contest only G5MA, G4DC, G3ICO and G5QA were worked; no others heard! If G3JGJ owes anyone a QSL, he will send one on receipt of a p.c. **G2JF** (Ashford, Kent) says activity locally is normal with nothing unusual to report. G3EMU is active again with a fine 100 watt signal but is not hearing a great deal.

G2HCJ (nr. Warrington) now on 145·36 Mc/s (QTH in Cheshire) has already heard several stations in the new Zone. For the Second 144 Mc/s Field Day G2HCJ will be in south-west Wales and would like to hear from

anyone who can recommend high spots accessible by car within 40/50 miles of St. David's (N.G.R. preferred). Several have been noted, but the assistance of those with local knowledge would be appreciated. **G3HAZ** (Birmingham) states that on February 16/17 conditions were particularly good towards the south-west. G6GN, G3KHA and G8DA were worked, and G3CHW and G2HDR heard. Good signals were also received from F3LP, F9JY and F9XG, the latter being worked at RS55 both ways. The s.s.b. " twins " G3MED and G3CCH were both hard at it, but apparently not having much luck with the DX. G3HAZ had a QSO with G3HBW on the 19th. Traces of a signal from OK1VR/P were heard again on the 18th (" I'll get him yet " says G3HAZ). On March 16 the path was open to G3JMA and the south-east generally, but other carriers in strange places suggested that " Monday Night was Crystal Grinding Night! " A lot of people reacted very quickly to the new Band Plan and surprised G3HAZ by moving before he received his March BULLETIN. The odd men out locally were those operating below 145 Mc/s and they were very few! The following morning saw 5-core solder being rubbed on an 8075 kc/s crystal to give a new final frequency of 145·29 Mc/s.

A.1491 (Palmers Green) repaired a broken reflector on his indoor 4-element beam, and found an amazing improvement in results! He was " stunned " by hearing DJ3HX at 57/8. Seven continentals were heard the same evening, including PA0LQ at S9+ all the time. The opening collapsed the next day, and nothing like such good conditions have been experienced since. The Open Contest was a time of high activity and poor conditions, but 78 stations were heard, including several new ones. A.1491 would like very much to see a monthly list of new stations and starts it off with the following; who have come up for the first time in the last few months:

G2BRQ, G2FAB, G3AMF, G3DBO, G3DVV, G3EJA, G3EPK, G3FUH, G3FVG, G3HBR, G3IKA, G3JDN, G3JKA, G3JKY, G3JUW, G3LAR, G3LBA, G3LHH, G3MVI, G3NGK, G3NGS, G3SI, G4CM, G4LJ, G8BV. G3MNB hopes to be ready shortly.

Other new stations will be listed if they advise G2AIW (preferably with frequencies).

G3FZL states that the Danish station on s.s.b. is **OZ7BR**, not OZ3NH as stated last month.

GM3DIQ reports that the Scottish beacon transmitter has been air tested and is now being modified to provide c.w. and s.s.b. The aerial is complete but not yet erected.

GW3MFY (Bridgend) found the Open Contest disappointing because conditions were so bad. G5MA, GK3EQ, G3HBW and G3FZL were worked but they always are workable. It is a pity there aren't a few more signals like theirs! Since the opening of February 17/18, conditions have generally been at rock-bottom again!

Overseas News

LA9T (Moss) reports auroral openings on February 14 (16.00/17.00 G.M.T. during which SM6ANR, SM6BDQ and SM7YO were heard), February 15 (17.30/18.00 G.M.T.: Dresden TV heard), February 16 (17.00/18.00 and 21.30/23.00 G.M.T.: SM5SI, SM6PV, SM7AED and many others heard), February 27 (17.00/18.00 G.M.T.: SM7AED worked). Norwegian amateurs have skeds with the Graz V.H.F. Group.

F9CQ (Paris) reminds us that they are still keeping to their weekly schedule, but it has not been very successful during the winter. **F8OB** is back on 2m after two years' absence. **F3LP** (Le Havre) is also active.

Seventy Centimetres

G3HAZ (Birmingham) reports continued 70cm activity in the area on Sunday mornings. It is hoped to break through to London one of these fine (and high mB) days. **F8OB** is back on 70cm, as is **F3LP**, one of the few French stations to have worked G stations on the band.

The unofficial 70cm activity night every Saturday from 7 p.m. onwards, which has built up during the last 12 months or so, continues to flourish in the London area. Anything up to a dozen stations from G2XV and G5UM in the north to G5DT and G6NF in the south, to mention only four, operate regularly during this period.

Activity is mainly between 434 and 436 Mc/s. Any newcomers to the band can be pretty sure of securing a number of contacts if they make a point of coming on between about 7 and 8.30 p.m. any Saturday.

Twenty-three Centimetres

Arising out of **F3SK's** inquiry, **G3JHM** (Worthing) states he will co-operate if at all possible. The gear has a DET24 as a tripler giving 1·8 to 2 watts output which is fed to a pyramidical horn of F8OL design A receiver is under construction and will cover 1296/1300 Mc/s, the main receiver tuning 26/30 Mc/s as the first i.f.

G5DT, who is using a modified s.e.o. receiver tuning 1230-1320 Mc/s, reports that during the past month G3FP, G8AL and G8RW have all been active on the band. In the R.S.G.B. 1250 Mc/s Tests on March 21-22, G3FP, G3GDR, G3HBW, G8AL and G8RW were worked (the contact with G8RW was two-way on 23cm) and 23cm signals were received from G3FP (1296·16 Mc/s), G3GDR (1297·8), G3HBW (1297·05), G8AL (s.e.o. on 1300 Mc/s), and G8RW (1306·5). G5DT's own frequency is 1298·4 Mc/s.

G2HDJ and G5NF are preparing equipment for the band and hope to be active shortly. (The Editor will be pleased to consider for publication descriptions of 23cm gear. —F.G.L.)

Three Centimetres

G3JHM has a pair of transmitter/receivers ready for air testing (with **G3GNR**) as soon as the weather improves. This gear is working very well in the lab. Work is being done to improve the noise factor in preparation for some experiments on masers.

Four Metres

B.R.S. 20133 has obtained through G3FZL a R.1355 but nothing has yet been heard on 4m. **G2JF** (Ashford, Kent) reports little activity apart from local work with G5MR. **G5MR** himself found conditions steadily improving. With the exception of one occasion when he was unavoidably absent, daily contact was maintained from February 1 to March 10 with F8GH, a distance of 112 miles. Two or three " misses " since then are believed due to causes other than conditions. In view of the possibility of ionospheric openings in May and almost certainly in June, G5MR suggests that all 4m stations should get their gear ready and keep watch.

Six Metres

B.R.S. 21476 (Penarth) has heard no signals during the period—the m.u.f. for North America is now well below 50 Mc/s and has only occasionally risen above 30 Mc/s.

G3EHY (Banwell) says the last cross-band (10/6m) contact made in the 1957/58 season was on February 11, 1958. As the sunspot cycle is on the decline, it was thought that the season would close the year somewhat earlier but on the contrary the latest signals heard on 6m were on February 15 from 16.30 G.M.T. onwards, when W2IDZ and W1GKE were RS57. On February 24 at 15.05 G.M.T. some carriers were observed on the band, but no modulation was readable. This makes the season's opening across the Atlantic probably the longest ever, since it commenced at the beginning of October last.

The deadline for the May issue is April 18.

Good luck.

V.H.F. QSY

Following the re-arrangement of the British Isles Two Metre Zone Plan announced last month, members who wish to acquire crystals for their new zones or have crystals for disposal on an exchange basis, are invited to send details for inclusion in this space. Requests should be addressed to "V.H.F. QSY," R.S.G.B. BULLETIN.

Crystals Offered

By G2AHL, R.S.G.B. Headquarters, 36·28 Mc/s overtone crystal (International Crystal Co. type FA9).
By G2BHN, "Claremont," 17, Hill Grove Avenue, Yeovil, Somerset. 8029·5 kc/s (10X type).
By G2HCJ, The Lodge, Higher Walton, Warrington. Lancs. Type 10X plated 8 Mc/s fundamentals for final frequencies of 144·528, 144·618, 144·639 and 145·718 Mc/s.
By G2JF, Wye College (University of London), Ashford, Kent. 8 Mc/s crystals to give final frequencies of 144·121, 144·789 and 145·456 Mc/s.
By G3GSS, 185 Henley Avenue, Cheam, Sutton, Surrey. 6000·5 (FT243 type, Zone 1), 8059·62 (British ¾ in. spacing, Zone 5), 8060 (½ in. large pins, Zone 5), 8090·77 (½ in. large pins, Zone 8).
By G3ICO, 113 High Lea, Yeovil, Somerset. 8073·333 kc/s and 8075 kc/s (FT243 type).
By G3JGJ, Lincombe View, Five Lanes, Paignton, Devon, 8073·3, 8075, 8106·66 and 8106·7 kc/s.
By G3LPO, 57 Newenham Crescent, Liverpool 14, 8021·4, 8064·3 and 8078·6 kc/s (½ in. spacing).
By GC2CNC, Department of Agriculture (Agricultural Economics), Victoria Chambers, 28 Conway Street, Jersey, C.I. 8063 and 8080 kc/s (New ¾ in. spacing by Quartz Crystal Co.).

Crystals Wanted

By G2AHL, as above, overtone crystal between 36·125 and 36·233 Mc/s (½ in. spacing).
By G2BHN, as above, crystals between 8000 and 8006 kc/s.
By G2HCJ, as above, FT243 type 8 Mc/s crystals for final frequencies between 145·3 and 145·5 Mc/s.
By G3GSS, as above, crystals between 8027·8 and 8038·8 kc/s (Zone 4).
By G3ICO, as above, crystals between 8000 and 8006 kc/s.
By G3JGJ, as above, crystals between 8001 and 8005·5 kc/s.
By G3LPO, as above, any crystals in the range 8083 to 8100 kc/s.
By GC2CNC, as above, new (not ex-Government) ½ in. pin spacing (FT243 type) between 12009 and 12020 kc/s.

Aurora Opening

THERE was an aurora opening during the night of March 28/29. GM2FHH, a strong signal in the South of England was worked by, among others, G3KEQ and G2AIW. GM3EGW was also logged several times, once when calling PA0EZ. G3LAR (London) was heard with strong aurora characteristic but there did not appear to be many stations active at the time.

News has come to hand that SM7AED heard GB3IGY on February 18, 1959 at RST 549.

Short Wave Propagation Time for Different Distances

UNTIL June 1956, the International Time Bureau (BIH) adopted as the value of mean apparent propagation velocity 252,000 km/s for long waves, 274,000 km/s for short waves on direct path, and 286,000 km/s for short waves on super-propagation. Since July 1956, the BIH has used new values obtained by discussing 6,771 results of time-signals duplex reception at a number of observatories.

Ground wave propagation has been taken into account for transmission paths (between transmitter and receiver) in the range of 0–100 km. A single reflection on the ionosphere has been assumed for distances between 100 and 1000 km. The following asymptotic formula has been used for evaluating the apparent short wave propagation velocity for distances between 1000 and 40,000 km:

$$V_d = \left(290 - \frac{a}{d + b}\right) \cdot 10^3 \text{ km/s}$$

where d (expressed in 10^3 km) is the geodetic distance between transmitter and receiver. A treatment by least square method gives the following results:

$$a = 139{\cdot}41; \quad b = 2{\cdot}90$$

For calculating long wave propagation times, the BIH still makes use of the mean apparent velocity $V_1 = 252{,}000$ km/s.—*Information Bulletin of URSI, quoted by the I.T.U. Journal.*

LONDON U.H.F. GROUP
will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road,
at 7.30 p.m. on Thursday, May 7, 1959
All v.h.f. and u.h.f. enthusiasts welcome.

Radio Controlled Models Licences

THE Post Office has just issued the three thousandth licence for the radio control of model aircraft, boats, cars, etc. These licences, which cost £1, and remain in force for five years, were introduced on June 1, 1954, under the Wireless Telegraphy Act, 1949. The main purpose of the licence is to control the use of radio frequencies.

Rover Crew Radio Camp

THE John Lewis Rover Crew of Kenilworth, Warwickshire, is holding a "radio camp" at Newnham, Warwickshire, on May 9 and 10. G3HDB/A will be in operation on 3·5, 7 and 14 Mc/s looking for phone and c.w. contacts, especially with other scouts.

