R.S.G.B Bulletin

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R.S.G.B. BULLETIN

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Current Comment

The New Telephony

IT was around about twenty years ago—when the G8s were beginning to be licensed—that telephony on the long-distance h.f. amateur bands started to become popular. Until then the Top Band had carried the bulk of amateur telephony working, and most of this was cross-town ; for anything much over 50 miles telegraphy was the rule. As for telephony on 80 metres, this was virtually unknown. In those days " eighty " was a very exclusive band ; permission to use it could be obtained only by a special dispensation from the Post Office, supported by a recommendation from the R.S.G.B. Anyone who wished to hear Amateur Radio operating at its very best—copper-plate Morse-sending coupled with good manners—would listen on 80 metres.

On the higher frequency bands, while a certain amount of telephony could generally be heard, the key held sway. There was a feeling abroad that " the true ham " used Morse for preference and that 'phone was a little decadent—and certainly the proficiency that was developed bore out the contention that good Morse sending, coupled with the proper use of the recognized international and amateur abbreviations, allowed almost as much information to be transmitted in a given time via the key as via the microphone. Between two skilled operators, working a telegraphy QSO, an affinity of mind developed that never seemed to be experienced on a telephony circuit.

Nevertheless, the very considerable attractions of 'phone working could not be denied, and around about that time, twenty years ago, increasing numbers of amateurs began to take it up. So rapid was its expansion that band planning schemes were felt to be necessary to segregate phone and c.w. stations for their mutual protection from interference by the other mode of transmission. Some of the band planning was voluntary ; some of it was regularized on an official basis, giving rise to one or two curious anomalies, such as the establishment of an American 'phone allocation right in the middle of the 14 Mc/s band that crowded most c.w. working into the l.f. end and wasted the h.f. end.

What worried the c.w. man at that time was the tremendous increase in interference caused by the growth of telephony operation. For in those days t.r.f. receivers—or even " straight threes "—were the rule and the superhet was regarded as either too expensive or too complicated (or both) for the average amateur. A reactive straight receiver worked admirably on c.w. but was of little use on telephony under the conditions of growing interference. It was not surprising that the communications superhet soon became a " must "—cost and complexity notwithstanding—in the years just before the war. Then it was that the horny-handed, hard-bitten brass-pounder observed to his horror the growth of a new race of amateur operator—the man who tuned his receiver without the b.f.o. on!

The development of the communications superhet was a useful but only temporary antidote to the growth of interference in the narrow amateur frequency allocations. Useful though it is, it has its limitations when it is called upon to resolve some intelligibility from the chaos of the telephony segments of the bands at a time when 'phone is in more widespread use than ever before. When dealing with c.w. it delivers as good an account of itself as ever it did by reason of its ability to operate in the single signal mode ; the listener hears only *one* side of the squeak. The other sideband is virtually suppressed.

Applying this receiving technique to an ordinary double sideband telephony signal, however, produces a horrible sounding result that quite defeats the feeling of aural comfort which is such an important ingredient in enjoyable 'phone working. The problem can be solved by tackling it the other way about. Do not ask the receiver to apply a telegraphy degree of selectivity to a telephony signal. Instead. arrange for the transmitter to do the job, by radiating only *one* sideband instead of two. Already many hundreds of amateurs have done precisely this. They are the s.s.b. enthusiasts and there should be many more of them.

The thought may be ventured that double sideband telephony working on crowded communication bands will prove, in time, to be as archaic as those non-superhet receivers of twenty years ago turned out to be. Professional agencies, less goaded by interference than is the amateur, have found single sideband phone to be a desirable proposition. In amateur phone bands it is rapidly becoming an essential one.

The spirit of *laissez faire* will doubtless prevent many amateur telephony operators from taking an active interest in s.s.b. until a series of spoiled QSOs compels it—or indeed until the preponderance of s.s.b. stations means that " you've got to go s.s.b. to find anyone to talk to! " This state of affairs may very well materialise fairly rapidly when more and more operators come to recognize that adapting a transmitter to single sideband working is probably less difficult than the job of making it TVI-proof.

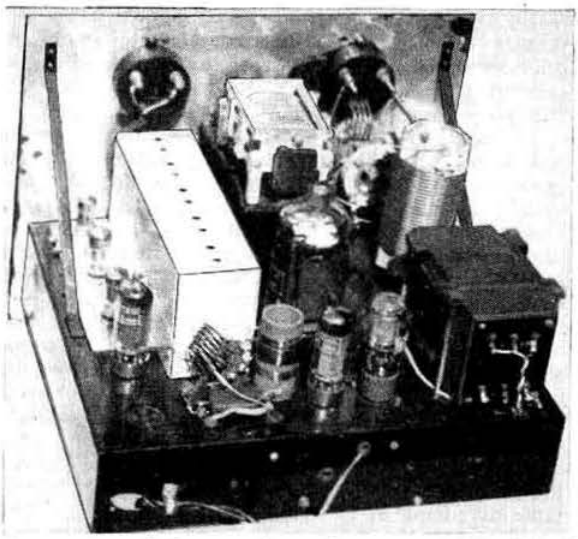
" Going s.s.b. " is not to venture into uncharted territory. The literature on the subject in the BULLETIN has been profuse over a period of years—and it is encouraging to note that contemporaries are now showing an interest in it.

The motto of any S.S.B. Club which might be formed in the future could be: " Two may speak in the space of one ". The quicker the 'phone bands reach that desirable state of affairs the better.—*J.H.*

A Modern Transmitter for the Amateur

Full Power Design for 3.5 to 28 Mc/s

BY N. SHIRES (G3BTM)*



A rear view of the transmitter using a commercial wideband coupler unit. Details for winding the coupler coils at home are given in the text. The modified pi-network coil L5 is at the extreme right with the transformer T1 at the lower right.

IF full advantage is to be taken of the high frequency allocations available to the amateur the requirements of the transmitter are quite stringent. The time has long passed, unless operating is confined to the small hours, when a few pieces from the junk box were sufficient to put one " on the air." On the other hand it should be possible to get good results without the use of elaborate test gear and a highly equipped workshop.

The cost of suitable equipment makes it necessary to obtain the maximum use from a transmitter which should, therefore, permit the use of as many licensed modes of radiation as possible on the bands it is designed to cover. One transmitter is generally accepted as being sufficient to cover the bands from 3.5 to 28 Mc/s and the design to be described is based on this idea. Two models, one rack mounted, and the other a table topper have been built using the circuit shown with entirely different component arrangements. Equally good results have been obtained from each proving that if the general principles that have been laid down by many writers are followed, trouble-free operation is assured.

The power requirements are modest being 1000V at 180 mA maximum, 350-400 at 120 mA maximum, 10V at 5A, and 6.3V at 3A.

Description

As the v.f.o. for this unit is called upon to provide drive for c.w., n.b.f.m. and a.m. together with space for the associated keying and control circuits, it is not a practical proposition to include it on the same chassis as the rest of the transmitter. The first stage (V1 in Fig. 1), therefore, is a 6AM6 isolating amplifier which is fed from the oscillator via 80 ohm coaxial cable. The power required at this point is not more than 20 mW (a little over 1 volt in 80 ohms); the output is sufficient to supply full excitation to the grid of V5 on all bands.

V2 and V3 are frequency multipliers which (via S1) drive the buffer amplifier with the required output frequency. Low-mu triodes (12AU7s) were chosen for V2 and V3 as they lend themselves to an even output when used in conjunction with wideband couplers. Higher gain valves are not warranted in this application as in the interests of TVI reduction, all frequency multiplying stages should run at the lowest possible input power. Nevertheless, the drive obtained is adequate. The switch section S1G reduces the current through V2b, V3a, and V3b when these valves are not in use by introducing additional cathode resistance. V4, a 5B/254M, which is a tetrode with generally better characteristics than the 807 and a B8G base, has a potentiometer in the screen supply which controls the drive to the final stage. V5 is an 813, and with 5-8 mA drive 150 watts input can easily be achieved. Considerably more drive is available but no further output is obtained by exceeding this figure. Excessive drive causes the level of unwanted harmonics in the output to rise.

*8 Marconi Bungalows, North Weald, Epping, Essex.

List of Components for Fig. 1

C1, 6, 7, 18, 19, 20, 27, 29, 30, 100pF (T.C.C. type CC31Y)
C2, 9, 10, 11, 12, 15, 22, 26, 28, 1000pF mica.
C3, 21, 50pF (T.C.C. type CC31Y).
C4, 10-100pF (T.C.C. type TCK1010).
C5, 150pF (Eddystone).
C13, 200pF (Cyldon).
C14, 1000pF (Receiver type 500pF twin-gang with sections in parallel).
C23, 24, 25, 3 30pF Philips concentric trimmers.
C31, 32, 500pF 5kV wkg.
C33, 500pF mica.
C34, 35, 36, 37, 38, 39, 40, are in the wideband coupler unit and with the exception of C35 are 50pF. The value of C35 will vary with the design of the coupler.
C41, 4μF 500 V.D.C.
C42, 6μF 500 V.D.C.
C43, 44, 0.01μF (T.C.C. type 543).
L7, 9H 100 mA.
L8, 9H 20 mA.
L9, 10, 2 amp TV chokes (T.C.C.).
R1, 7, 11, 12, 4.7 K ohms.
R2, 4, 6, 9, 10, 560 ohms.
R3, 5, 8, 13, 14, 22K ohms.
R15, 10K ohms (Erie type 2).
R16, 470K ohms.
R17, 68 ohms.
R18, 33 ohms.
R19, 560 ohms (Erie type 2).
R20, 10K ohms.
R21, 560K ohms.
R22, 5K ohms (Erie type 2).
R23, 2K ohms 10 watts*.
R24, 50K ohms 20 watts.
VR1, 50K 3 watts.

All resistors are Erie 20 per cent tolerance type 8 unless otherwise specified.

*R23 will require adjusting if the h.t. available is not 390 volts.

RFC1, 2, 3, 2.5 mH (Eddystone).
S1, 5 way 7 bank (Yaxley).
S2, 5 way 1 bank ceramic.
S3, 2 pole single way toggle (Bulgin).
T1, 350-0-350V, 100 mA, 4V 2.5A.
T2, 10V 5A, 6.3V 6A.
V1, 6AM6 (Brimar).
V2, 3, 12AU7 (Brimar).
V4, 5B/254M (S.T.C.).
V5, 813 (S.T.C.).
V6, 5B/255M (S.T.C.).
V7, 8, 9, VR150/30 (Brimar).

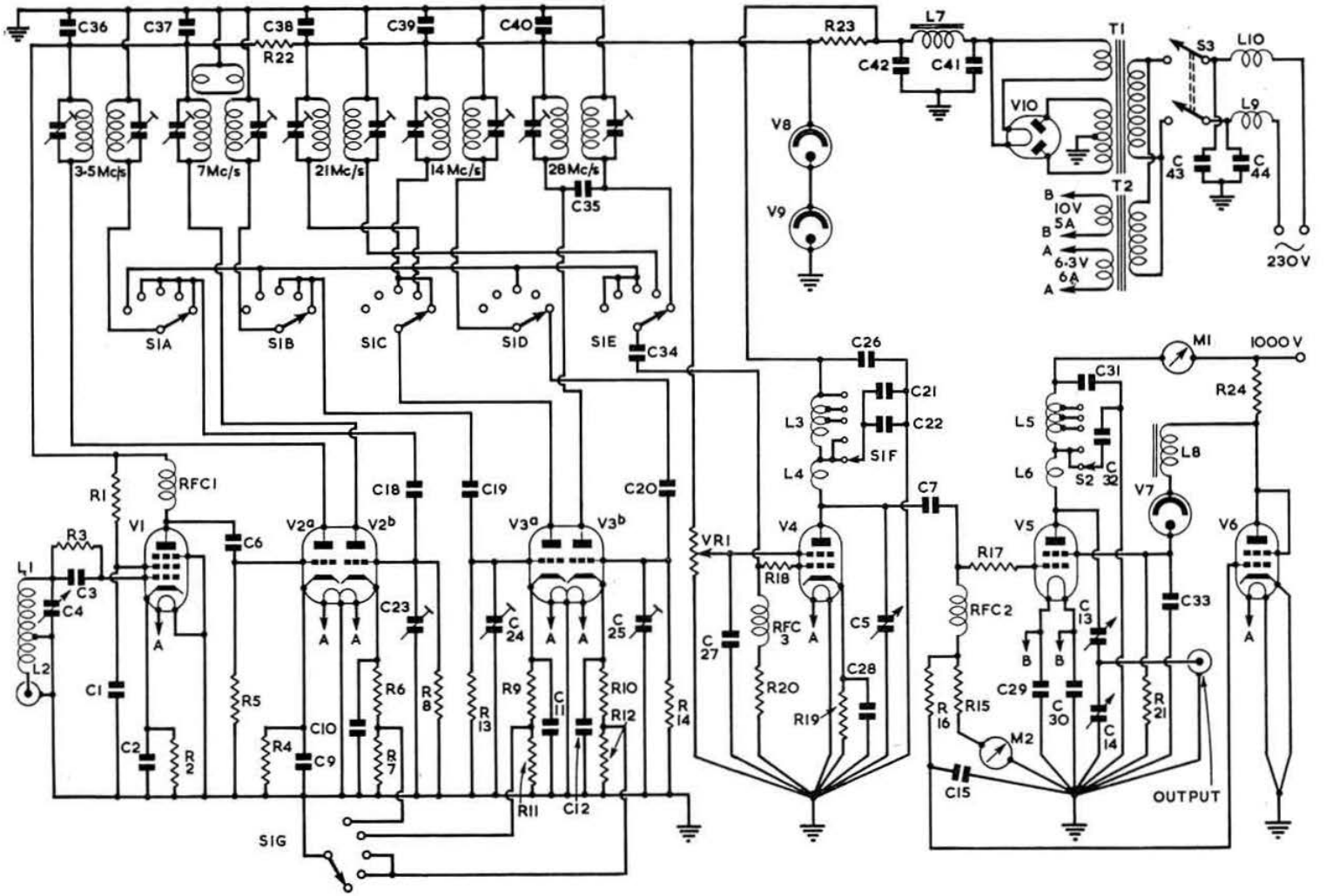


Fig. 1. Circuit diagram of the modern transmitter for the amateur using an 813 in the power amplifier stage.
(Note : Switch S1G should be shown as the progressively shorting type.)

The method found to give the best results when setting up the grid drive to V5 is as follows. After loading to the required power input reduce the grid excitation until the r.f. output commences to fall, and then increase drive to the point where maximum output is just realised.

V6, a 5B/255M, is the clamp valve and in conjunction with V7 reduces the screen voltage on V5 to zero when no drive is supplied.

V7 with L8 serves to shape the c.w. waveform in the following manner. When the clamp valve (V6) is taking maximum current V7 is extinguished the potential on the screen of V5 is zero and the anode current is about 10 mA. When drive is applied from the v.f.o. initially all subsequent stages are altering their operating conditions as the various grid voltages build up. This build-up period is one in which transients are frequently generated and appear in the output as clicks. Until the drive is sufficient to raise the potential of the clamp valve anode above the striking voltage of the stabilizer (V7) the final is cut off and the clicks are not radiated. Rapid growth of the screen current is prevented by the choke L8 and the leading edge of the signal is nicely rounded. The slow decay of drive, if it occurs, is also masked by the stabilizer ceasing to conduct a short time before the grid voltage falls to a very low value. Clamp controlled amplifiers often become momentarily unstable at this point and in the worst cases a slight rise in anode current occurs in the output stage before it becomes quiescent.

Construction

In the interest of screening the complete unit is contained in a metal cabinet 16in. by 12in. by 13in. The steel chassis is 15in. by 12in. by 3in. which is about the minimum for an easily worked layout. The arrangement of the major components is shown in Fig. 2. The valves V1 to V4 are mounted from front to rear of the chassis along one side with the associated components on a long groupboard arranged parallel with them. Beneath this groupboard are the connections to the wideband couplers, a method of wiring that maintains the short leads so necessary for stability. The reason for using groupboards in this case was that it lent itself readily to changes of components for experimental purposes. A smaller groupboard carries components in the circuits of V5, V6 and V7.

The low level of power in the early stages reduces the risk of radiation to negligible proportions and the use of wideband couplers tends to suppress the amplitude of unwanted products in subsequent stages. In the original driver unit which was rack mounted and separated from the p.a., the wideband couplers were made from Government surplus material. Unfortunately these couplers with their switching occupied more space than was available and a commercial set of couplers has been fitted to the latest model. The efficiency of the home produced units was comparable with the commercial product and the question of whether to buy or build is left to the reader.

Details are given in Table 1 to enable the couplers to be made at home if desired. The main departure from normal practice is that both coils are on the same former and the passband is controlled by the spacing between them. If the data given are followed closely ample bandwidth will be obtained. Screening between the couplers when using triodes has been found unnecessary and this should also hold good for pentodes. In the circuit diagram (Fig. 1) the component values associated with the couplers are suitable for either home constructed or commercial units.

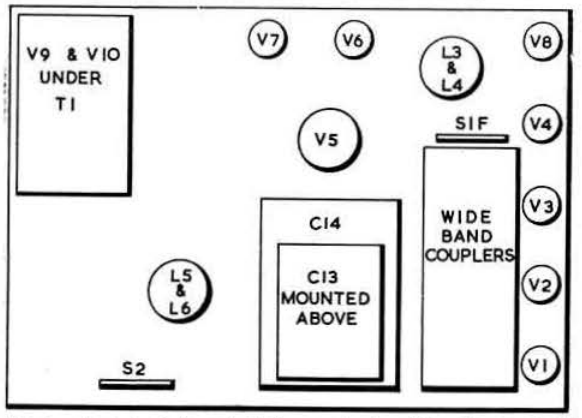


Fig. 2. Layout of the principal components. This diagram should be compared with the photograph.

The transformer T1 is mounted above the chassis at the rear with V10, L7, C41, and C42 located underneath. T2 is bolted to the side of the case and connected to the chassis wiring by a flexible cord and plug. The sketch plan Fig. 2 shows clearly the layout of components on top of the chassis. Mounting C13 above C14 was to conserve space only.