Worked and Heard on Two Metres

G3JGJ (Paignton) January 19-February 16, 1959.
Worked: G2RY, 3CGE, 3EFT, 3HBW, 3HXT, 3ICO, 3JMA, 3KHA, 3KEQ, 4PS, 5BM, 5NF, 5OB, 6OX, 8AL, GC2FZC, GW3MFY. *Heard:* G2MR, 5BW, 5QA.
GW3MFY (Bridgend, Glam.). *Worked:* G3EFT, 3FZL, 3HBW, 3LAR, 5MA, 6NF, 6OX, F3LP, 3ND, 9JY, 9XG. *Heard:* F3AL, 8GH, 3JHM, 3LOK, 3LHA, 3DVV, 4DC.
A.1491 (Palmers Green) February 17-March 17.
Heard: DJ3HX, F3LP, 9LD, G2JF, 2NM, 2DDD, 2DTO/P, 3FAN, 3GHO, 3GVC, 3HKD, 3IRS, 3KHA, 3LOK, ON4DY, 4PE, PA0BM, 0LQ.
B.R.S. 20133 (Melton Mowbray) February 17-March 8.
Heard: G3HBW, 3IRA, 3JGY, 3JMA, 3JMA/P, 3MPS, 5MA, 5YV, 6XX, GB2RS, 3IGY.
B.R.S. 21476 (Penarth) February 18-March 16.
Heard: G3FIH, 3HXN, 4GR, 5DW, GW3DDY, 3MFY, 8UH.
G3JGJ (Paignton, S. Devon) February 17-March 14.
Worked: F8AL, G2BD, 2BRQ, 2DZH, 2JF, 3BVU, 3CGL, 3CGU, 3CLW, 3FAN, 3GNR, 3GSE, 3GVU, 3HBW, 3HXJ, 3JMA, 3JQN, 3KEQ, 3KMD, 3LAR, 3LTF, 4DC, 4OZ, 4PS, 5BM, 5MA, 5NF, 5OB, 6NF, 6OZ, 6TA, 8AL, 8SK. *Heard:* G2MR, 3EFT, 3KSR, 3MVI, 3NR.

The Story of . . .
ZL1PPJ

By J. F. FREEMAN (ZL1VA)*

BEING well aware of the activities of GB3BP, the Amateur Radio Station installed at the Baden Powell Centennial Jamboree in England in 1957, the organizers of the 1959 Pan Pacific Boy Scout Jamboree called on New Zealand Association of Radio Transmitters as representing Amateur Radio in the Dominion, to set up a similar station for them.

As it turned out, ZL1PPJ followed a rather different pattern but was equally successful in its own way. GB3BP acted almost as an amateur broadcasting station in addition to its normal amateur activities—ZL1PPJ was not permitted to undertake broadcasting nor third party traffic, but put in a very full week as a normal Amateur Radio station and by this means spread the news of the Jamboree all over New Zealand and to many other parts of the world.

The station was planned and operated by members of five branches of N.Z.A.R.T. in the Auckland area. Amateur Radio received a good deal of publicity in the N.Z. newspapers because the idea of the Jamboree having its own Amateur Radio station caught the imagination of the Press and the public. The original planning provided for the station to be set up under canvas in Cornwall Park, One Tree Hill, Auckland, and from a radio point of view this would have been most desirable. However, as plans for the Jamboree developed it became apparent to the Boy Scout Association that a large scale Exhibition was desirable under cover and so ZL1PPJ was found a home in a special broadcasting studio in one of the permanent buildings in which Jamboree Headquarters was located. Thus we had a weatherproof, comfortable station with power and telephone facilities provided and were in a prominent position from a public relations point of view. The main worry was of course the much higher electrical noise level, but now that the Jamboree is over, it is felt that this disadvantage was outweighed by the fact that the location enabled many more members of the general public as well as Scouts to visit the station and learn more of our hobby.

Equipment

The station operated on all amateur bands from 3·5 to 50 Mc/s and used four modes of transmission—c.w., a.m., s.s.b. and radio teletype. The equipment used was as follows.

Transmitters

3·5 and 7 Mc/s: The transmitter, loaned by ZL1AKW, employed a Geleso v.f.o. and a 6146 final amplifier with a multi-band tank circuit. Associated with this transmitter was RTTY equipment which included a page printer.

14 Mc/s: On this band, a very compact s.s.b. transmitter, loaned by ZL1ARH, was used. The p.e.p. was about 100 watts.

21 and 28 Mc/s: On these bands two transmitters were used. ZL1AFW lent a rig comprising a Geloso v.f.o. and 6146 p.a. with a pi-network tank circuit and multi-band aerial tuner. ZL1KG provided his very compact table-topper which also had a Geloso v.f.o. followed by a QQV06/40 final amplifier.

50 Mc/s: On this band ZL1AKW's transmitter employing p.p. 807s was used. It was built into the same rack and used the same modulators as the 3·5 Mc/s rig mentioned earlier.

Receivers

The receivers used were a Collins 75A2 (ZL1AFW), G.E.C. BRT400 (ZL1AKW), RCA AR77 (ZL1CH), National NC98 (ZL1ARH), Hallicrafters S27 (ZL1MO). A special home-built s.s.b. receiver was lent by ZL1AAX while ZL1KG brought his home-built all-band receiver, which uses plug-in converters. Both these sets were a real credit to their owners.

Aerials

A multiplicity of aerials was used—many of them built "scout fashion" with bamboo and rope! After all, the station was only on for nine days! Three element beams were built for 21 and 28 Mc/s, and a two element array for 50 Mc/s. In addition doublets were put up for 3·5, 14 and 28 Mc/s while a 3·5 Mc/s Windom was also available; this was also used for the few contacts on 7 Mc/s. Most of the 14 Mc/s work was carried out on a ground plane.

Activities

Unfortunately the period of operation proved to be poor from a DX point of view and the station did not have as many DX contacts as had been hoped for. On the 3·5 Mc/s band all contacts but one were with ZL stations—the odd one was with VK9AD in Norfolk Is. on s.s.b. It was found quite difficult to work even ZL3 and ZL4 because of conditions and to some extent the high noise level. On 7 Mc/s the main activity was the radio teletype circuit which operated twice a day to ZL1WB in Whangarei. News of the Jamboree and the station activities given to him were re-transmitted to W6NKP and W6CQL for dissemination in U.S.A. and thanks are due to ZL1WB for the diligent way in which he kept these "skeds." A few other c.w. and phone contacts were had on this band mainly with stations in New Zealand.

As was to be expected the main DX activity took place on 14 and 21 Mc/s with 28 Mc/s to a lesser degree due to the prevailing conditions. In the earlier part of the week it was the s.s.b. transmitter on 14 Mc/s which brought most of the DX contacts, but as the bands opened up later in the week the honours tended to become more even. Quite a number of c.w. QSOs were made on this band but generally the station kept to phone as in this way more people heard of the activities at the Jamboree.

V.H.F. activity was limited to 50 Mc/s. Most contacts were with ZL1s but ZL4GY in Invercargill and several VK3s in Melbourne were worked.

By the end of the week the station had made 574 contacts in 40 countries and in all continents. Prefix areas worked were W/K, TI2, YN1, KL7, TG9, VE7, HR1, VP1, VP2, PJ3, LU3, YV5, PY1, G, GM, GW, OZ, PA0, OH, SM, UR2, SP1, UA1, DL9, JA, CR9, VS1, VQ5, ZS6, ZL, VK, VK9, ZK1, KH6, KB6, KX6, KG6, KR6, VR2 and KC4USK (Wilkes Base).

As mentioned above it was felt that the station's major purpose was to provide an Amateur Radio station for display to the Boy Scouts and which could be operated by any scout who held a licence. Secondly, it existed to tell as many amateurs as possible all over the world the news of the scouting activities that were taking place at the Jamboree—the terms of the licence precluded actual broadcasts but the P. & T. Dept. agreed that the station could be a means of telling other amateur stations what was going on. Naturally many other people listened to the contacts. For these reasons the operators did not set out to work as many stations as possible as in a contest. N.Z.A.R.T. are therefore well satisfied with the results achieved.

During the period we had our frustrations and worries—such as the morning when we arrived at the station to find both the 21 and 28 Mc/s "bamboo beams" on the ground! —but all concerned derived much satisfaction and pleasure from the project. Much was learned which will stand us in good stead for future occasions and will gladly be passed along to anyone contemplating a similar station.

* *President, N.Z.A.R.T. Inc.*

Display Stand

Alongside the ZL1PPJ stand, which was behind plate glass windows in the " broadcasting booth," another stand was laid out with examples of Amateur Radio equipment—both past and present—and this attracted a great deal of interest among scouts and visitors to the Jamboree Exhibition. An outstanding feature was a Creed tape perforator upon which visitors were able to punch their own names and hear them played back on an oscillator at about 10 w.p.m.—a simple but attractive exhibit.

Within three days of the close of the Jamboree a very nice letter of thanks was received from the Jamboree's Organizing Commissioner, conveying the thanks of his Association to all of those who took part—it appears therefore that the Scouts were well satisfied with the activities of ZL1PPJ.

The 574 stations who were able to contact ZL1PPJ will be interested to know that QSL cards will be distributed through the various QSL bureaux in the near future.

New Zealand Amateurs May Use F.S.K.

THE New Zealand Post and Telegraph Dept. recently approved an application by the New Zealand Association of Radio Transmitters, Inc. to permit the use of frequency shift keying with shifts from zero to 800 c/s in the bands 3500-3550 kc/s, 7000-7050 kc/s, 14,000-14,100 kc/s, 21,000-21,100 kc/s, 28,000-28,100 kc/s. Audio frequency shift keying may still be used in New Zealand, without any restriction, in v.h.f. amateur bands higher than the 28 Mc/s allocation.

When making their request to the P. & T. Dept., N.Z.-A.R.T.S. Inc. mentioned the desirability of encouraging amateurs to utilize new techniques.

Royal Air Force Amateur Radio Society Comes of Age

THE first Amateur Radio Society to be formed in the Royal Air Force came into being at Cranwell, Lincolnshire, during 1936. Known as the Cranwell Amateur Radio Transmitting Society it provided much scope at the then No. 1 Wireless School for the young apprentices who were interested in radio as a hobby. The call-sign G8FC was allocated to the Society.

Widening interest in Amateur Radio throughout the Service, and a desire on the part of those who had left Cranwell to maintain contact with their friends still at the School, led to the formation in April 1938 of the Royal Air Force Amateur Radio Society.

PREWAR G8FC
" Benny "—now S/Ldr. H. E. Bennett G8PF—operating from Hut 2, Cranwell in 1937. G8FC was the leading U.K. station that year in the VK/ZL contest.

In recent years the Society has received very valuable financial help from the Nuffield Trust which has enabled the Headquarters Society (now at Locking, Somerset) to supply its affiliated overseas clubs with kits of parts for transmitters.

An outstanding event in the history of the Society occurred on April 23, 1950, when more than 200 amateurs attended an open day at Cranwell. On that occasion the late G3JN (ex-SU1AF), G6CL, G8PF and others flew to Cranwell from various parts of England.

Many of those who have occupied high office in R.A.F.-A.R.S. circles are well-known radio amateurs. For example Wing Commander Wally Dunn, O.B.E. (G2LR) was responsible for R.A.F.-A.R.S. at Air Ministry level virtually from its inception until he retired a short time ago. F/Sgt. Frank Johnstone (G3IDC) accompanied the Inspector of Radio Services on his flight by *Iris* to R.A.F. Societies and Clubs overseas. Sgt. Ellis " Taffy " Williams (VP8BO) was a

POSTWAR G8FC
Flying Officer Margaret " Meg " Mills, G3ACC, operating G8FC at Locking during the summer of 1954.

member of the Advanced Party of the British Trans-Antarctic Expedition at Shackleton Base in 1956 where he operated under conditions of great difficulty in an official capacity for the Expedition and also as an amateur.

Air Marshal Sir Raymund Hart, K.B.E. (Retd.) is Patron of the Society; the position of President being vested in the Officer Commanding R.A.F. Locking. The present Vice-President is Wing Commander Alec Gilding (G3KSH) who represents the Society at Air Ministry level.