All wiring except that carrying r.f. is screened with the braid bonded to earth at all convenient points, a practice which does much to prevent stray coupling and in turn

Table 1

Winding Details for the Wideband Couplers

Band	Former Diam.	Turns	S.W.G.	Length	Space betw'n Coils	Circuit Position
3·5 Mc/s.	1"	44 37	30 30	$\frac{1}{2}$" $\frac{7}{16}$"	$\frac{1}{4}$"	Anode V2a Grid V2b–V4
7 Mc/s.	1"	21 16	30 26	$\frac{7}{32}$" $\frac{3}{32}$"	$\frac{7}{16}$"	Anode V2b Grid V3a–V4
14 Mc/s.	$\frac{3}{4}$"	15 10	24 24	$\frac{15}{32}$" $\frac{5}{16}$"	$\frac{3}{16}$"	Anode V3a Grid V3b–V4
21 Mc/s.	$\frac{3}{4}$"	10 9	20 20	$\frac{5}{16}$" $\frac{3}{16}$"	$\frac{1}{2}$"	Anode V3a V4
28 Mc/s.	$\frac{3}{4}$"	8 7	20 20	$\frac{1}{4}$" $\frac{1}{16}$"	$\frac{1}{2}$"	Anode V3b V4

The associated trimmers are all 3–30pF Philips concentric type. One coil should be made loose so that the bandpass can be varied. After adjustment the coil should be cemented in place with Dencofix.

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Table 2

Coil Winding Data

Coil	Diameter of Former	Number of Turns	Wire	Remarks
L1	$\frac{5}{8}$"	60	36 S.W.G. enamel	Close wound.
L2	$\frac{5}{8}$"	10	36 S.W.G. enamel	Close wound adjacent to L1.
L3a	$1\frac{1}{4}$"	16	26 S.W.G. enamel	Close wound on the same former with a $\frac{1}{4}$" gap between each section.
L3b	$1\frac{1}{4}$"	12	18 S.W.G. enamel	
L3c	$1\frac{1}{4}$"	6	18 S.W.G. enamel	
L4	$1\frac{1}{4}$"	4	14 S.W.G.	6 T.P.I. Self supporting
L5	$2\frac{1}{2}$"	26 (see text)	14 S.W.G.	Standard. Eddystone ceramic former.
L6	$1\frac{1}{4}$"	4	14 S.W.G.	6 T.P.I. Self supporting

instability as well as helping to reduce harmonic radiation. All the inductances are hand wound and the type of former used can be governed by what is to hand. The details of those used by the writer are given in Table 2.

L5 is tapped (counting from the h.t. feed end) at 14 turns for 7 Mc/s, 21 turns for 14 Mc/s and at the junction with L6 for 21 and 28 Mc/s. The whole of L5 and L6 is used for 3.5 Mc/s. L4 and L6 are mounted at right angles to L3 and L5 respectively to reduce the coupling between them to a minimum and improve the efficiency at the higher frequencies. To prevent the movement of the turns it is advisable to secure them in place with Denfix polystyrene cement.

The method of switching in the anode circuit of V4 and V5 has an advantage over the conventional pi-coupler in that no r.f. choke is required. A further point in favour is that no shorted turns appear within the r.f. loop to cause losses of output power.

The position of the front panel controls is governed by the component layout on the chassis. No attempt has been made to obtain a symmetrical arrangement.

Setting-up

First insert a meter between the bottom of R20 and earth. Switch on all supplies except the 1000V h.t. supply with VR1 to minimum. Set the switch S1 to the 3.5 Mc/s position and apply drive to V1 via an 80 ohm line. Do not overdrive the first stage as no increase of output will result and the consequent squaring of the waveform at either anode or grid will cause unwanted harmonics to appear in the signal. Adjust the first coupler to give a constant drive to the grid of V4 as indicated on the meter over the band 3.5-3.8 Mc/s. It should be emphasized at this point that the signal source power output must be reasonably constant over the frequency range to ensure correct adjustment of the couplers. Oscillators of the Clapp variety are usually unsatisfactory for this purpose unless carefully designed. A circuit of an easily made measuring set for checking this level is shown in Fig. 3, and a short description appears below. Having obtained a satisfactory condition on 3.5 Mc/s S1 should be turned to the 7 Mc/s position and the second coupler adjusted in the same way. After this the procedure is repeated on each band. Care should be taken to ensure that no more bandwidth is allowed than is necessary to cover each subsequent band.

The next operation is to set up C23, C24 and C25 for constant drive level into the following multiplier over its frequency range. These condensers are to compensate for the added capacity in the coupler due to the grid lead of V4 through S1.

To make this correction it is necessary to open in turn the earthy end of R8, R13 and R14, and adjust each condenser for the best results. When this has been done it is desirable to go through the adjustments to the couplers again and seal them in the optimum position. This rather lengthy process is well worth careful attention as it adds much to the performance of the unit.

The expected drive at the grid of V4 is in excess of 2 mA on all bands. As this is more than the requirements of the buffer valve no difficulty will be found in driving the final stage sufficiently hard to attain the required input.

The whole unit can now be tested for stability in the following manner. A 50K resistor is placed across V7 (the valve can be removed and the resistor leads pushed into the valve socket connections). Switch on all supplies, remove the drive with VR1 at maximum and note the feed currents to the grid and anode of V5. C5, C13, and C14 should then be swung to various positions in relation to each other. No variation of grid or anode current should occur in V5. It should be possible to remove R17 and R18 without any instability occurring, but they must not be left out of circuit as they are a safeguard. Only when complete stability has been proved can the setting up of the final stage be completed. The requirements are a resistive load of value equal to the output coax characteristic impedance and preferably of sufficient power rating to take the full output (100 watts). If a lower wattage is to be used the screen voltage on the final must be adjusted to limit the output to accommodate the smaller figure. In addition an r.f. ammeter is required—a small type shunted will do as the measurements are comparative only. It should be borne in mind that the current will be in the region of 1-1.5A.

Place the resistor across the coax output in series with the ammeter, switch on all supplies with S1 and S2 in the 3.5 Mc/s position and C14 at maximum. Apply drive and tune C13 for minimum current to V5, adjust C14 for maximum current in the load resistor and re-tune C13 if necessary. Adjust the drive to V5 with the aid of VR1. Note the setting of C14. It is important that this position be exactly the same when an aerial is attached to the output. If the loading will not agree with that obtained with the load resistor it is the aerial circuit or coupling arrangement which is at fault. This statement is equally true when using a conventional pi-coupler. An adjustment of C14 to accommodate an aerial fed through a coaxial line will rarely lead to more useful power output and will certainly result in more heat losses. Another important consideration is that if a low-pass filter is used it may be damaged by high voltages caused by standing waves. A record of the setting of C14 on each band should be kept for reference.

The approximate cathode current to the valves when the unit is switched to 28 Mc/s are shown below. They will vary slightly on the other bands due to reduction of frequency.

V1	6 mA	V2a	5 mA	V2b	6 mA
V3a	8 mA	V3b	7 mA	V4	38 mA

V5 anode current will depend on the loading required but should be in the region of 150 mA.

If the high voltage required for the 813 is not available or the power required is below the maximum permitted very good efficiency can be obtained by using two 5B/254M valves in parallel as a final stage. The low internal capacities of this type of valve makes for a very useful output with excellent stability. The maker's maximum h.t. rating in this application is 475 volts when anode and screen modulated. 807s or QV06/20s could also be used.

It is hoped to supply details of a suitable modulator and v.f.o. for use in conjunction with this unit in later articles.

(continued on page 122)

The Adjustment and Monitoring of Telephony Transmitters

Test Equipment Needed

BY G. L. BENBOW, M.Sc., A.M.I.E.E. (ex-G3HB)*

THE importance of thoroughly checking the overall performance of a telephony transmitter cannot be overemphasised. Unfortunately it is a task which can present considerable difficulties, especially in the case of a transmitter designed for the power limit of 150 watts. Nevertheless, it should be the aim of every amateur to test his modulator as far as his facilities will allow before applying its output to the transmitter and also to test the complete system on some form of dummy load before using it to radiate a signal.

The principal tests which should be applied to any telephony system are as follows:

(1) On the modulator alone.
  (a) Hum level.
  (b) Fidelity (i.e. absence of distortion).
  (c) Maximum undistorted power output.
  (d) Gain/frequency characteristic or variation of performance over the frequency range.
(2) On the complete system.
  (a) Depth of modulation.
  (b) Overall fidelity.

Testing the Modulator

Having thoroughly checked the wiring of the modulator, the h.t. can be applied and the voltage at the various electrodes of each valve may be measured with a high resistance voltmeter (sensitivity at least 1000 ohms per volt) and compared with the design figures. It must be pointed out here, that on no account should the h.t. voltage be applied to the output stage unless it has a suitable load. This should be a resistor, preferably non-inductive, with a wattage dissipation at least equal to the expected power output. It should be approximately equal to the modulating impedance of the r.f. stage or alternatively of such a value that it can be matched to the output impedance of the modulator by suitable adjustment of the taps of a multi-ratio modulation transformer.

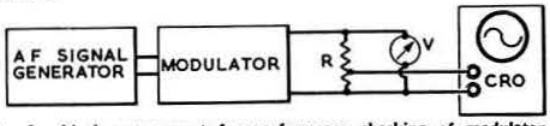

Fig. 1. Ideal arrangement for performance checking of modulator.