The Royal Air Force Amateur Radio Society is affiliated to the R.S.G.B. as are a great many other R.A.F. clubs at home and abroad. It issues its own magazine *QRV* twice a year under the editorship of Mr. A. E. Seymour, M.B.E. (G3GNS) and the Headquarters station at Locking (G8FC) is one of the most up-to-date and efficient Amateur Radio stations in the country.

Mr. Charles Ian Orr-Ewing (G5OG) O.B.E., M.P., is an Honorary Member of the Society.

Remote-controlled TV Camera

A MARCONI type BD871 television camera, controllable from the Marconi stand, is to be installed on the roof of the Royal Albert Hall, London, during the period of the Industrial Photographic and Television Exhibition from April 20-24. The object of the demonstration is to show how simple is the control and operation of industrial TV cameras.

NORTH MIDLANDS MOBILE RALLY

Trentham Gardens, Staffordshire

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

Sunday, April 26, 1959

Large reserved room with car park adjoining. Catering in the Ballroom (no prior booking necessary). Attractions include Miniature Railway, Italian Gardens, Rose Gardens, Hot Houses and Boating Lake. Amateur Television and R.A.E.N. will be demonstrated. The A.A. is erecting direction signs locally. Fix a QSL card on your windscreen for identification.

RALLY STATIONS

1·8 Mc/s—G3GBU/A 3·5–28 Mc/s—G3MAR/A
144 Mc/s—G3BA/A

Entrance to Gardens: Adults 1/6. Children 9d. Cars 1/-.

Organized by the Stoke-on-Trent Radio Society and the Midland Amateur Radio Society.

CORNISH HAMFEST AND MOBILE RALLY

King's Hotel, Penryn, Cornwall

Sunday, May 3, 1959

The programme commences at 2 p.m. (Assembly and display of QSL cards), and comprises Exhibition of Equipment and Judging of Mobiles (2.30 to 3.15 p.m.), High Tea and Lucky Draws (3.15 to 4.30 p.m.), Entertainment (4.45 to 5.15 p.m.), Film Show (5.30 to 7 p.m.). Hot Cornish Pasties will be served at 7 p.m. Special prizes for mobiles, YLs and XYLs.
Tickets, price 10/- each for adults (half-price for children under 12), may be obtained from N. Elliot, 11 Belmont Road, Falmouth, or from J. Brown (G3LPB/T), Marlborough Farm, Falmouth, who will arrange lunches and accommodation for visitors if desired.

Organized by the Cornish Radio and Television Club.

CHELTENHAM MOBILE RALLY

Montpellier Gardens, Cheltenham

Sunday, May 10, 1959

A contest is being organized for Top Band mobiles, requiring competitors to match their skill and equipment against each other. Operating and navigating ability will be needed to obtain points. Intending competitors would be well advised to brush up their map reference reading. A route is being chosen to enable visitors to see some of the lesser known byways of the beautiful Cotswolds. Five out-stations will act as check-points and will listen only on their own frequencies. The competition will commence at 14.00 and end at 16.00 B.S.T. Full details may be obtained from L. W. Lewis (G8ML), 117 Fairview Road, Cheltenham.

RALLY STATIONS

1920 kc/s—G3GPW/A 145·27 Mc/s—G5BM/P

Organized by the Cheltenham R.S.G.B. Group and Cheltenham Amateur Radio Society.

NORTHERN MOBILE RALLY

Harewood House, near Harrogate

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

Sunday, May 24, 1959

Harewood House is situated on the A61 road, 7 miles from Harrogate and 8 miles from Leeds. The Park will be open from 12.30 to 6 p.m. "All-in" tickets for adults 3/-, children half-price. Attractions will include the Bi-centenary Exhibition "The Story of Harewood". Rally stations will be in operation on 1·8 and 3·5 Mc/s. Refreshments, including cold luncheons and high teas, may be obtained at nominal prices.
Further details may be obtained from J. J. Rose, 14 South View Terrace, Hill Head, Dewsbury, Yorkshire.

Organized by the Spen Valley Radio Club.

LONGLEAT MOBILE RALLY

Longleat House, near Warminster, Wiltshire

Sunday, June 14, 1959

Full details in next month's issue.

Organized by the City and County of Bristol R.S.G.B. Group.

Research Flights by Radio Scientists
D.S.I.R. Uses Airborne Technique for Radio-Wave Studies

SCIENTISTS of the Radio Research Station D.S.I.R. are flying with the Meteorological Research Flight of the Air Ministry to obtain new data affecting radio wave propagation. They are measuring and recording changes in the refractive index of the lower atmosphere at heights up to at least 10,000 ft. using a microwave refractometer specially built at Slough for this work.

The refractive index is a measure of the property of the air which produces bending of radio waves. Under certain meteorological conditions the strength of an ultra-high frequency signal at a receiving station beyond the horizon is considerably influenced by the atmospheric structure and the variation of the refractive index. Earlier methods of measurement have produced only limited information on this feature of the lower atmosphere—and it is hoped that this airborne technique will fill in the gaps in existing knowledge.

The first stage in this research began at Slough about a year ago, when scientists started construction of a suitable microwave refractometer which could be installed into a Hastings aircraft.

The apparatus records the refractive index changes on a photographic-type recorder. The sensitivity of the instrument can be varied to measure either the large fluctuations extending over a considerable height or the smaller variations which occur, for example, in or near clouds. Compared with conventional methods, this instrument can record rapid fluctuations, but a new model now being made at Slough will have an even smaller response time.

This technique was first developed in the United States and it is hoped that its application here will lead British scientists to a better understanding of certain features of wave propagation.

Tests and Contests

Affiliated Societies' Contest 1959

THE following are the results of the Affiliated Societies' Contest held on February 7-8, 1959:

Posn.	Society	Call-sign	Points
1.	Stourbridge & District Amateur Radio Society	G3HVX	143
2.	Dorking & District Radio Society	G3JEQ	138
3.	Bailleul Radio Society	G3IHH	136
	Oxford & District Amateur Radio Society	G3KLH	136
5.	Surrey Radio Contact Club	G3BFP	135
6.	Harlow & District Radio Society	G3ERN	131
7.	Grafton Radio Society	G3AFT/A	127
8.	Northern Polytechnic Students' Union Radio Society	G3LPY	124
9.	Sheffield Amateur Radio Club	G4JW	120
10.	Mitcham & District Radio Society	G3LCH/A	115
11.	Medway Amateur Receiving and Transmitting Society	G2FJA	111
12.	R.A.F. Amateur Radio Society, Locking	G8FC	108
13.	Kingston and District Amateur Radio Society	G3KIN/A	106
	Slade Radio Society	G3JBN	106
15.	Liverpool & District Amateur Radio Society	G3AHD/A	105
16.	Barnet & District Radio Club	G3FFA/A	103
	Acton, Brentford & Chiswick Radio Club	G3IIU	103
18.	Hartlepools Amateur Radio Club	G3IDV	102
	Aldershot & District Radio Society	G3KMO	102
20.	Clifton Amateur Radio Society	G3GHN	99
	York Amateur Radio Society	G3HWW/A	99
22.	South Shields & District Amateur Radio Society	G3DDI	95
23.	Grimsby Amateur Radio Society	G3IYT/A	93
	Sutton & Cheam Radio Society	G2BOF	93
25.	Barnsley & District Radio Club	G2AFV	91
	Derby Short Wave Experimental Society	G3EEO	91
	Gravesend Radio Society	G3GRS	91
28.	Thanet Radio Society	G3DOE	90
29.	Amateur Radio Club of Nottingham	G3EKW	89
30.	Ravensbourne Amateur Radio Club	G3HEV/A	86
31.	Derby & District Amateur Radio Society	G3ERD/A	85
32.	B.T.H. Recreation Club Radio & TV Section	G3BXF	84
33.	Stockport Radio Society	G3FYE	80
34.	Unit Amateur Radio Club 21st (NM) Corps Signal Regt. (TA)	G3LTL/A	79
35.	Leicester Radio Society	G3LRS	72
36.	Edgware & District Radio Society	G3ASR/A	64
37.	Aberdeen Amateur Radio Society	GM3BSQ	59
	Ariel Radio Group (Bush House)	G3GDT	59
39.	Preston Radio Society	G3LBU	56
40.	Scarborough Amateur Radio Society	G4BP	46
41.	City of Belfast Y.M.C.A. Radio Club	GI6YM	17

Check logs from G3ADZ, G3CWW, G3NDS, G3NFV and GM3KHH are acknowledged with thanks.

420 Mc/s Open Contest, 1959

When: 09.00 G.M.T. to 23.00 G.M.T. on Sunday, May 24, 1959.

Station Locations: Stations may be operated from more than one site but the National Grid Full Six Figure reference must be recorded in the log for each location in the case of entries from G, GD, GM and GW. In all other cases, entrants must show latitude and longitude.

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.

Scoring: Points will be scored on the basis of one contact per mile.

Contest Exchanges: RST (RS) reports followed by the band identification letter B and the contact number and location (e.g. RST559B001 5NE Wigan).

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," " Points Claimed."
Logs must show clearly when station locations are changed.
(*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, June 8, 1959.**

Awards: At the discretion of the Council, a miniature cup will be awarded to the winner and a certificate of merit to the runner-up. A certificate of merit will also be awarded to the non-transmitting member submitting the best check log in the opinion of the judges.

The General Rules for R.S.G.B. Contests published on page 348 of the January 1959 *Bulletin* apply to this contest.

Contests Diary

1959

April 25-26	**- April 25-26 P.A.C.C. Contest (C.W. Section)**
May 2-3	**- P.A.C.C. Contest (Phone Section)**
May 3	**- First 144 Mc/s Field Day (c.w. only)† §**
May 10	**- D/F Qualifying Event (Oxford)***
May 24	**- D/F Qualifying Event (South Manchester)***
May 24	**- 420 Mc/s Contest***
June 6-7	- National Field Day‡
June 20-21	- First 70 Mc/s Contest
June 28	- D/F Qualifying Event (High Wycombe)
July 5	- Second 144 Mc/s Field Day†
July 12	- D/F Qualifying Event
September 5-6	- National V.H.F. Contest and European V.H.F. Contest†
September 6	- D/F National Final
September 20	- Low Power Field Day
September 27	- R.A.E.N.
November 7-8	- Second 1·8 Mc/s Contest
November 21-22	- R.S.G.B. Telephony Contest

* Details in this issue.
† These contests are arranged to take place during the periods suggested by the Region 1 V.H.F. Committee.
‡ For rules, see page 294, R.S.G.B. *Bulletin*, December, 1958.
§ For details, see page 451, R.S.G.B. *Bulletin*, March, 1959.

D/F Qualifying Events

DETAILS of qualifying events are as follows:

Oxford

Sunday, May 10
Organizer: P. G. Tandy (G2DU), 4 Harbord Road, Oxford.
Frequency: 1875 kc/s.
Call-sign: G2DU/P.
Map: Ordnance Survey, New Popular Edition, Sheet 158.
Assembly Point: Junction of Bayswater Road from Headington with B4027 (N.G.R. 42/574094).
Assembly Time: 13·30 B.S.T.
Entries and Tea: Intending competitors should notify the Organizer as soon as possible stating the number in their party requiring tea, which will be at the Forum Restaurant, High Street, Oxford (N.G.R. 42/518063).

South Manchester

Sunday, May 24
Organizer: D. Provan (G3LQQ), Cromrach, Brooks Drive, Hale Barns, Cheshire.
Frequency: 1820 kc/s.
Call-sign: G3FVA/P.
Map: Ordnance Survey, New Popular Edition, Sheet 101.
Assembly Point: South Manchester Radio Club Headquarters, Mauldeth Road Lads' Club, Ladybarn House, 17 Mauldeth Road, Fallowfield, Manchester 20.
Assembly Time: 13.30 B.S.T.
Entries and Tea: Intending competitors should notify the Organizer at least 7 days in advance, stating the number in their party requiring tea.

Contests for Listener Members

THE Contests Committee has decided to organize a series of contests specially for B.R.S. and Associate members. These events will coincide with the European V.H.F. Contest, the R.S.G.B. 21/28 Mc/s Telephony Contest, the B.E.R.U. Contest and a Short Top Band Contest.

Ideas and suggestions for these contests will be most welcome and should be addressed to the Contests Committee at R.S.G.B. Headquarters.

R.S.G.B. 21/28 Mc/s Telephony Contest

FOR the third year in succession Mr. D. A. G. Edwards, G3DO, of Sutton Coldfield, Warwicks, has won the R.S.G.B. Telephony Contest. His score of 4,610 points was 265 higher than that of the runner-up, Mr. R. G. Yearwood, G3KGY. Lt.-Col. N. I. Bower, G5HZ, finished third with 4,175 points whilst ZB1DC with 3,345 points led the overseas entry.

A full report of the Contest will appear next month.

NATIONAL FIELD DAY 1959— FINAL DATE FOR ENTRY

Members responsible for stations participating in this year's N.F.D., to be held on June 6-7, are reminded that details of call-signs and frequencies to be used, together with the name of the group, club or affiliated society concerned, must reach the Contests Committee at R.S.G.B. Headquarters not later than MAY 4, 1959.

The rules for N.F.D. 1959 were published in the December 1958 issue of the R.S.G.B. BULLETIN.

V.E.R.O.N. Morse Proficiency Transmissions

ON the last Sunday in each month, commencing at 09.00 G.M.T., the Dutch national society's station PA0AA transmits morse proficiency exercises at 15, 20, 25, 30 and 35 w.p.m. Transmissions at each speed last for five minutes.

In connection with these exercises, code proficiency certificates are offered to radio amateurs and shortwave listeners submitting original copy showing at least one minute's faultless reception. Stickers are available for higher speeds as skill increases.

Applications for code proficiency certificates, accompanied by the *original* handwritten copy and two I.R.C.s should be addressed to the Traffic Bureau, V.E.R.O.N., P.O. Box 6011, The Hague.

Illustrated Recorded Talk

SLADE Radio Society offers to loan to other radio societies and clubs an illustrated tape-recorded talk by C. H. Young (G2AK) entitled " Round the Local Amateurs." A wide range of stations, both elaborate and simple, are shown and described. The talk was recorded at $3\frac{3}{4}$ i.p.s. and lasts about 45 minutes. The slides are 2 in. × 2 in. (35mm) in colour.

Applications to borrow the tape-recorded talk should be addressed to the Hon. Secretary of Slade, C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23. The only charge is for the cost of postage.

Cleethorpes Hamfest

THE Grimsby Amateur Radio Society is holding a hamfest and mobile rally at the Lifeboat Hotel, Kingsway, Cleethorpes, on Sunday, May 3, 1959. The hotel is on the seafront and full seaside facilities will be available. The programme being arranged includes lectures, raffles and a junk sale.

Tickets, price 8/6 each inclusive, may be obtained from F. R. Peterson (G3ELZ), 58 Peaksfield Avenue, Grimsby, Lincs.

New Isle of Wight Ship-to-Shore Service

A new v.h.f. ship-shore service, operating from the Isle of Wight came into service during January 1959. The service uses a single-frequency calling channel (156·8 Mc/s), and a two-frequency traffic channel (161·85 Mc/s for transmission and 157·25 Mc/s for reception).

Jodrell Bank Observatory Described at South Manchester Radio Club Supper

ABOUT 50 members and friends, including the Region 1 Representative, Basil O'Brien (G2AMV), attended the South Manchester Radio Club's Annual Hot Pot Supper on February 13, 1959, at which Dr. R. C. Jennison was the Guest of Honour.

Dr. Jennison gave a talk on the Jodrell Bank Experimental Station tracing its history from its early days as a botany station. In 1945 Professor Lovell commenced an investigation into the reflection of radio waves from meteor trails and in 1949 a transit telescope which is still in use was erected. The bowl was 220 ft. in diameter but was not steerable. At about this time small steerable radio telescopes about 30 ft. in diameter were in use for observations on meteor trails. The present main telescope is 250 ft. in diameter and is officially described as a steerable azimuth paraboloid radio reflector. It took three years to construct.

Work at Jodrell Bank is by no means confined to the main 250 ft. " dish " and Dr. Jennison spoke of two main categories—radar astronomy and radio astronomy.

So far as radio astronomy is concerned the strength of the reflected pulse is governed by the inverse fourth power and no great distances can be surveyed by this technique. Whilst it is simple enough to obtain an echo from the Moon, Venus represents the present extreme limit. Radar principles are employed for investigating meteors, aurorae and the ionosphere.

The really spectacular results are obtained by radio astronomy, i.e., picking up signals direct from the source. Considerable development has taken place in this field in recent years. In 1949 only about three radio stars were known; today the figure is nearer 2,000.

The giant 200 in. optical telescope at Mount Palomar, U.S.A., is incapable of discerning a large number of the radio stars; in fact they are well beyond its range. These far distant radio stars may well be radio waves resulting from a supernova or collision of two galaxies.

The Jodrell Bank telescope is used to (*a*) " look at " (i.e., listen to) these radio stars; (*b*) plot their position in space so that " sky " maps may be made; (*c*) work out the angular size by utilizing interferometer techniques.

As an example of the accuracy to which bearings can be taken, Dr. Jennison cited the case of the radio star observed in the constellation of Cygnus. Careful and repeated investigation had revealed that here was a radio star second only in power to the largest known, that in Cassiopeia. The exact position was carefully determined and the information was passed to the Mount Palomar Observatory and they were thus able to see for the first time an object, (dimly it is true), which had never previously been seen. Evidence gathered from these observations, aural and optical, points to it being a galatic collision. C.M.D.

CQ Anthology

CQ Anthology, produced by the Cowan Publishing Corporation, is a volume of 160 pages containing reprints of 41 feature articles published in *CQ Magazine* between 1945 and 1952. Whilst some of the information is no longer applicable in the light of subsequent developments, there is a great deal of valuable basic material on subjects ranging from grip dip oscillators, transmitters and aerials to a panoramic adaptor. It may be noted that three of the features referred to on the front cover do not appear in the text. The book may be ordered from R.S.G.B. Headquarters, price 16/-.

Overseas Subscription Rate

As from April 1, 1959, the Overseas Corporate Subscription rate was increased to £1.8.0 ($4.00 U.S.) per annum.

Society News

Another Aerial Mast Appeal Successful

AN appeal by Mr. A. F. Pavis (G3MAP) against a decision of the Rugby Borough Council, acting on behalf of the Warwickshire County Council, refusing him permission to erect a lattice aerial tower has been allowed by the Minister of Housing and Local Government.

After listening to the various arguments the Minister's Inspector expressed the view that it is essential that Mr. Pavis should possess an efficient rotary beam aerial on a mast of requisite height if his station is to work properly. He stated in his report that it was a misnomer to describe the proposal as a tower and no doubt this description of it in the local press had aroused the opposition of a few local residents following the first application. The only local resident present at the Inquiry was Mr. Pavis's neighbour, who had allowed the aerial to " oversail " his back garden. The Inspector expressed himself as satisfied that the proposed 30 ft. mast would not be a form of development that would cause any appreciable harm to the visual amenities of the neighbourhood. His recommendation to the Minister was that the appeal should be allowed.

The Minister accepted the recommendation of his Inspector and accordingly allowed the appeal.

It is of interest to record that Mr. R. G. Frisby of Leicester, the solicitor who acted for Mr. Pavis, also acted in the successful appeal brought by Mr. F. E. Wyer (G8RY) a few months ago. Mr. Frisby is himself a practising amateur.

Technical Articles Wanted

THE Editor will be pleased to consider for publication articles on subjects which are likely to prove of general interest to readers, including, in particular, single sideband operation, the use of transistors for amateur transmitting, the design and construction of amateur transmitters and receivers, the results of experiments with aerial systems and the construction of equipment for the beginner. Intending contributors should, however, forward to the Editor a precis of the proposed article before commencing work on the manuscript.

A copy of " Hints to Contributors " will be sent on application to any interested reader.

Forthcoming O.R.M.s

APROPOS the announcement published last month, members in Region 14 are asked to note that Official Regional Meetings will be held in Glasgow on Saturday, September 12, and in Ayr on Sunday, September 13.

The Region 17 meeting will be held in Southampton and not in Portsmouth. The actual date of the meeting has not yet been fixed.

Honorary Film Curator

THE Council has been pleased to accept the offer of Mr. C. W. Austin (B.R.S.22019), 135 Shaftesbury Avenue, Kenton, Harrow, Middlesex, to act as Honorary Film Curator in succession to Mr. L. S. Gillham who, for business reasons, has resigned from that office.

The Council takes this opportunity of placing on record its warm thanks to Mr. Gillham for his service to the Society as Honorary Film Curator.

Inquiries regarding the loan of Society films should be addressed to Mr. Austin and not to R.S.G.B. Headquarters.

R.S.G.B. Contest Forms

SPECIALLY printed log forms and cover sheets for the use of members taking part in contests are now available from Headquarters on receipt of a s.a.e.

STAFF VACANCY

THERE exists at Headquarters a vacancy for a qualified shorthand typist or for an experienced copy typist. Salary according to age, qualifications and experience. Office hours 9.15 a.m. to 5.15 p.m., Mondays to Fridays. Luncheon vouchers. One week's holiday with pay after six months; two weeks with pay after twelve months' service.

Applications in the candidate's own handwriting should be addressed to the General Secretary and marked " Staff Vacancy ".

Radio Amateurs' Examination

COMPREHENSIVE revision notes for the use of members who are preparing for the City and Guilds of London Institute examination on Friday, May 8, are available from Headquarters, price 1s. per set, post paid.

* * *

MEMBERS resident in County Durham who wish to study for the Radio Amateurs' Examination are invited to write to the Durham Technical College, Framwellgate, Durham City. The College is prepared to consider including a course leading to the R.A.E. in its 1959-60 syllabus, provided there is sufficient initial interest.

Council Ballot — Zone A Representative

THE result of the ballot for a new Zone A representative was as follows:

Mr. P. H. Wade, G2BPJ 80 votes.
Mr. A. C. Dunn, G2ACD 56 votes.

The ballot was scrutinized by Mr. N. Caws who accepted 136 ballot papers and rejected five.

Mr. Wade has therefore been elected to fill the vacancy on the Council.

GB2RS SCHEDULE

R.S.G.B. News Bulletins are transmitted on Sundays in accordance with the following schedule:

Frequency	G.M.T.	Location of Station
3600 kc/s	10.00	London
	12.00	Yorkshire
145·55 Mc/s	11.15	Beaming south-east from Leeds
	11.30	Beaming south-west from Leeds
	11.45	Beaming north from Leeds
145·3— 145·4 Mc/s	12.00	Beaming north from London area
	12.15	Beaming west from London area

GB3IGY SCHEDULE

The Society's beacon station is in operation daily in accordance with the following schedule:

145·5 Mc/s	18.00— 23.00	Well Hill, Kent

Council Proceedings

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 Monday, February 23, 1959, at 6 p.m.

Present: The President (Dr. R. L. Smith-Rose in the Chair), Messrs. H. A. Bartlett, N. Caws, C. H. L. Edwards, K. E. S. Ellis, W. J. Green, J. H. Hum, E. G. Ingram, J. D. Kay, W. R. Metcalfe, A. O. Milne, L. E. Newnham, W. A. Scarr, A. C. Williams, E. W. Yeomanson (Members of the Council), John Clarricoats (General Secretary) and John A. Rouse (Deputy General Secretary).

Apologies for Absence: The Secretary submitted an apology for the absence from the meeting of Mr. D. A. Findlay.

Absent: Mr. H. W. Mitchell.

* * *

Annual General Meeting

It was reported that accommodation had been reserved in Over-Seas House for the Society's Annual General Meeting on Friday, December 11, 1959.

Cash Account

Resolved to receive and adopt the Cash Account for January 1959 as prepared and submitted by the Secretary.

Financial Statement

Resolved to receive and adopt the Estimated Income and Expenditure Account for the 12 months to June 1959 as prepared and submitted by the Honorary Treasurer.

Membership

Resolved (i) to elect 94 Corporate Members and 26 Associates. (ii) to grant Corporate Membership to three Associates who had applied for transfer.

Applications for Affiliation

Resolved to grant affiliation to the B.O.A.C. Speedbird Amateur Radio Club and the 3rd Training Regiment (Royal Signals) Amateur Radio Club.

O.R.M.s

Resolved (i) to authorize the Representatives in Regions 7, 10, 14 and 17 to organize O.R.M.s during 1959. (ii) to defer for the time being the question of holding an O.R.M. in Region 6 during 1959.

Aerial Masts

It was reported that Mr. W. James (G6XM) had succeeded in an appeal to the Minister of Housing and Local Government against a decision of his local planning authority refusing him permission to erect an aerial mast in the garden of his home. (A report on the case appeared in the March 1959 issue of the BULLETIN.—ED.)