The ideal set-up for the overall performance checking of any audio amplifier is shown in Fig. 1. A signal of known frequency and amplitude is fed into the modulator from the a.f. oscillator. The modulator output is dissipated in the resistive load *R*, the voltage across the load being measured by the voltmeter *V*. This must be an a.c. voltmeter, suitable for use at audio frequencies. A multi-range test meter is generally suitable for this purpose. A preliminary calculation to find the order of the voltage to be expected is advisable, as the voltage may quite easily be more than 750 volts. It will be found convenient to plot a graph showing the output in watts against the voltmeter reading for a given load resistance. The output waveform is observed on the cathode ray oscilloscope, which is tapped down the load to avoid overloading it.

If such an arrangement is available, the performance of the modulator may be checked in a very short time. The maximum power output is quickly found by increasing the gain control until distortion becomes apparent on the output waveform. With the gain control at this setting and no input, the residual hum on the output may be seen on the 'scope and also measured. The hum level should be less than 0.5 per cent of the output. If it is more than this, then the oscilloscope should be applied to the output of each stage in turn starting from the output end, so that the origin of the hum may be traced.

The use of a variable frequency source enables the gain at different frequencies to be measured hence the characteristics of the low-pass filter, if used, may be found. The overall distortion may be estimated by applying the oscilloscope to the output and input of the modulator in turn, making suitable adjustment to the oscilloscope amplifier gain in order to obtain the same sized trace in each case. The comparison is best made by tracing one waveform and holding the trace over the other waveform.

A somewhat easier method of estimating distortion is to apply the input and output of the modulator to the horizontal and vertical deflector plates of the oscilloscope, with the internal time base inoperative. This test requires separate horizontal and vertical amplifiers, the gains of which should be adjusted to give equal vertical and horizontal lines in the absence of the other. The resulting pattern, in the absence of phase shift in the modulator, is a straight line, at an angle of 45° to the horizontal and vertical axes. The presence of phase shift causes the straight line to open out into an ellipse. Distortion in the modulator shows up as a slight curving at the ends of the straight line or ellipse. The straight line will slope to the right or the left according to whether there is an odd or an even number of valves in the modulator, i.e. whether the phase change across the modulator is 0° or 180°. These patterns are shown in Fig. 2.

Fig. 2. Patterns produced by applying the input and output of the modulator to the X and Y plates of an oscilloscope. A—No phase shift or distortion; B Slight phase shift; C—Phase shift and distortion.

Before embarking on tests such as these, it is advisable to examine the output waveform of the a.f. source and also to check whether the oscilloscope amplifiers produce any distortion.

This, as mentioned earlier, is the ideal method of amplifier testing, but it is realised that many amateurs do not have access to a C.R.O. and a.f. signal source, and therefore simpler methods must be used. However, the serious telephony worker is well advised to undertake the construction of an oscilloscope and audio oscillator.

The output of the modulator may be quite satisfactorily monitored by means of a pair of headphones, connected across a low resistance in series with the load resistor as shown in Fig. 3. The value of *r* should be adjusted to give comfortable listening strength in the headphones—generally two or three ohms is sufficient. As a safety precaution, one side of the headphones should be earthed.

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There are several convenient alternative signal sources which may be used for test purposes. If a gramophone pick-up is available, then a gliding frequency record is a worthwhile investment. Such records are available from most of the record companies and provide a source of

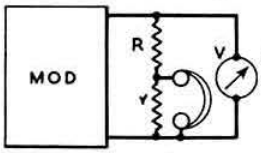

Fig. 3. Alternative method of monitoring modulator output by means of headphones.

accurately known frequency. Another possibility is the use of a simple receiver tuned to a B.B.C. programme. The circuit of a very simple audio oscillator is given in Fig. 4. The inductance L must be centre-tapped; if such a choke is not available a small 10 H 60 mA smoothing choke may be pressed into service. These are generally wound without end cheeks and have an inductance of the order of 0.1 to 0.5 H with the stampings removed. The centre tap may be made by carefully pulling out with a pair of tweezers the end turn of a layer of the winding around the centre point. The frequency of oscillation may be changed by switching in various values of capacitance, the values required being found by "trial and error." The frequency calibration may be carried out as described in "Single Sideband Technique," Part VI, R.S.G.B. BULLETIN, May 1956, page 464.

Using simplified apparatus, as described above, quite an accurate appraisal of the performance of a modulator may be made. As the estimation of distortion is an aural one, the accuracy achieved depends to a large extent on the sharpness of the experimenter's ear.

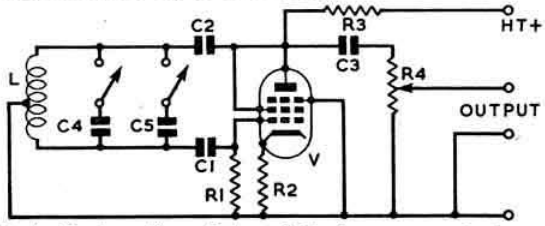

Fig. 4. Simple audio oscillator suitable for use as a signal source for modulator testing. C1, 0.001μF; C2, 0.0005μF; C3, 0.1μF; C4, 5, L1, see text; R1, 100K ohms ½ watt; R2, 1K ohms ½ watt; R3, 33K ohms ½ watt; R4, 250K ohms (output control); V, EF50.

Testing the Complete System

Before applying the output of the modulator to the transmitter, it is essential to make certain that the stage which is to be modulated is itself operating satisfactorily. Neutralization, if used, must be as good as possible. The approximately correct values of grid bias and grid drive should be applied, and the aerial coupling must be adjusted so that the stage is drawing the required anode current. This ensures that the modulating impedance is the correct value. Better smoothing of the h.t. supply to the r.f. stage is required for telephony operation than for c.w. operation alone. For anode modulation about 50 per cent more grid drive is required than for c.w. conditions. As suggested earlier, the first trials of any telephony transmitter should be done on some form of artificial aerial to avoid causing unnecessary interference to other stations.

When it is clear that the r.f. stage is operating satisfactorily, the modulation may be applied and increased up to the maximum of which the system in use is capable. In the case of anode modulation this is 100 per cent but for the various forms of grid modulation the modulation depth should be restricted to about 75 to 80 per cent to avoid distortion.

Measurement of the Depth of Modulation

As always, the most useful tool for this job is the cathode ray oscillograph, as its use enables a quick visual check of the modulation depth to be made. There are two distinct methods of measuring modulation depth by means of the oscillograph: one requires a time base while the other does not.

The simplest method which does not require a time base is shown in Fig. 5. A small fraction of the modulated output is fed by means of a pick-up loop loosely coupled to the output tank circuit to the Y plates of the oscilloscope. Likewise the a.f. modulating voltage is fed

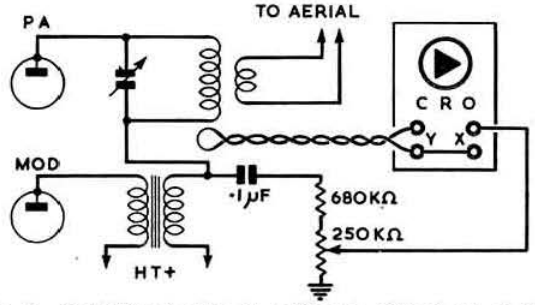

Fig. 5. Modulation checking by oscilloscope without use of time base.

to the X plates. On modulation a trapezoidal or wedge shaped pattern is produced on the screen. Fig 6 shows the variations in this pattern for various conditions. For 100 per cent modulation the pattern produced is a triangle. The modulation depth is calculated from the expression,

$$\text{Modulation Depth} = \frac{A-B}{A+B} \times 100 \text{ per cent}$$

where A and B are the lengths of the vertical sides of the pattern. A and B can be measured with reasonable accuracy by means of a pair of dividers.

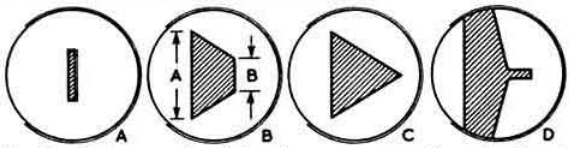

Fig. 6. Patterns produced by the arrangement shown in Fig. 5. A—Carrier alone; B—Less than 100 per cent modulation; C—100 per cent modulation; D—Overmodulation.

This method also presents an easier method of checking the overall performance in addition to the measurement of modulation depth. If the operating conditions are correct, the sloping sides of the trapezoid will be perfectly straight. Curvature of these sides indicates non-linearity. Typical patterns for various fault conditions for both anode and grid modulation are shown in Figs. 7 and 8.

In view of the simplicity of the apparatus, only a cathode ray tube, which may be a small 2½ in. tube, and its associated power supply is required. This is a particularly attractive method of performance checking. The whole apparatus can be very conveniently built up on a 3 in. meter panel for rack mounting..

The alternative method which requires an oscilloscope with a time base produces the envelope of the modulated wave on the screen. In the set-up shown in Fig. 9 the modulated r.f. voltage is applied to the Y plates of the oscilloscope either by a pick-up loop or directly from a tuned circuit. The patterns produced for various conditions are shown in Fig. 10. The depth of modulation may be found from the relation:—

$$\text{Modulation Depth} = \frac{Y-X}{X} \times 100 \text{ per cent}$$

The patterns resulting from incorrect operation are more difficult to interpret and for this reason the other system is to be recommended.