In view of the fact that all planning applications are considered by planning authorities on their merits it was resolved to take no action on a suggestion made by Mr. James that the Society should liaise with the Ministry of Housing and Local Government in an attempt to persuade the Minister to accept a standard design of mast or tower.

It was resolved to advise Mr. James that the Council is prepared at all times to provide practical help in the case of members who appeal to the Minister against a decision of a local planning authority and that such help could include appointing a representative to attend the appeal enquiry and paying some portion of the legal charges of the member concerned, but each such case must be considered by the Council on its merits.

Reports of Committees

The Minutes of Meetings of the Finance and Staff, Contests and V.H.F. Committees were submitted as Reports.

Resolved to receive the Reports and to accept and adopt the various recommendations contained therein.

The recommendations of the Finance and Staff Committee provided for the transfer of £2,000 from the Society's Current Account for the purchase of 5 per cent Defence Bonds, and for the grant of increases in salary to certain members of Headquarters staff. The Committee also recommended that steps should be taken to replace the machine at present used by Headquarters staff to address BULLETIN wrappers. (The present machine was purchased second-hand in 1946 and has broken down twice recently.—ED.) The Committee also recommended that estimates should be obtained for the installation of electrical appliances as a secondary means of heating Headquarters in place of the present gas appliances.

The recommendations of the Contests Committee dealt with the method of acknowledging Contest entries and the award of trophies in connection with the Second 1958 1·8 Mc/s Contest.

The recommendations of the V.H.F. Committee dealt in the main with the new 2m Band Plan.

GB3IGY

It was agreed to produce a special QSL card to confirm the reception of signals from the Society's beacon station GB3IGY.

Bulletin Deliveries

Reference was again made to the late delivery of certain copies of the BULLETIN in South Wales. The Secretary stated that he had been assured by Loxley Bros. that all copies of the February issue addressed to home members were put into the post at Letchworth on Friday, February 13. Such delays as had occurred must therefore be attributed to the Post Office.

The meeting closed at 9.25 p.m.

Representation

THE following are additions or amendments to the list of town representatives published in the December 1957 issue:

REGION 2

NORTHUMBERLAND—TYNESIDE AREA

K. SKETHEWAY (B.R.S. 20185), 51 Baret Road, Walkergate, Newcastle-on-Tyne 6.

REGION 7

LONDON—BARNET AREA

E. W. BRETT (G3LUY), 28 Edward House, Edward Grove, New Barnet, Herts.

CHINGFORD—

C. OLLEY (G3AIZ) 157 Wanstead Park Road, Ilford, Essex.

SOUTHGATE AREA

W. A. J. SMITH (G3MXQ), 57 Oakwood Crescent, Winchmore Hill, N.21.

REGION 10

MONMOUTHSHIRE—PONTYPOOL

J. S. HAMMOND (GW3JBH), 46 High Street, Abersychan.

* * *

VACANCIES

Messrs. G. W. TAYLOR (G3GWT) and F. J. T. TUCKFIELD (G2HOX) have resigned as Town Representatives for Hull and Slough respectively. Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary, by not later than May 31, 1959.

Affiliated Societies' Representatives

THE following are additions to the list published last month:

ABERDEEN AMATEUR RADIO SOCIETY: G. T. Donaldson (GM3FKS), 342 King Street, Aberdeen.

A.E.R.E. AMATEUR RADIO CLUB: Dr. H. Kearsey (G3GKD), 37 Buscot Drive, Abingdon, Berks.

NORWICH & DISTRICT RADIO CLUB: O. F. Simkin (G3HYJ), 15 Hillside Road, Thorpe-next-Norwich, Norwich, Norfolk.

Can you Help?

● G. R. Smith (B.R.S.22194), 5 Throxenby Lane, Newby/Scarborough who wishes to borrow or purchase the circuit and, or manual of the ex-Army No. 2 Apparatus Selective Carrier Receiver Unit covering 80-4000 kc/s (6 volt d.c. supply).

● A. B. Sedmore (G3LAA), 17 Alexandra Crescent, Hexham, Northumberland, who requires a circuit diagram or information which will enable him to modify a Bendix Type TA12C Radio Transmitter for use on amateur frequencies?

● C. T. Fairchild (G3YY), 44 Hawkhurst Road, Coldean, Brighton 6, Sussex, who wishes to obtain the circuit diagram and/or frequency details of the Admiralty Master Oscillator Type A1252?

● A. Wright (G3IWR), 108 Old Oak Road, Acton, London, W.3, who wishes to hear from anyone with experience of the Canadian C43 transmitter and its conversion to 10m?

Silent Keys

JOHN E. BELL (G3CKL)

With much sorrow we report the death of Mr. John E. Bell (G3CKL) of New Eltham, London, S.E.9. A keen member of the R.S.G.B. since 1947, Mr. Bell was also a member of F.O.C. and of the Cray Valley Radio Club. Chiefly interested in 80 and 20m c.w. operation he was always happy to assist those wishing to learn the code. He will be much missed by his colleagues and friends.

To Mrs. Bell and to her son and daughter deepest sympathies are extended. R.C.B.C.

D. W. BUCHANAN (ZL3AR)

Old Timers in particular will be sorry to learn of the sudden death on March 28 of Mr. David W. Buchanan (ZL3AR). Mr. Buchanan had been an active amateur since World War I and his voice was frequently heard on the DX bands using single sideband. He was a prominent member of N.Z.A.R.T. and a member of R.S.G.B. until a few years ago.

Sutton & Cheam Radio Society

DR. R. L. SMITH-ROSE, C.B.E., President of the R.S.G.B., and Mrs. Smith-Rose were the chief guests at the Eleventh Annual Dinner-Dance of the Sutton and Cheam Radio Society held at Wilson's Restaurant, Sutton, on Saturday, March 15, 1959. R.S.G.B. Past Presidents Arthur Milne (G2MI) and Leslie Cooper (G5LC) together with the General Secretary (John Clarricoats, G6CL) were also present with their ladies.

The Chair was taken by Stanley Vanstone, G2AYC (President) who was ably supported by Leslie Seaton, G3HSK (Vice-President and Toast Master), Reg Pearson, G4DH (Chairman) and Jack Harris, G2BOF (Secretary).

The Cabaret, now a traditional feature of S. & C. functions, reached new heights of topicality, a skit on the adventures of *The Small World* providing the highlight of an impeccable performance by the Sirens and Shufflers.

Representatives were present from the Thames Valley, Mitcham and Kingston Societies and from the Acton, Brentford and Chiswick R.S.G.B. Group. An attendance of 90 was recorded. Dancing was to the music of Cliff Bridges' Quartet.

In this picture taken at the Sutton and Cheam Radio Society's Annual Dinner last month are (left to right) Dr. R. L. Smith-Rose (President, R.S.G.B.), Mrs. Smith-Rose, Arthur O. Milne (G2MI), Mrs. Clarricoats, Stanley Vanstone, G2AYC (President), Mrs. Vanstone and John Clarricoats, O.B.E., G6CL.
(Photo copyright *Croydon Times*)

London Members' Luncheon Club

THIRTY-TWO members and guests were present at the Eighth Annual General Meeting of the Club held on March 20, 1959, at the Bedford Corner Hotel, London, W.C.1. John Clarricoats, G6CL, who founded the Club in March 1950, with the help of Arthur Milne, G2MI and May Gadsden, spoke of the valuable services rendered by the retiring officers, Stanley Vanstone, G2AYC (Chairman), Clem Jardine G5DJ (Hon. Treasurer) and Frank Fletcher, G2FUX (Hon. Secretary). During the year the Club had entertained 41 overseas visitors from no less than 18 different countries. A proposal that the retiring officers be re-elected *en bloc* was accepted unanimously.

The Treasurer reported that the Club had had a good year financially with income exceeding expenditure by £9 16s. 6d. This satisfactory state of affairs was due largely to the success of the monthly raffles, the proceeds from which had amounted to £36 10s. 6d.

Visitors from abroad included L. W. Barclay, VP8CR (G3HTF), E. J. Game, VP8CY (G3LWX), J. Montagne, F9CQ and R. L. Gunther, W6THN; W. C. Bradford, GM3DIQ, was welcomed from Scotland. Following the luncheon VP8CR and VP8CY spoke briefly of their experiences in Antarctica as members of the I.G.Y. scientific team.

The Club will meet again on April 17, 1959, at the Bedford Corner Hotel, Tottenham Court Road, London, W.C.1, at 12.30 for 1 p.m. Reservations to R.S.G.B. Headquarters, HOL. 7373 or to Ruislip 2763.

London Lecture Meeting

ABOUT 50 members were present at the last meeting of the 1958-59 session at the Institution of Electrical Engineers, London, on Friday, March 20, 1959, when Mr. Bernard Rogers (G3ILI) lectured on "Single Sideband Techniques." Mr. Rogers described the filter and phasing methods of generating a single sideband signal and touched briefly on the third method. Other subjects discussed included linear amplifiers and methods of reception A lively discussion took place at the conclusion of the lecture.

The Chair was taken by Mr. W. H. Allen, M.B.E. (G2UJ), and a vote of thanks to the lecturer was proposed by Mr. R. F. G. Thurlow (G3WW).

(Mr. Rogers' paper will appear in the R.S.G.B. BULLETIN shortly.—EDITOR.)

Thanet Radio Society

THE Twelfth Annual Dinner-Dance of the Thanet Radio Society, held at the San Clu Hotel, Ramsgate, on Saturday, March 21, 1959, was an unqualified success.

Arthur Milne, G2MI, a Past President of the R.S.G.B. and John Clarricoats, O.B.E., G6CL (General Secretary), with their ladies, were guests of honour at the Dinner which was presided over by G. A. Chapman, G2IC. The London R.R. (F. G. Lambeth, G2AIW) and Mrs. Lambeth were also present.

The Inventor's Contest proved an interesting innovation. Laurie King, G4IB, and his daughter Heather won the first prize with an ingenious model of a Heath Robinson device for converting accumulator acid into Drambuie!

During the evening of Friday, March 20, Mr. Clarricoats and Mr. Milne spoke to members of the Thanet Radio Society about the Bad Godesberg, I.A.R.U. Conference, the latter illustrating his talk with some beautiful colour transparencies.

The organisation of the Dinner-Dance and the Lecture Meeting was in the capable hands of Norman Cramp, B.R.S. 16756, who is Chairman of the Thanet Radio Society.

NORTHERN IRELAND
OFFICIAL REGIONAL MEETING, BANGOR

Saturday, May 2, 1959

Programme:

11 a.m.	**Coffee Party at Bangor Castle as guests of the Mayor of Bangor.**
2.30 p.m.	**Business Meeting at New Savoy Hotel.**
7 p.m.	**Dinner at New Savoy Hotel.**

Tickets £1. 1. 0 each from J. W. Douglas (GI3IWD), 54 Kingsway Park, Cherryvalley, Belfast, from whom further details may be obtained. The Council will be represented at the meeting by Mr. A. O. Milne, G2MI, Mr. E. G. Ingram, GM6IZ and the General Secretary (Mr. J. Clarricoats, O.B.E., G6CL).

R.A.E.N. Notes and News

BY E. ARNOLD MATTHEWS (G3FZW)*

AT the first meeting of the R.A.E.N. Committee for 1959 the following officers were elected: Chairman, Dr. A. C. Gee (G2UK); Vice-Chairman, C. L. Fenton (G3ABB); Honorary Secretary, E. A. Matthews (G3FZW).

Co-operation with the Police

G3AET, Cornwall Controller, reports that the County Police are desirous of R.A.E.N. co-operation and details of call-out procedure are being arranged. It has been agreed that in cases where police require R.A.E.N. aid they will first contact A.C.s who will decide before alerting their members whether the emergency is one in which R.A.E.N. can assist.

Use of Flashing Indicators

The Essex Controller, G8TL, has been considering the need for identification of R.A.E.N. vehicles working at the scene of an emergency during hours of darkness, and it has been agreed to use a green flashing light for this purpose. Since it is an offence to use flashing lights on vehicles for purposes other than direction indication, the green lights will be used on the highway in emergency action only.

It must be made easy for runners to find R.A.E.N. stations working in the field from mobiles, or from buildings near to the site of local emergencies. Groups might give consideration to the Essex idea, which has been discussed with the police, and also to the provision of suitable sign boards which could be used by day or night. (The Ministry of Transport and Civil Aviation are also concerned in this matter—EDITOR.)

Operating Procedure

The proposed new procedure was again considered by the R.A.E.N. Committee at its last meeting and three suggested forms are now under detailed scrutiny. As a body, amateurs are familiar with many forms of procedure, and individual ideas concerning the details of what constitutes " good procedure " seem to be legion. The committee is concerned with having a procedure which is acceptable to the majority and succint enough to be easily assimilated.

Around the Groups

The **Medway** Group requires exercises with other groups and will be pleased to hear from Controllers in other counties. The group also requires contact with members or prospective members in Margate, Canterbury and Ramsgate. Replies to these queries should be addressed to the A.C., R. A. M. Crust (G3MC).

Suffolk C.C., G2CPL, after visiting his Area Controllers has divided the county into three sections, East Suffolk being under the control of G2BVM, the Northern part under G3JMU, and the South-East under G3AGN and G3KUM. The group now has some 15 fixed stations, five mobiles and three portable. Regular tests have been carried out to ascertain coverage, and exercises with B.R.C.S. are to be held in the coming months.

Cheltenham is looking forward to a demonstration of its work to the Red Cross. The group has also been working on a draft procedure which has been submitted to the R.A.E.N. Committee.

The **Birmingham** C.C., G3CNV, is making arrangements for R.A.E.N. to be shown at **Trentham Mobile Rally** on April 26.

A letter from G3HIU, **Buckingham** C.C., gives the news that through the good offices of the newly-formed Wolverton Radio Society a meeting is to be held to give local amateurs an opportunity to learn more about R.A.E.N. C. L. Fenton (G3ABB) will be present, and a representative of Buckingham Police will also attend. The date is not yet settled, but will be announced in this column.

Net Schedules

Cornwall net now alternates between 160m on odd days of the month and 80m (3600 kc/s) on even days.

Torbay: Sundays, 10.30 G.M.T., 1980 kc/s then QSY to 1930 or 1880 kc/s.

Personnel

W. E. Nutton (G6NU), 42 Richmond Road, Gillingham, Kent, has been appointed County Controller for Kent. G. Lancefield (G3DWQ) has resigned from the office of C.C. for Lancashire.

More Radio Channels for Business Mobiles

DOUBLE the number of radio channels will become available for private mobile services as a result of approval by the Postmaster General of the recommendations in the Third Report of the Mobile Radio Committee. This increase in radio channels in the lower v.h.f. band will be obtained by introducing equipment capable of operating on channels 25 kc/s wide instead of 50 kc/s. The Report also includes a revised allocation of channels amongst the various categories of users.

The new channel-spacing comes into force on June 1, 1959. Thereafter, all new land-mobile schemes in the v.h.f. low band will have to use equipment meeting the 25 kc/s specification. With few exceptions, the new equipment standard will also apply to additions or replacements for existing systems. There is a " Five Year Plan " for the change-over of exisiting services to 25 kc/s equipment to be completed by June 1, 1964.

Directory of Certificates

GEORGE VERRILL (G3IEC), R.S.G.B. Honorary Certificates Manager, 10 Seahorse Street, Gosport, Hants., is now able to accept subscriptions to the Directory of Certificates published by W3RPG. Members wishing to obtain copies should send a postal order for 17/6 direct to Mr. Verrill. The directory is kept up to date by monthly amendment sheets, the subscription rate for which is $4 U.S. per annum.

Flying Saucer Contact Weekend

MANCHESTER Flying Saucer Research Society invites the co-operation of licensed amateurs and listeners during the period May 16-18 which has been designated " Flying Saucer Contact Weekend " by the *Flying Saucer Review* of 1 Doughty Street, London, W.C.1. Further details may be obtained from that address or from H. Bunting, 36 Ilkley Crescent, Reddish, Stockport.

Mr. W. H. Allen moves house

MR. W. H. ALLEN, M.B.E. (G2UJ), is now living at 24 Arundel Road, Tunbridge Wells, Kent, having moved recently from 32 Earls Road, Tunbridge Wells. His telephone number is Tunbridge Wells 2926. Mr. Allen is a member of the Society's Handbook, Publications, Technical and V.H.F. Committees.

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* *1 Shortbutts Lane, Lichfield, Staffs.*

"A High Performance Two Metre Converter"

IN response to enquiries, the author (Mr. D. T. Bradford, VQ4EV) of the article "A High Performance Two Metre Converter," which was published in the November 1958 issue of the R.S.G.B. BULLETIN, states that the size of wire specified for L10 may have been incorrect. A sample of the wire used by Mr. Bradford appears to be 24 s.w.g. and the number of turns specified can be close wound with this wire on the former suggested. However, C17 and the adjustable slug in L10 provide for a wide variation of operating frequency and will usually compensate for using, say, two turns less or a thinner gauge of wire. The circuit is not critical, provided the ratio of "feedback" to "tuning" turns is maintained.

The leads to L8 in the prototype are extremely short; long leads might easily cause difficulties to arise because the associated tuning capacities are quite small. In some cases, it may, in fact, be necessary to try half a turn or even one turn less on L8. The actual size of the coil does, of course, depend on the i.f. chosen and on the oscillator injection frequency. L9 comprises seven turns but is not centre-tapped.

The resistor values given in the article are those actually used by the author but none is critical and the nearest "preferred" value should give equally satisfactory results.

Films Available

SIEMENS Edison Swan Ltd. now have available two 16 mm. sound films for loan to R.S.G.B. Groups and Affiliated Societies. *Behind the Screens* deals with the historical development and manufacturing methods involved in the production of cathode ray tubes for television reception and runs for approximately 30 minutes. *They're Called Electrons* expounds elementary electronic theory by means of photography and cartoons.

Both films may be borrowed from the company's Publicity Division, 155 Charing Cross Road, London, W.C.2.

Cubical Quad Array for 144 Mc/s (contd. from p. 478)

plotted on the Smith chart from which it will be seen that the complete array is very well compensated for bandwidth: in fact the characteristic is pretty well ideal in that the loop closes over a range of approximately 3 Mc/s giving a minimum variation of standing wave ratio over the band. This is particularly attributable to the two quarterwave transformers in cascade, as this system is to an order self compensating over a wide range of frequencies. The gain over a halfwave dipole of the complete array is 13·5db, and the back-to-front ratio 18db. The polar diagram of the system is shown in Fig. 4. In view of the fact that the spacing of the array is a compromise between gain and mechanical stability, the size of the side lobes is not disturbing and the overall plot is considered quite satisfactory for amateur use.

Since completion of the 144 Mc/s array, a single quad aerial scaled to the same electrical dimensions has been built at G3GOZ for use on the 28 Mc/s band [3] and has shown a marked improvement in performance over the original quad constructed in accordance with the earlier *QST* formula.

References

[1] "A Cubical Quad for 20 Metres," S. B. Leslie, *QST*, January 1955.

[2] "Trends in Aerial Design for the Amateur," S. R. Kharbanda, R.S.G.B. BULLETIN, March 1958.

[3] "More on Quad Dimensions," G. C. Rummell, *QST*, September 1958.

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.

Power Supplies for Mobile Equipment

DEAR SIR,—With reference to the article which appeared in the February BULLETIN entitled, " Modifying 6 volt car systems for 12 volt Mobile Equipment," I note that Mr. Pearson states that the system he has described works very well and with no signs of dynamo overheating. He says this is to be expected as the excess voltage output affects only the field coils and these are well cooled by the case.

Examination of both 6 and 12 volts operation reveal the following figures:

6 Volt Operation

Assume the field coils to have a resistance of 2·5 ohms and the voltage across them is 5, then a current of 2A will flow, or 5V × 2A = 10 watts.

For the armature current assume a charging rate of 18A at 6 volts = 108 watts so the total wattage is 108 + 10 = 118 watts.

12 Volt Operation

Field coils 2·5 ohms, and the voltage across them 10, a current of 4A with flow; 10V × 4A = 40 watts.

Again, assume a charging rate of 18A at 12 volts = 216 watts, total wattage 216 + 40 = 256 watts.

It will be seen that the field coils are dissipating four times their normal consumption, and the armature is supplying more than twice the normal wattage.

If it is all right to run the generator in the 12 volt conditions, one would immediately assume that it is too large for its standard 6 volt operation. This is not the case however, for designers of these machines are constantly endeavouring to reduce the size and weight. Evidence of this is seen in the fact that many generator driving pulleys are finned in order to direct a cool air stream into and around the generator.

Most of the heating of a generator is produced within itself and is due to hysteresis losses in the armature core, saturation of the iron circuit and resistance of the windings (both armature and fields).

It is evident that operating a 6 volt generator on a 12 volt circuit will aggravate the situation, and by no small amount.

Readers intending to use this system are strongly recommended to keep constant checks for overheating, especially those anticipating long runs. When you see solder from the commutator being thrown off, your generator will have had it! Far too many generators fail this way because the external load has either become disconnected or high resistance.

Yours faithfully,

Belfast. A. J. MITCHELL (G2DLX).

DEAR SIR,—As Mr. Mitchell points out, I omitted in my article to mention the increase in armature hysteresis losses caused by using a 6 volt dynamo to charge a 12 volt battery.

The losses in the dynamo may be split into two parts—iron losses and copper losses. The copper losses may be further sub-divided into two parts—field and armature losses. Both of these are equal to the product I^2R where I is the current flowing and R the winding resistance. The field losses will thus be approximately quadrupled as G2DLX shows, but since the armature current is relatively constant in a third brush system, the armature copper losses will be unchanged by running at double the designed output voltage.

Saturation of the field would not *per se* increase iron losses since the field is not subject to flux reversals in a d.c. generator, so that increased iron losses will be due solely to increased armature hysteresis losses caused by running at a higher field flux density.

Since the open circuit terminal voltage of the generator was well in excess of 20V, I believe that this indicates that the iron circuit is not operating anywhere near saturation flux density (a point borne out by the large air gap on such generators) and that iron losses will therefore be small compared with copper losses even when delivering twice normal voltage.

The increase in generator dissipation will, therefore, be mainly due to increased copper losses in the field winding as suggested in the original article.

I agree with G2DLX that persons intending to use the system referred to would be well advised to check the dynamo for overheating in the first instance, but this need not be continued indefinitely. I certainly noticed no signs of solder being thrown from the commutator in my own dynamo after having operated portable and mobile throughout a tour from London to Sutherland and back, averaging 300 miles per day last September!

Yours faithfully,

Bushey, Herts. CLIVE M. PEARSON (G3IUQ).

Voice Control

DEAR SIR,—I have read with interest the article by Mr. R. F. Stevens (G2BVN) on a voice control unit for a.m. transmitters. I have been using a similar arrangement myself for some years on the 160m band, but I employ a rather different method of " anti-trip " protection which may perhaps be new to your readers. The second valve in the microphone amplifying chain is a variable slope pentode type 6BA6 which is operated as a normal voltage amplifier. The grid of this valve is returned to a negative bias derived from rectification of a sampled audio frequency signal from the receiver a.f. stages. The operation is in effect a form of audio frequency a.v.c., and I find that a much finer range of anti-trip control can be obtained by such a method rather than by the unbalanced voltages system of Mr. Stevens.

Yours faithfully,

R. C. HILLS (G3HRH)

Welwyn Garden City. B.Sc.(Eng.) Hons.

Stabilising the 807

DEAR SIR,—I see from the February issue of the BULLETIN that Mr. Frost (G3GNL) has also suffered headaches over stabilising the 807 in r.f. p.a. stages.

From the Brimar application report on the 807, may I quote:

" Due to their relatively high slope these valves are prone to parasitic oscillation, and it is advised that a small resistance of the order of 47 ohms, or less if essential, should be wired in series with the anode, directly connected to the top cap."

I have found that, with average care in layout, a 47 ohms resistor works every time (33 ohms in each anode in push-pull circuits). I have not found it necessary to employ any of the recommendations suggested by G3GNL.

Yours faithfully,

ANTHONY RUSH (G3HBZ).

Feltham, Middx.

Golden Jubilee

DEAR SIR,—I would like to put forward two ideas to commemorate the foundation of our Society.

First, I would suggest that special care be taken to record the important parts of the major celebrations, wherever they may take place, so that those members who are unable to attend may borrow the recordings and hear for themselves.