Whichever system is used, optimum results are obtained with constant sinusoidal input to the modulator. The loud sustained whistle into the microphone cannot be reproduced with sufficient accuracy to enable precise measurements to be made.

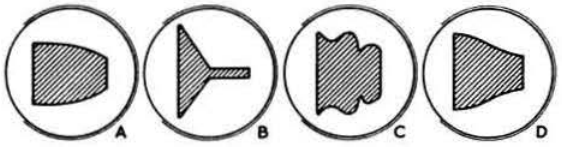

Fig. 7. Fault conditions, anode modulation. A—Drive too low; B—Overmodulation; C—P.a. unstable; D—Incorrect matching of p.a. to modulator

Alternative Methods of Modulation Depth Measurement

In the absence of a cathode ray oscillograph, the most convenient way of measuring the depth of modulation is to measure the aerial current with and without modulation. The relationship between the modulated and unmodulated aerial currents is

$$I_m = I_0 \sqrt{1 + \frac{m^2}{2}}$$

This may be rearranged thus

$$m = \sqrt{2\left[\left(\frac{I_m}{I_0}\right)^2 - 1\right]}$$

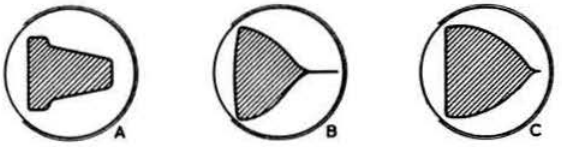

Fig. 8. Fault conditions, grid modulation. A—Drive too high; B—Overmodulation; C—P.a. insufficiently loaded.

Hence the modulation index m may be calculated from the ratio of the modulated and unmodulated aerial currents. It should be noted that for 100 per cent modulation or a modulation index of 1, the increase in aerial current is 22.6 per cent.

In an anode modulated system, the modulation percentage may be estimated by measuring, preferably with an electrostatic voltmeter, the voltage across the modulation choke or the secondary of the modulation transformer. Knowing the unmodulated anode voltage of the class C amplifier, the modulation percentage can be calculated from the following formula:

$$\text{Modulation Percentage} = \frac{\text{Secondary or Choke Volts}}{\text{Amplifier Volts}} \times 141.4.$$

The values given in this section presume the use of a sine-wave input. In the case of speech the average aerial current rise, or modulation voltage will be perhaps only one-third of these values for 100 per cent modulation on peaks.

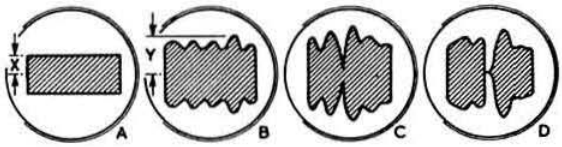

Fig. 10. Patterns produced by the arrangement shown in Fig. 9. A—Carrier alone; B—Less than 100 per cent modulation; C—100 per cent modulation; D—Overmodulation.

Modulation Monitors and Over-modulation Indicators

Whilst it may be argued that it is not necessary to be able to measure at any time the exact depth of modulation, some indication of the presence of over-modulation is essential. There are several ways of doing this. In a class B or class AB2 modulator there is an appreciable variation of modulator anode current. If a red mark is made on the modulator anode current meter scale corresponding to 100 per cent modulation, then the gain control should never be advanced far enough to cause the anode current to swing above this value. Likewise, a high resistance a.c. voltmeter connected to the output of one stage of the modulator may be calibrated to show the voltage at that point corresponding to full modulation.

As the average anode current of a linearly modulated amplifier is constant, the reading of the anode milliammeter is some indication of the presence of over-modulation. A slight flicker of the anode current indicates non-linearity of the modulated amplifier, due especially to over-modulation in the downward direction. This method, in particular, should be carefully checked, as there are several other causes of anode current shift. The most common are incorrect operating conditions, i.e. insufficient grid drive or grid bias on the modulated stage, incorrect matching or gross overloading of the modulated stage. It may also be caused by incomplete neutralizing or an otherwise unstable r.f. stage.

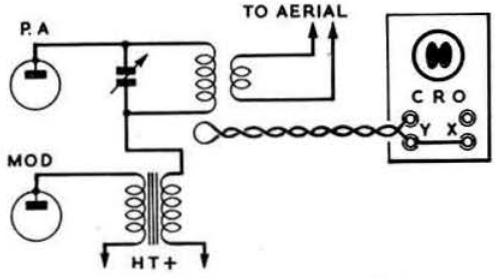

Fig. 9. Modulation checking by oscilloscope with time base using speech input.

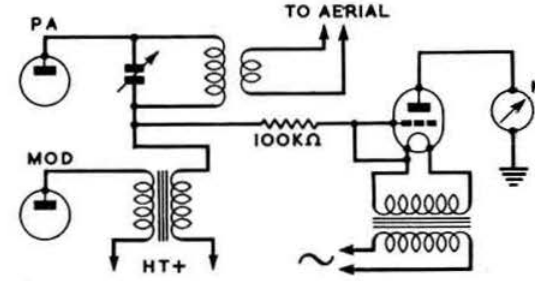

Fig. 11. Circuit of overmodulation indicator.

As the sudden breaking up of the carrier wave by over-modulation in the downward direction is the principal cause of "splatter" or severe interference to local receivers it is particularly important to prevent this occurring. A simple means of showing the presence of negative peak over-modulation is shown in Fig. 11. The milliammeter in series with the diode will show a reading on each peak of modulation which carries the instantaneous voltage on the anode of the modulated r.f. stage "below zero", that is, negative. The diode cannot conduct so long as the negative half cycle of audio output voltage is less than the d.c. voltage applied to the r.f. stage. Both the diode and its heater transformer must be capable of withstanding, without flashover, a voltage equal to the sum of the peak r.f. and a.f. voltages. Any high voltage low current rectifier or alternatively an old transmitting triode with the grid and cathode strapped will serve for the diode. Any low or medium reading milliammeter (up to 5 mA or so) is suitable as an indicator.

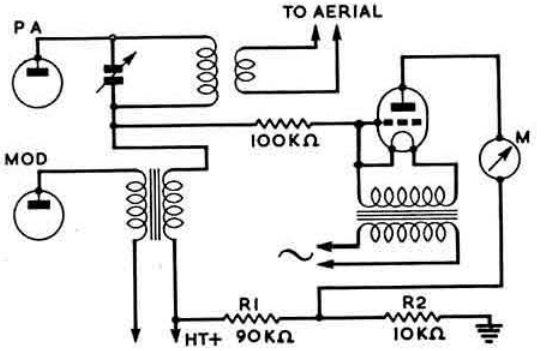

Fig. 12. Overmodulation indicator modified to show when modulation exceeds 90 per cent (i.e. the voltage across R2 is 10 per cent of the supply voltage).

If an indication of when the modulation depth exceeds a predetermined level of less than 100 per cent is required, then the meter may be returned to a point on a potentiometer connected across the h.t. supply instead of to earth. For example, if a maximum of 90 per cent is to be indicated, then the voltage across the bottom section of the potentiometer should be 10 per cent of the d.c. supply voltage as shown in Fig. 12.

The best answer to the whole problem of the indication and prevention of over-modulation is undoubtedly to ensure that it is impossible for it to occur, either by the use of an efficient speech clipping system or by careful adjustment of voltage and impedance levels throughout the system.

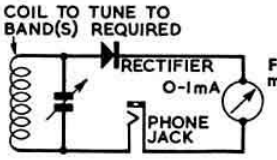

Fig. 13. Simple receiver for monitoring telephony transmissions.

It is generally considered that any telephony transmission should be monitored at fairly frequent intervals. This can be done on headphones by using the station receiver if this is sufficiently screened and has a gain control in the first r.f. stage.

A far more satisfactory way of monitoring is to build a very simple receiver (Fig. 13). The tuned circuit is resonant at the frequency in use. The rectifier *CR* may be a silicon or germanium crystal or a valve. Such a piece of apparatus can well be the most useful piece of test apparatus to have. In addition to its value as a telephony monitor, it is extremely useful for checking the hum level and source of hum on the carrier, as a simple field strength meter and as a fairly sensitive frequency meter. If the tuned circuit is resonant at a television frequency, a continuous check may be kept on the radiation of offending harmonics. If the meter is kept in a fixed place with fixed coupling to the transmitter, then the reading provides a continuous check on the overall operation of the system, any change, such as a stage going off tune or a valve slowly failing, is immediately shown.

Under normal modulation conditions the meter reading is steady; any variation indicates non-linear operation of the modulated stage and carrier shift.

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South London Pirates Fined

DURING the past year it became evident to South London amateurs that unlicensed stations were working on Top Band and 3.5 Mc/s. Preliminary investigations showed that the pirates seldom worked licensed amateurs but operated a net with their own kind and seemed to take pleasure in jamming licensed stations.

After considerable work, which involved close co-operation between R.S.G.B. members and Post Office engineers, the trap was sprung on May 6, 1956, with the result that unlicensed stations using the following call-signs were closed down within a few hours: G2CRV, G3FOT, G3HFY/A, G3IXH, G3JBV (who had previously used the call G3DM), G3CJA/M and G3GXQ.

The operators of two of these unlicensed stations appeared at Bromley, Kent, Magistrates Court on July 20, when fines of £10 and £5 5s. costs were imposed on each defendant. A third appeared at Penge Magistrates Court on July 24 when a fine of £5 with £3 3s. costs was imposed.