Second, I would suggest that it should be possible to find enough members who have the necessary equipment and who would be willing to make the effort to record the recollections of those who are still with us and who took part in the earliest days of radio. I have in mind not only those who are or may have been members but also those who contributed to the history and achievement of electronics in the broadest sense as well as those who may not necessarily have been directly connected but who knew the great men of those days. The edited recordings should be preserved in disc form and made available for loan purposes on tape.

Yours faithfully,

Great Bedwyn, Marlborough. H. J. FENN (B.R.S. 2515).

Two Metre Harmonic Interference

DEAR SIR,—I would like to take this opportunity to bring to the notice of 2m operators a possible source of interference to aircraft services which is not covered by the band plan announced in the BULLETIN for March 1959. It is the fact that the second harmonics of signals between 144 and 146 Mc/s fall within the u.h.f. band allocated to aircraft for fixed and mobile services. Inevitably occupation of this u.h.f. band will increase during the next few years. Experience has shown that a 150 watt 2m transmitter can radiate quite a strong harmonic. Its strength can be considerable when compared with the low power signal from an aircraft at extreme range.

In order to maintain good relations and prevent further restrictions, it is recommended that transmitter design be such that the second harmonic be kept to a minimum. The following measures should help:

(*a*) Complete screening and earthing of the transmitter.
(*b*) Use of pi-output tank circuits for single or double-ended p.a. stages.
(*c*) Operation of p.a. in Class AB2 or preferably AB1.
(*d*) Use of a stub trap tuned to the second harmonic in the feeder line to the aerial.

Yours faithfully,
A. J. R. PEGLER, Comdr. R.N. (G3ENI).
A.M.I.Mech.E., A.F.R.Ae.S.

Bedhampton, Hants.

Even on an 1155!

DEAR SIR,—Perhaps you might allow a few comments from a listener on s.s.b.

I am the owner of a very decrepit and run-down R1155a which suffers, amongst other things, from excessive tuning rate, backlash, insensitivity, poor selectivity and an annoying tendency to drift, even on 3·5 Mc/s—not to mention a detector which is the height of inefficiency—but which I am unable, for financial and other reasons, to set about improving. Whilst I fully agree with almost all that has been said on the subject by G3ECA, 3WW, 3BID and others, I did find, personally, that with a little patience (enthusiasm?) it was possible to become quite adept at receiving s.s.b. even with this receiver. And s.s.b. alone has been the cause of reviving my rather waning interest in the l.f. bands.

Yours faithfully,
Hamburg. SVEN F. WEBER (B.R.S.19317).

Tri-square Aerials

DEAR SIR,—A similar arrangement to that described by VE3IT (March issue) has been in use at this QTH for some six months on the 21 and 28 Mc/s bands and I would not credit the system with quite as much gain as is mentioned by Mr. Gloster. However, results are excellent and I consider the work involved in construction well repaid.

My arrangement differs in a number of ways from that described in the BULLETIN. For example the boom length I use is 12 ft. with 6 ft. 6 in. director spacing and approximately 5 ft. 6 in. reflector spacing. The 90° spacing for the spiders is obtained by using four-way 1 in. conduit junction boxes for the director and reflector, but welding was resorted to in order to set up the spider for the driven element. The actual arrangement for the driven element is a flange welded to the boom and a separate plate, with four 9 in. pieces of 1 in. conduit welded to it, which is slipped over the boom and bolted to the flange just before the quad is erected.

I do not recommend dowelling for the spiders, because some that I was using on another quad broke during a gale in 1957 only a short while after it was erected. I use a good quality British bamboo, which is readily available and should last well if adequately protected.

Another point that may be of interest is that I use a two-turn square for the driven element on 28 Mc/s, fed by 68 ohm coax via a 4 : 1 coaxial balun; the matching is quite good. The resonant frequency is 29·3 Mc/s and the s.w.r. rises to about 1·4 : 1 at 28·4 Mc/s. It even loads on 21 Mc/s and once, when I plugged in the 28 Mc/s aerial on that band by accident, I worked a KL7.

The 21 Mc/s quad is simply an enlarged version of the 28 Mc/s one, using a single turn loop, and fed via a 1 : 1 balun.

Finally, care in tuning is repaid by good results.

Yours faithfully,
Gravesend, Kent. M. P. HUGHES (G3KBH).

Live and Let Live

DEAR SIR,—G3LCH complains (March 1959) because a few entirely different contests are run simultaneously; he'd like them spread out so that there was one every weekend.

Has he done a survey to find what percentage of amateurs are contest-minded? He might be surprised to find that the majority are *not* so minded. Those who *are* contest-minded delight in their ability to work through QRM.

Would it be asking too much of our representatives at the next International Amateur Radio Conference for them to put forward a proposal "that all amateur contests be held on the same weekend throughout the world?" If adopted this *should* delight the contest-minded QRM workers and result in great relief to the vast majority of the fraternity who could enjoy 51 weekends clear of the 5 and 9 rubber-stamp noise.

Yours faithfully,
Old Byfleet, Surrey. JACK N. HANCOCK (G3JNH).

Value for Money

DEAR SIR,—Your old-timer correspondent G2CD behaves like one of his cartoon characters, so illogical is his reply to my December letter. A man of his undoubted intelligence really should have done better!

If the Hobbies Exhibition is put on by a private member at his own expense, why is it called the "R.S.G.B. Hobbies Exhibition?" How does G4KD guarantee "us" (who is or are "us"?) a profit? If the exhibition is put on by a private member at his own expense, who might be left "holding the baby"? How it is that a later paragraph implies that the R.S.G.B. will subsidise the venture? Be consistent, Mr. Toose-Eady!

G2CD states that I have not yet realised that we are all equal as members of the Society which is run for "us" (that word again) by some of "us," but we're not in the same class when it comes to fortune (meaning "opportunity" I presume). That is precisely the point I made in my December letter. Agreement on one point (*the* point) at least!

The chaps in Llanon, Wales, and Killin, Scotland, are also, by my definition, "country bumpkins"; no complaint has been heard from them because they probably belong to the apathetic majority of Society members.

G2CD's reference to London theatres, etc., is quite superfluous and irrelevant. Anyway, I was not asking for a sub-reduction, but expressing my opposition to any general increase. Anyway, what's it to do with the number of one's amateur neighbours? If a 40 per cent higher subscription for London area members was once thought to be reasonable, can someone tell me why this no longer applies? Why has the provincial subscription been increased by 100 per cent compared with only a 43 per cent increase for London area members? Why do provincial members have to pay more for what they, in general, can't have, than their London brothers who can?

I do not serve or seek service on the Council or attend the A.G.M. because these meetings are held on a weekday; I am not my own boss, and cannot have time off at will; and cannot attend in my own time because I live some 170 miles from London. Perhaps G2CD would be able to attend our meetings in Pontefract once every month and the annual dinner once a year. He would be welcome, and we could straighten up some of his strange ideas about membership in the remote outposts.

"This is," says G2CD finally, "a society of amateurs . . . who want to be on the inside, not outside." Precisely, old man, but we "country bumpkins," I repeat, *are* most definitely on the *outside*.

Those are my last words in this battle. I leave it now to some of those outsiders who have verbally supported my contentions to convince some of these insiders of the disparity in our status. What about it? Or must I remain the lone voice crying in the wilderness?

Yours faithfully,
Pontefract, Yorks. W. FARRAR (G3ESP).

[The last words have been said—EDITOR]

Can You Help?

- Ian Dufow (A.1696), 2 The Fairway, Banbury, Oxon., who requires information on the conversion of the BC624C receiver to 144 Mc/s?
- D. R. Hall (B.R.S. 21883), 27 Ravenscroft Park, High Barnet, who wishes to obtain the circuit diagram and any other details of the ex-Government Indicating Unit No. 277 which uses a VCR522 and four EF50s?

Regional and Club News

Barnsley and District Radio Club.—The radio control of models and s.s.b. have been subjects of recent talks. On April 24, W. Lee (G6LZ) will lecture on TR switches. A demonstration of the Eddystone 888A Receiver by P. Ackley (G3LRP) is arranged for May 8. Venue for meetings: King George Hotel, Peel Street.

Bristol.—Nearly 60 members were present at the March meeting when E. C. Halliday (G3JMY) gave a lecture entitled "Transmission Lines and Tuned Circuits." The lecture was illustrated with the aid of some very effective working models and demonstrations. At the April meeting the speaker will be A. G. Blackmore (G3FKO) who will be talking about his recent trip to Australia and showing some of the films which he took on the journey. On May 15 a talk and demonstration about transistors will be given by G. A. Bird (G4ZU). *Hon. Secretary*: D. F. Davies (G3RQ), 51 Theresa Avenue, Bishopston, Bristol 7.

Cambridge and District Amateur Radio Club.—Details of the meeting to be held at The "Jolly Waterman," Chesterton Road, Cambridge, at 7.45 p.m. on April 24 may be obtained from the *Hon. Secretary:* H. Waton (G3GGJ), "Arkengathdale," New Road, Barton, Cambridge.

Chester and District Radio Society.—At a meeting of the Chester and District Amateur Radio Society on February 24, the title of the society was changed by the omission of the word "amateur." The new *Hon. Secretary* is H. Morris (G3ATZ), 24 Kingsley Road, Boughton Heath, Chester.

Amongst those present at the Barnsley and District Radio Club's Annual Dinner were G2BH (Founder), G2AFV, G3MCK, G3ABS, G3HTM, G3FLQ, G3MJX, G3AMH, G3ESP, G3LRP, G3BPL, G4JJ, G5KM, G5IV, G6LZ and G6UF.

Clifton Amateur Radio Society.—Lectures were given recently on "The History and Development of the Avometer" and "Aerials for the Amateur," the latter by G3ISX. On April 17, G3HZI will give a lecture/demonstration on "Direction Finding." Members of Mitcham Radio Society have been invited to attend. Regular meetings are held every Friday at 225 New Cross Road, London, S.E.14.

Cornish Radio and Television Club.—"The G.P.O. Television Detector Van" was described by Mr. Locke at the March meeting in Falmouth. At the same meeting G3JYF described amateur and commercial methods of frequency shift keying and teletyping. Details of the Hamfest and Mobile Rally to be held at Penryn on May 3 are given elsewhere in this issue. *Hon. Secretary:* J. Brown (G3LPB/T), Marlborough Farm, Falmouth, Cornwall.

Flintshire Radio Society.—D. C. Morris (GW2FVZ) acted as chairman of the Brains Trust at the well-attended March meeting. A new transmitter for society use is under construction. Details of future meetings are given in *Forthcoming Events. Hon. Secretary:* J. Thornton Lawrence (GW3JGA), Perran Porth, East Avenue, Prestatyn.

Halifax and District Amateur Radio Society.—High fidelity and stereophonic reproducing equipment was demonstrated by Messrs. Falkus and Newbold of Fane Acoustics Ltd., at the March meeting. Details of activities may be obtained from the *Hon. Secretary:* A. Robinson (G3MDW), Candy Cabin, Ogden, Halifax.

Harlow and District Radio Society.—The annual mobile rally is to be held at Magdalen Laver Village Hall on June 21. Arrangements are being made for exhibitions and demonstrations and it is expected that talk-in stations will be active on Top Band and 144 Mc/s. *Hon. Secretary:* A. T. White, The Chestnuts, Fyefield, Ongar, Essex.

Lothians Radio Society.—As a result of a recent talk on air traffic control a vist to the installations at the local airport is being arranged. On April 30 there will be a lecture on the radio control of models. Lawrence Benzie (GM3DDE) is to give a talk on v.h.f. techniques on May 14 in place of Jock Kyle (GM6WL) who is indisposed. Both these meetings will be held at 25 Charlotte Square, Edinburgh, and will commence at 7.30 p.m. Visitors and prospective members will be very welcome. *Hon. Secretary:* L. Lumsden, 33 Hillview Drive, Edinburgh 12.

Manchester and District Radio Society.—The society now meets on the *second* Monday in each month at the Wellington Hotel, Nicholas Croft, High Street (off Market Street), Manchester. Details are given in *Forthcoming Events. Hon. Secretary:* J. A. Elliott (G3KIQ), 2 Pennine Close, Higher Blackley, Manchester 9.

Medway Amateur Receiving and Transmitting Society.—At the recent A.G.M. the following were elected for 1959: *President:* W. Althorpe (G2CBA); *Chairman:* G. Cheeseman (G3KNO); *Vice-Chairman:* G. Southgate (G3LXO); *Hon. Secretary*, G. A. Gascoigne; *Assistant Hon. Secretary:* A. Poynter; *Hon. Treasurer:* F. May; *Committee Members:* J. Anthony (G3NDY) and M. Mervyn. Meetings, which are held on alternate Mondays at the Viscount Hardinge Hotel, Gillingham, at 8 p.m., are well attended. The next is on April 20. Several members are preparing for the R.A.E. next month. *Hon. Secretary:* G. A. Gascoigne (G3LCC), 78 Valley View Road, Rochester.

Mitcham and District Radio Society.—Meetings are held on Fridays at 8 p.m. at "The Cannons," Madeira Road, Mitcham. Morse and radio theory classes are held on alternate weeks. The society's station is active and preparations are being made for N.F.D. in June. *Hon. Secretary:* D. Johnson (G3NFA), 23 Woodland Way, Mitcham.

North Kent Radio Society.—There will be a hi-fi demonstration at the meeting on April 23, while the Annual General Meeting is arranged for May 7. This society is one of the many which produces an informative newsletter each month and every issue contains a technical article well worth reading. Further details of activities may be obtained from the *Hon. Secretary:* D. W. Wooderson (G3HKX), 39 Woolwich Road, Bexleyheath.

Torbay Amateur Radio Society.—About 80 members, and friends attended the Society's annual dinner at Torquay—the best attendance so far. The Chairman, F. D. Cawley, presented the Construction Cup to E. Hayman (G3ABU) for his mobile transmitter/receiver. A special award of a loudspeaker in an oak case was made to the youngest member, 15-year-old Richard Pavey, for his transistor receiver in a pill box. A R.A.E.N. practice net is held on Sundays at 10.30 a.m. G3ABU is conducting classes for the R.A.E. every Tuesday. *Hon. Secretary:* George Western (G3LFL), 118 Salisbury Avenue, Torquay.

Forthcoming Events

Details for inclusion in this feature *must* 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 and venue of the meeting and, whenever possible, details of the lecture or other event being arranged. Regional Representatives are requested to set out copy in the style used below.

REGION 1

Blackpool (B. & F.A.R.S.).—Tuesdays, 7.30 p.m. Squires Gate Holiday Camp. (May 5 " Ship Radio " by Mr. John Wells, G3IZG).

Bury (B.R.S.).—May 12 (Talk by G3KMM), The George Hotel, Kay Gardens.

Macclesfield.—April 21, May 5, 19, 8 p.m. The Bruce Arms, Crompson Road.

Manchester (M. & D.R.S.).—May 11 (" TVI/BCI," N. Paul, G2AUB), June 8 (" This, That and T'other," D. Barber, G2AKR), 7.30 p.m., Wellington Hotel, Nicholas Croft, High Street (off Market Street), Manchester.

Manchester (S.M.R.C.).—April 17 (" The Vanguard Transmitter " by C. M. Denny, G6DN); May 8 (" Single Sideband " by Eric Taylor). May 24, D/F Qualifying Event.

Preston (P.A.R.S.).—April 15, 7.30 p.m. The Fruiterers' Club, High Street.

Stockport (S.R.S.).—April 22, 8 p.m. Blossoms Hotel, Buxton Road.

Wirral (W.A.R.S.).—April 17, May 1 and 15, 7.45 p.m. No. 4 Hamilton Square, Birkenhead.

REGION 2

Bradford (B.A.R.S.).—April 21, Visit to Esholt Sewage Works (meet at Esholt Hall, 7 p.m.), May 5 (N.F.D. Arrangements), 7.30 p.m., Cambridge House, 66 Little Horton Lane; May 26, Visit to Emley Moor I.T.A. Station (provisional date).

REGION 3

Birmingham (M.A.R.S.).—April 21 (" Colour TV " by C. Grant Dixon), May 7 (TV Demonstration/Lecture), May 19 (" Relay Control of Amateur Equipment " by Mr. Yates), 7.30 p.m., Midland Institute, Paradise Street. **(Slade)** April 24, 7.30 p.m., Church House, High Street, Erdington.

Coventry.—April 24, 7.30 p.m., Vine Street Schools. (C.A.R.S.).—April 20 ("Auxiliary Equipment " by G3KFE), April 27 (" Station Descriptions " by G3LNO), May 11 (Recorded Lecture " Adventure in Tibet " by AC4RF), 7.45 p.m., 9 Queen's Road (Top Floor).

Stourbridge (St.A.R.S.).—April 24, 8 p.m., " White Horse," Amblecote; May 5, 8 p.m., Brotherhood Hall, Scotts Road, Stourbridge (N.F.D. Discussion).

REGION 4

Derby (D. & D.A.R.S.).—April 22 (Talk and Demonstration of Single Sideband by J. Curnow, G6CW); April 29 (Beginners' Demonstration); May 6 (Auction Sale of Surplus Items); May 13 (Direction Finding Practice Run); May 20 (Open Evening). 7.30 p.m., Room No. 4, 119 Green Lane, Derby.

Derby (D.S.W.Exp.S.).—Sundays, 10.30 a.m., April 23, 30, May 7, 14, 7. 30 p.m., Club Room, Nuffield House, Boulton Lane, Alvaston, Derby.

Leicester (L.R.S.).—April 20, 27, May 4, 11, 7.30 p.m., Old Hall Farm, Braunstone Lane, Leicester.

Lincoln (L.S.W.C.).—April 22, May 6 (R.A.E. Classes), 7.30 p.m., Technical College, Cathedral Street.

Retford.—April 22 (Recorded Lecture—"Adventure in Tibet," by AC4RF), 7.30 p.m., Retford Little Theatre Lounge, Wharf Road, Retford.

REGION 6

Cheltenham.—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street; May 10, Mobile Rally.

High Wycombe.—April 29 (" N.F.D. Arrangements "), 7.30 p.m., G6JK, 1 Windsor Hill, Princes Risborough.

Oxford (O. & D.A.R.S.).—April 22, May 13, 27, 7.30 p.m., Cherwell Hotel, Walter Eaton Road, Oxford; May 10, D/F Qualifying Event

LONDON MEMBERS' LUNCHEON CLUB

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

at 12.30 p.m. on Friday, April 17 and Friday, May 15, 1959

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

GION 7

Acton, Brentford & Chiswick.—April 21 ("A Visit to SV0-land "), A.E.U. Rooms, 66 High Road, Chiswick.

Barnet (B. & D.R.C.).—April 28 (" N.F.D. Discussion "); May 26 (" Mobile Operation," John A. Rouse, G2AHL), 7.30 p.m., Red Lion Hotel, High Barnet.

Bexleyheath (N.K.R.S.).—April 23. (" History and Development of High Quality Sound Reproduction "), Congregational Hall, Clock Tower, Bexleyheath.

Ealing.—Sundays, 11 a.m., ABC Restaurant, Ealing Broadway, W.5.

East Molesey (T.V.A.R.T.S.).—May 6 (N.F.D. Meeting), Carnarvon Castle Hotel, Hampton Court.

Harlow.—Tuesdays, 7.30 p.m., rear of G3ERN (G. E. Read), High Street.

Holloway (G.R.S.).—Mondays and Wednesdays (R.A.E. and Morse); Fridays (Morse and Club), 7 p.m., Montem School, Hornsey Road, N.7.

Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road, Ilford.

Kingston.—Lecture alternate Thursdays; Theory and Morse Classes weekly, 7.45 p.m., 5 Penrhyn Road, Kingston, Surrey.

New Cross (C.A.R.S.).—April 17 (" Direction Finding," C. Hatfull, G3HZI), 7.30 p.m., 225 New Cross Road, S.E.13.

Norwood & South London.—First Tuesday in month (R.A.E. and Morse Classes), 7.30 p.m., Windermere House, Westow Street, Crystal Palace.

Romford (R.D.A.R.S.).—Tuesdays, 8.15 p.m., R.A.F.A. House, 18 Carlton Road, Romford, Essex.

Slough.—May 4 (Lecture Meeting N.F.D.), 7.45 p.m., Stag Hotel, Wexham Street, Wexham.

Welwyn Garden City.—May 14 (Preparing for N.F.D.), I.C.I. Recreation Club, Blackfan Road, Welwyn Garden City.

REGION 9

Bath.—May 11, 7.30 p.m., 12 James Street West, Bath.

Bristol.—April 17 (Amateur Radio in Australia, A. G. Blackmore, G3FKO); May 15, (Transistorized Equipment for the Amateur, G. A. Bird, G4ZU), 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol.

Exeter.—May 14 (Discussion on N.F.D.), 7.30 p.m., Redcroft, Clifton Hill, Exeter.

Torquay.—May 9, 7.30 p.m., Y.M.C.A., Castle Road, Torquay.

Wells.—April 21, 7.30 p.m., Globe Hotel, Wells.

Yeovil.—Wednesdays, Grove House, Preston Road, Yeovil.

REGION 10

Cardiff.—May 11 (Arrangements for N.F.D.), June 8, 7.30 p.m., " The British Volunteer," The Hayes.

REGION 11

Prestatyn (F.R.S.).—April 20 (Two Metre Field Day Discussion); May 4 (" R.A.E.N.", L. Goldsbrough, G3ERB), May 18 (N.F.D. Arrangements); June 1, 7.30 p.m., Railway Hotel, Prestatyn.

REGION 13

Edinburgh (L.R.S.).—April 16 (" TVI Causes and Cures "); April 30 (Guest Lecturer); May 14 (" U.H.F."); 7.30 p.m., 25 Charlotte Square, Edinburgh.

REGION 14

Falkirk.—May 8, 7.30 p.m., Temperance Cafe.

DATES FOR YOUR DIARY

April 26.—North Midlands Mobile Rally.
May 2.—Bangor (N.I.) O.R.M.
May 3.—Cornish Hamfest and Mobile Rally, Penryn.
May 3.—Grimsby A.R.S. Hamfest and Mobile Rally, Cleethorpes.
May 10.—Cheltenham Mobile Rally.
May 21-27.—International Transistor Exhibition, London.
May 24.—Northern Mobile Rally.
May 30.—Fifth International V.H.F./U.H.F. Convention, London.
June 14.—Longleat Mobile Rally.
June 21.—Harlow Mobile Rally.
June 28.—Worthing "Bucket and Spade" Party.
July 5.—Amateur Radio Mobile Society Rally.
August 16.—Derby Mobile Rally (Provisional).
August 16.—South Shields Mobile Rally.
August 26-September 5.—National Radio Show, London.
August 30.—G6UT's Ham Party.
August 30.—South Manchester and Stockport Mobile Rally.
September 6.—London Mobile Rally.
September 12.—Ayr O.R.M.
September 13.—Glasgow O.R.M.
September 13.—Woburn Abbey Mobile Rally (Provisional).
September 20.—Lincoln Hamfest and Mobile Rally.
September 26.—Cardiff O.R.M.
October 10 or 11.—Southampton O.R.M. (provisional date).
October 24 or 25.—London O.R.M. (provisional date).
November 25-28.—R.S.G.B. Radio Hobbies Exhibition, London.

Carmarthen Bay Calling

CAPT. G. C. PRICE (GW2OP), Hilcourt, Freshwater East, Pembroke, who is C.R. for the counties of Pembrokeshire, Cardiganshire and Carmarthenshire, proposes to arrange a meeting at the Evelyn Café, Saundersfoot on Saturday, July 4, provided he is assured in advance of support from members in and around Region 10. Saundersfoot is a delightful spot at the west end of Carmarthen Bay with a lovely stretch of golden sands adjoining which is an excellent car park.

Members who expect to attend should notify Capt. Price as soon as possible so that he can make arrangements with the café proprietors. Tea will cost 2/6 a head.

New Members

THE following were elected to membership at the February 1959 meeting of the Council.

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G3EYG †A. J. Price, 563 Chepstow Road, Newport, Mon.
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G3HDV R. G. Key, Youlgreave, Oakdene Road, Marple, Cheshire.
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G3NDS R. B. Oliver, 153 Compton Crescent, Chessington, Surrey.
G3NGS G. D. Roe, 16 Dorchester Drive, Herne Hill, London, S.E.24.
G3NGT J. W. Philips, 221 Elson Road, Gosport, Hants.
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(*continued on page 512*)

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