Unlicensed stations in South London are, in the future, likely to meet with a warm reception. Some excellent D/F equipment is now available in the area which means pirates will not escape detection for long.

Grandson of F.D.R. visits R.S.G.B. Headquarters

WELCOME visitor to Headquarters recently was Frank Roosevelt (W8NKI), of Grosse Point, Michigan. Frank, a grandson of the late President Franklin D. Roosevelt, is doing social service work with the Winant Volunteers in England until September. He hoped to attend the September meeting of the London Members' Luncheon Club.

TVI Queries

MEMBERS are asked to note that Louis Varney (G5RV) has been in Venezuela for more than a year and is likely to remain there for some time to come. For that reason enquiries regarding TVI should not be sent to his old address at Chelmsford.

THE MONTH ON THE AIR

BY S. A. HERBERT (G3ATU)*

DURING the past week or two, the bands have begun to take on a distinctly autumnal aspect from the point of view of conditions and all the signs and portents seem to indicate that a good time is going to be had by all DX enthusiasts. The month under review got off to a quiet start, but before long there were signs of an all-round improvement, with the three h.f. bands in particular coming into their own. Somewhat naturally, with interest centred on these bands, the improved conditions on forty and eighty metres have caused little excitement and the consensus seems to be that, at least for the time being, there is little point in doing things the hard way. Comment this month is concerned largely with fifteen and twenty metres, with the latter just leading, and so to business.

Twenty Metres

Normal doings on the band have been enlivened by the activities of no less than four expeditions. The DL trip to Luxembourg duly took place and was greeted with acclamation, as were the efforts of F8EX, F3AT and company, who held a successful session from Andorra operating PX1EX. Even more attention was paid to SM5KV when he appeared on Spitzbergen, wielding the impressive call-sign SM8KV/LA/P. The fourth rare one—VQ1JO—also appeared according to plan, but Mal had to cope with poor conditions over the north/south path and his signals in Europe were weak. We hope he had better luck with other parts of the globe.

G3JFF (Kingswear) is active again with a new Panda Cub and now has 40 watts c.w. on all bands (except Top!). YV5AE, PX1EX and SM8KV were new ones, making the score 105C, which would have been more if he could have connected with KH6AYG, YK1DF, ZD2ROC, HE9LAA, CT3AB, VR2AO and other splendid items. Mike would like to hear from MF2AG (Duncan) and MD5FF. He was told by a DM that a certain UA is going to Albania, where he has hopes of getting on the air. DUF1 and 2 have been added to the '3JFF collection and, the necessary SMs having been worked, the WASM is in the offing. **G2WQ** (Prestwich) has noticed that although a variety of aerials can produce good signals on fifteen, the strong signals on twenty come mostly from stations using beams. Latest DX from '2WQ includes UA0OE (Ulan Ude, Zone 18), PX1EX, KH6WW, '6BIF and VK, but no rare Pacific calls were heard. **G3CED** heard that I1BUQ would operate from San Marino on September 7, 8, 9. On phone, George worked YU3CCD, at the Third Television and Radio Exhibition in Ljubljana. The 250-watt transmitter belonged to YU3BC and the various operators all spoke excellent English.

G3IRU (Sutton) has returned to DX hunting after exams. and associated work and was pleased to get RST579 from VK3VJ (18.00), despite the presence of a ripply YU. Sundry Us have provided new countries (UH8BA got away, though) and an interesting one at 21.00 was CE0AW (RST576). Nigel remarks that forty metres still provides "good W.A.E. fodder", but has lost some of its savour now that he has 50 watts on the other bands. **G3AAE** (Barnet) has done the trick. Congratulations to him on working 202C with just a 67 ft Zepp—the only aerial he has ever used except for an indoor dipole when he first came on in 1946. CR4AH, SM8KV, VP5RR, ZD1DR, VP2GW and CR5SP helped to do the job; QSLs are to hand from FS7RT, HI8FR, CR4AH, ZD1DR, YK1DF and KW6CA. John remarks that if he was single and didn't have to do so much gardening and decorating, he would be able to step up the pace to a more satisfactory level! **G6YQ** (Liverpool) found a poor month saved by QSOs with SM8KV and YA1AM—the latter through the good offices of a W2 who fixed a sked. This got George out of bed at 03.30, but it was worthwhile. The legitimacy or otherwise of YA1AA now fades into insignificance! XE1MJ, YI2OT, FP8AP and XW8AB were also worked and a QSL has in fact been received from XW8AB via the Bureau, which clears a point raised last month in *M.O.T.A.* VQ1JO was heard twice, weakly, but VK9TW remained missing, even when SM and OH could be heard working him. However, the daily marathon with VK4YP continues successfully. ZB2Q told '6YQ that ZB2U and '2V are newly on and that ZB2T will close down in about two months. (Further news of ZB2 appears later.)

G3KBH (Gravesend) has been on vacation and added several new ones, to wit 9S4CH, LX1BS, CT2BO (21.30), TI2PZ, KL7BFW (19.00), CX2CO and FE8AE, but he can't raise CR6, despite calling dozens! Various Us were added to the score and other DX included VS2GR, VS6CO and VU, with VK9RM and VR1B two good ones earlier in the year. Mike's brother is now VE3DQB/W8 (Ohio), but no luck so far in contacting him. **G6CJ** (Stoke Poges) spent some time hunting the hot ones and managed the DL/LX expedition, heard VK9TW and the SM8, then laid in wait for VQ1JO and raised him on his first CQ.

B.R.S.20317 (Bromley) still prefers 14 Mc/s c.w., despite his converter for the h.f. bands; his latest DX includes CR7CK, EA6AW, FB8ZZ, FE8AE (14022, 20.30), FG7XC, FL8AB (14033, 18.30), I5RAM (14025, 22.10), KW6CD, VP8BC, VQ3FN, XE1BC, ZD9AE (14054, 19.20) and ZS9O. That little lot helps the score to 40Z and 203C. **B.R.S.20104** (S. Harrow) is one of those who appreciate GM2DBX's remarks on the help given to DX chasers by keen short-wave listeners and he suggests that frequencies and times of DX logged would add to this help. C.w. produced four new ones (something of a miracle when one is around 230C!) in SM8KV, VQ1JO, UL7CB (14075, 13.15 and 23.15) and VK1RW (Cocos, 18.20), with CE0AD (14005, 23.00), FU8AA (14020, 17.30), YA1AA (via A.R.R.L.) and YA1AM (via R.S.G.B.) and KG6CE on A3 (14155, 21.30). **B.R.S.20135** (Newport, I.o.W.) is still busy feeding the multitudes—and it falls to his father capably to do most of the listening, during intervals due to gales, snapped poles, holes in roof, aerials down and power off. No TV or radio—just a candle for light. (Yes, it

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has been quite a summer!) However, perseverance was rewarded with phone from ZD3D, ZL4BQ, KG1BO, 5A2TM/AM (7000 ft above the Mediterranean), W6 and VK2, 3 and 5. **B.R.S.20487** (North Finchley) had VK7CK on phone, while **B.R.S.20416** (London, S.E.12) heard ZL3QM, VO6AP, VS2DW, HB1GJ/TI (the /TI suffix denotes the Swiss Canton, not Costa Rica!), VP5AK, FM7WN, '7WS, HB1TL/HE and SM8KV, while one day all W districts were logged on phone between 07.45 and 09.10 G.M.T.

B.R.S.20106 (Petts Wood) has heard 204C this year—a record so far and there is still time for more — this despite varied local difficulties and distractions. VK9AW or '9TW was heard signing on c.w. at 13.20 (very likely it was '9TW, who has been just audible at that time) and KX6BP (15.15), UA0KAD (16.30), VP8BC (Falklands, 22.00), EA9DF, XE1MJ (05.30), YK1DF (10.45), TI2PZ, FB8ZZ (16.15), FL8AB (15.30), HA5A/AM (!), VE6, '7 and JA (03.00) were logged, while CR10AA and FI8BB were called. Phone brought in VP5FH (Turks), VE5VL, VK7CK and ZL4BX (talking to ZM6AT—14145 at 06.15—who, he says, is on after seven each night, i.e., each morning, British time). **B.R.S.21049** (Hanwood, Salop) heard W2ZXM/MM with Capt. Kurt Carlsen at S9 one night. The receiver at '21049 is interesting, being an ex-Naval W1516B weighing a bare 1 cwt. Obviously a case for a good strong table! Your commentator worked EA0AM, who has been heard at some distinctly "un-EA0'ish" times, ET3AF (Addis Ababa, 17.50 — QSL via S.S.A.) and heard VK1RW (RST347, 16.30), DU1VQ (20.00), VQ5GJ and a pile of W6s calling VR3B, while others concentrated on VK9OQ.

G3AMM says that **3A2BF** wishes it to be known that he and 3A2BE are the only stations in Monaco. Both work on 14 Mc/s phone only.

Fifteen Metres

The improvement on fifteen has been very noticeable during the past few weeks and if things go on as they have done, twenty will have to look to its DX laurels. Already, most mornings see the band full of good signals from ZL and occasionally from other Pacific areas, while afternoons, which used to produce mostly Ws and VEs, are starting to provide long openings to VK and the Far East, with VS1, 2, 4 and 6 easily workable. Later, the skip moves to the Americas and a variety of Central and South American DX is often available well into the early hours.

G2ACC (Salisbury) has worked some useful phone DX with a pair of QV06-20s to a dipole (although he has plans for a two-element rotary) and a new "888", which is doing excellently. ZD4BR, VP6GT, '6AM, '6JK, VS1GV, VP4TO, OA4DR, ZLs and G5RV/PJ2 were amongst those worked. Louis has official permission to operate as G5RV/PJ2 and hopes to return there in a month or two, when he will use fifteen and twenty metres. During his travels, he expects to use other calls. He has, of course, already been heard from VP6RV. **G2WQ** finds the WNs and KNs eager to work Europe and he was pleased to be first G to many. Archie also raised VS6AE, ZL1AH and a 4X4. **G3IRU** had ZL1AH reply to his CQ and talked to W7TIR, VS6CT (19.00), KH6BCM (09.30) and JA8AQ (23.00).

B.R.S.20135 logged VS1FE, VS2DB, VS4BO, ET2FM, 4S7YL, CR9AH and YA1AA on phone, while **B.R.S.20104** found the band good for BV1US (18.15; QSL to Box 63, San Francisco), YN1PM (Box 227, Managua) and CR5SP on phone. On c.w. Goff picked up FS7RT and XE1PJ (14.45). **B.R.S.20487** heard A3 from ZD8SC, ZS3AB, OQ5BI, VP8BR (21.00, Graham Land) and KV4BQ. **B.R.S.20106** found good DX during the early mornings when he heard VR2BC, ZK1BS (08.15), KH6, VK and ZL on phone and UA1KAE (Mirny, Antarctica, 08.00) on the key. Other c.w. was from VK9DB, UD6AL, FB8BX, VP9D/P, UG6KAA and W7s 'UZE, 'AOZ, 'YAY and 'RSP. On phone, Norman overheard VQ4ERR (who skeds VK9RH, 05.00-06.00 G.M.T.), VP2GW, ET3AH, MP4KAC, VK1GU, YA1AA (12.40), VP5FH, DU1SV (S9 plus at 14.50), AP2M (S9 on peaks at 15.40), ZS3G, ZD2JHP, GI3CWY/M, besides the more usual ones. He wonders

Frequency Predictions for October, 1956

PREPARED BY J. DOUGLAS KAY (G3AAE)

BAND	NORTH AMERICA	CENTRAL AMERICA	SOUTH AMERICA	SOUTH AFRICA	NEAR EAST	MIDDLE EAST	FAR EAST	AUSTRALIA
28 Mc/s	1130—2200	1000—2030	0930—2000	0700—1900	0630—1800	0630—1600	0630—1600	0630—1400
21 Mc/s	0930—2300	0900—2200	0830—2200	0600—2030	0530—1930	0600—1800	0600—1800	0530—1630 1900—2200
14 Mc/s	0830—0030	0800—0600	ALL DAY	0600—0200	ALL DAY	0600—0000	0600—0000	0700—2200
7 Mc/s	2200—0830	2300—0800	0000—0600	2200—0200	2100—0600	2200—0200	2200	1600—2000
3.5 Mc/s	2300—0800	0000—0600	0000—0600	0200	0000	0200	2200	1700

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

about the authenticity of PK2 and PK5s heard being called of late. **G3ATU** was intrigued to log FK8AL one lunch time, but his RST569 c.w. soon faded from the picture. ZS7C has been on phone and HH7YL was heard to ask a GM what country his prefix stood for!

Forty and Eighty Metres

Forty is often much better than it seems, says **G3JMO** (Middlesbrough) who worked XW8AB (22.30), despite the usual European CQs. Some of these characters obviously can't cope with anything below an S9 signal. Put them amongst a band full of VK and ZL and they wouldn't hear a thing. **B.R.S.20317** heard the XW8 as well as UM8KAA, UA9 and W0SGG (Colorado, 23.00). **B.R.S.20106** logged SM8KV/LA/P, ZB1HKO, 9S4AX, W5WDD, W0FM, W0BLZ and heard a DM call FG7XC (21.15). Eighty calls for little comment, though **B.R.S.20317** heard WWV at R5 S5-6 at the very early hour of 19.20 G.M.T. on August 10, so things should be happening on that band before long. **B.R.S.20106** mentions W1AW, W1TYQ, KN2PVE, VE1GF and UR2AR.

Ten Metres

Ten began to show signs of opening about the middle of August, with African and Middle East DX coming through. Then on August 18, W1, 2, 4, 5 and sundry South Americans started to appear and for four days at least, the band sounded distinctly healthy. When you read these words, DX should once again be in full swing. **B.R.S.20135** heard VQ3ES, VK5DB, OQ5 and ZS1, **B.R.S.20487** logged VP6GT, ZS1, '4, '6 and **G3ATU** managed FB8BZ (16.30) on A3.

Top Band G-ZL Tests, 1956

Dud Charman **(G6CJ)** sends full details of another series of tests which will appeal strongly to keen chasers of Top Band DX, but let nobody imagine the task to be easy: far from it. G6CJ and ZL1AH have run successful tests in the past and now arrange one open to all. The "season" lasts only for about 10 days and tests will run from October 1 to 19 or perhaps later, Monday to Friday, between 06.15 and 06.45 G.M.T. ZL stations will be between 1875 and 1900 kc/s and will *call* from 06.20-25, 06.30-35 and 06.40-45. G stations will transmit between 1800 and 1825 kc/s (very necessary, because of Loran in ZL) and will call from 06.15-20, 06.25-30 and 06.35-40. Likely stations are ZLs '1AH, '3GQ, '3JA and '3RB. Dud emphasises that the job is so difficult that only first class gear and rigid discipline can succeed—so please behave. Keep good time and break it only if a QSO is likely. Anybody heard calling 'em above 1875 kc/s will receive an atom bomb!

Overseas News Items

ZB2I, who is QSL Manager for Gibraltar, sends details of current activity there, correcting the details given in July *M.O.T.A.* ZB2A is the R.A.F. Club station, at present inactive; ZB2J is re-issued but not yet active; ZB2I is on all bands (except Top Band), phone and c.w.; ZB2P uses 14 and 21 Mc/s phone and c.w.; ZB2Q, 'R, 'T (all R.A.F.) are on c.w.; ZB2S is now QRT but ZB2U is active c.w. and phone. ZB2I himself is with Cable and Wireless and not R.A.F. as was stated earlier.

G3ILL (London, N.W.2) hears from **W3TYW** that the proposed expedition he was to make with W2EIK (July *M.O.T.A.*) it now off, as separate country status has not been granted by A.R.R.L.

W6ITH (FS7RT, PJ2MC) alerts us to future rare spot activity. Reg was seeking permission to operate from several other places while waiting for his FS7 and PJ2 tickets to arrive and, believe it or not, he has permission to operate from no less than three additional rare DX countries. Call-signs have been issued to him and accommodation is lined up. One spot has never had amateur activity, while the other two have seen none for many years. "All I need now", says Reg, "is to be triplets"! He hears from YV5BZ, who is handling the YV0AA QSLs, that cards and banners are going direct for those received. If anyone is in doubt as to a QSO with Aves, write YV5BZ, who will be pleased to check the log. Transport to Aves was a problem and '5BZ thinks La Blanquilla Is.—80 miles from Venezuela—is a better bet for future YV0 work.

More useful information from **W6YY** (La Canada) is that VK1RW is now active from Cocos, v.f.o. A1 with a chirpy signal. QSL to Direction Is., Cocos-Keeling Group, via Perth, Australia. FB8BI (Jan de Nova Is.) does *not* count as a new country. VR3B (Fanning Is.) on c.w., VR6AC (14143, phone) and BV1US on A1 and A3 are all making lots of QSOs. VK9TW left Nauru on August 19, headed for VR4. VQ8CB is in Mauritius, awaiting a visa to settle in ZL. XW8AC on 14130 kc/s closes around 13.00 local time when the Laos power is cut. ZD9AE (Gough Is.) is on 14050 kc/s Saturdays around 15.00. W6AM received a card from CR8SA for an early 1956 QSO. East coast Ws have been working AC3SQ on phone.

G2HJT (Ashton-under-Lyne) passes news of Richie Silverman (**W5CFG**) who, at the age of fifteen, has already held a licence for four years! Using 25 watts and three element beams on 14, and 21 Mc/s, he has worked 190 countries and holds various operating certificates. Richie has hopes of making a trip to Swan Is. in company with W6NJU, who is his own age. Navassa Is. also looms as an alternative, so maybe we shall hear W5CFG/KS4 or W6NJU/KC4 causing a stir on the bands. Anyway, good luck to both the youngsters.

And there we are until next month. Good luck and hunting again and please post your findings to arrive circa September 21. 73 and tnx.

Tahiti-Nui Expedition

RESEAU des Emetteurs Français, the French national society, has informed Headquarters that Roland d'Assignies will be operating FO8AD/MM on a French marine expedition which is leaving Tahiti about October 15 and is expected to reach Santiago, Chile, about the end of January, 1957. The object is to prove that it is possible to navigate from Tahiti to South America and back again on a Polynesian bamboo raft 50ft long, 16ft wide equipped with two triangular sails. The leader of the expedition is Eric de Bisschop, well-known for his oceanographic research. Four other Frenchmen complete the crew.

FO8AD/MM will operate on 7, 14, 21 and 28 Mc/s but it is expected that most contacts with amateurs in Europe will be on 14 and 21 Mc/s c.w. around 08.00 and 17.30 G.M.T. Contacts will be restricted to an exchange of RST reports and the names of the operators. The raft's position will be transmitted on the hour and on the half-hour.

So that those interested in the expedition may plot its progress, R.E.F. is producing a three-colour map 8½in. by 12in. which can be obtained from R.E.F., B.P. 42-01, Paris R.P., by sending 480 French francs or 16 international reply coupons. When the expedition is over, these maps may be sent to an address to be published later so that the dated positions can be verified and sent back to the owner without charge after being signed by members of the Expedition.

Amateur Television

By M. BARLOW (G3CVO/T)*

THE last report appeared just after the printing dispute, and so was rather condensed. A reminder, then, that this year so far British Amateur TV enthusiasts have transmitted colour pictures over a 13 mile path, had the first live-camera to live-camera QSO (duplex has not been successful yet) and raised the TV DX record to 38 miles (G2DUS/T-G3KKD/T). Abroad, we hear of the first successful pictures produced in Dublin, and the Gröningen (Netherlands) group are experimenting with colour; a large Italian group has been formed, and first results are expected there soon.

Activities now are concentrated on preparing exhibits for the Third Amateur Television Convention, to be held at the Bonnington Hotel, Southampton Row, London, on October 27.

Station Reports

G2DUS/T (Baldock) has now added a first-class slide scanner to his station, and finds that blue-trace oscilloscope tubes give far better results than the ubiquitous 5FP7 which suffers from grain. Unfortunately, many of these tubes burn easily and flash over if the rated e.h.t. is increased. The scanner, 16mm telecine, staticon camera, monoscope, sync generator, transmitter, aerial and converters will all be at the Convention, besides an exhibit of what can be made from the APN4 indicator unit. G2DUS runs a regular sked with G3KKD/T (Ely) on Sundays at 11.00, and also with G2WJ/T in the evening.

G3KKD/T has little spare time, but is increasing the power output of the vision transmitter to 50 watts. So far it has not been possible to exchange pictures with G2WJ or any others of the East Anglian TV Net apart from G2DUS. G3KOK/T (Bishop's Stortford) has exchanged pictures with G2WJ/T (Dunmow) but is in a bad site for other stations. The image orthicon camera chain is nearly complete, and will be running at the Convention. G3CVO/T has built a portable 70cm TV transmitter for the Convention, and also a QRP 3.5 Mc/s transmitter so that the Chelmsford group's Sunday morning TV net can be run on 1980, 3650 and 144 Mc/s simultaneously for publicity! A snag in the big TV transmitter has been traced to a faulty meter used to set the stabilizer currents. A new 32 element bidirectional array is available for relay and duplex work. Efforts are now in hand to send pictures to G3VI (Braintree) and G2BCB (Colchester). A 13cm link has also been started.

In Birmingham, G3DFL is moving to higher ground, as is G3BA, so another /T or two is a possibility. Colour expert C. G. Dixon (Ross-on-Wye) is also moving to a better site, and with possible help from G2DUS/P/T colour pictures may be sent to Birmingham in due course. The Birmingham camera is well on the way, and G5KS has also offered his camera. G. Wynn, with the R.C.A.F. in Metz, France, has a complete staticon camera chain in action, and is anxious to contact French amateurs interested in TV. The possibility of a first cross-channel TV contact was discussed at the London V.H.F./U.H.F. Convention.

G2WJ/T continues his regular Saturday sked with G3GDR/T (Watford) at 18.00, and has also received test signals from G3CTS/T (Norwood) which is shortly to begin regular working. G3LCM/T (Coulsdon) and G3KFE/T (Enfield), the latter having emigrated from Birmingham, are new stations in the London area. To encourage and instruct, Amateur TV groups are starting this autumn in both North London (c/o G3ICU) and South London (G3EKE). G3AST (Luton) now has a lattice mast erected, and will soon be on the air. PA0SW (The Hague) transmits TV regularly every Sunday 11.00 to 12.00 on 145.5 Mc/s, with the sound on 144.1 Mc/s. Horizontal polarization is used with a peak sync power (negative modulation) of 60 watts; 312 line 50 pictures per second standards are used. G3KFH/T (Worthing) has been radiating experimental transmissions (towards France?), but is temporarily off the air to get married.

The writer will gladly put any interested reader in touch with his nearest fellow enthusiast; there are in existence active groups in Southampton, Worthing, South and North London, Romford, Chelmsford, High Wycombe, Birmingham and Manchester. Anyone interested is cordially invited to come to the Convention mentioned above. Club secretaries may like to bear in mind that B.A.T.C. lecture tapes are available.

10 Baddow Place Avenue, Great Baddow, Essex.

Long-distance B.B.C. Television Reception

AS forecast last month, there has been a considerable upwards trend in the values of M.U.F. for October, and consequently the B.B.C. Band 1 Television transmissions may be receivable in more overseas locations and for increased periods of time.

It will be greatly appreciated if those overseas members who do successfully receive these transmissions will forward details to Headquarters. Such details should preferably include a brief description of the receiver and aerial(s), the quality of reception and the time in G.M.T.

—G3AAE

DX Television Predictions for October, 1956

Buenos Aires.	1500-1800.	Karachi	1000-1300.
Rio de Janeiro.	1530-1800.	Tel Aviv.	0900-1500.
Santiago.	1500-1730.	Accra.	0900-1730.
Falkland Is.	1430-1800.	Cairo.	0900-1500.
Aden	0900-1600.	Capetown.	1000-1700.
Baghdad.	0900-1500.	Dakar.	1100-1800.
Bahrein.	0900-1500.	Jo'burg.	1000-1700.
Bombay.	1000-1300.	Nairobi.	1100-1700.
Colombo.	1000-1400.	Salisbury.	1000-1700.

G.M.T. throughout

International Ferrite Convention

DELEGATES from France, Germany, Holland, Sweden, U.S.A., and, it is hoped, from Russia, as well as Great Britain, are expected to attend the International Ferrite Convention organized by the Institution of Electrical Engineers from October 29 to November 2, 1956. Full details can be obtained from the Institution at Savoy Place, London, W.C.2.

Ferrites

A COURSE of about eight lectures on "The Microwave behaviour of Ferrites" will be given on Tuesday evenings from 6.30 p.m. to 8.30 p.m. beginning on October 16, 1956, at Sir John Cass College, Jewry Street, Aldgate, London, E.C.3. The lecturer is a member of the staff of the G.E.C. Research Laboratories at Stanmore, Middlesex.

Application for enrolment form should be made to the College prior to the opening date of the course. The fee for those residing in the Administrative County of London is £1.

TWO METRES AND DOWN

By F. G. LAMBETH (G2AIW)*

V.H.F. and u.h.f. aerials are often mentioned by correspondents and it is certainly true that most of us, however efficient we believe our own equipment to be, are always "in the market" for information regarding that used by other stations whose achievements are above average. Many v.h.f. operators are, however, not very eager to pass on information, though this is by no means true of all. There is a great scope for experimentation in v.h.f. aerials, and many potential users of the 2m and 70cm bands would greatly appreciate some reliable information on the properties of aerials in use. With the never ending controversy as to the respective merits or demerits of Yagis, slot beams, stacked or otherwise, plain stacks, turnstiles, etc., there is a wide field.

It is known that a great deal of amateur aerial research is going on; anyone who is interested enough to send in details may be assured that they will be published in this feature.

Two Metre News

In general, conditions during the month were patchy, although there were some short periods of good conditions for a day or so. At other times the bad weather brought very poor propagation, nevertheless QSOs were usually possible.

During the 2m Field Day on August 19 the weather was generally poor although some parts were luckier with conditions below par. Nevertheless the portables seemed to be doing business at up to 100 miles distance.

B.R.S.6327 (Earlsfield) found conditions "not too good" with one or two better evenings and weekends. The Yagi now in use is a five element array on a $\frac{3}{8}$ in. brass boom which, at 32ft, stood up to unseasonable high winds. The first station heard on it was G3IRS (Locking, Somerset), over 120 miles away. **B.R.S.16075** (Shirley, Southampton) went out with G3ION/P to a site near Shaftesbury (Dorset) and had a fair day with only the odd shower or two. Portable activity appears to have been lower than usual. Propagation appeared to be poor except towards France and the Channel Islands. Signals to the north were at times good, but subject to heavy fading. The crew at G3ION/P included G8QW and three short-wave listeners. F8MX/A was heard recently at well over S9 using an indoor wire.

B.R.S.19162 (Dewsbury) says conditions were very patchy, the best nights being August 7 and 9. On the 7th G2ADZ (Woolacombe) was logged for the first time and on the 9th G3CGQ (Luton) was a very good signal for a couple of hours. G5KG, who is usually S5, was logged at 15 to 20 db over S9. B.R.S.19162 has built a version of the G2FKZ "Wonder Box" using an EC91. In front of a commercial converter it was a big improvement, but not so effective with the R.S.G.B. converter although receiver gain had to be reduced. Apropos the remarks we made here last month, '19162 says newcomers are frightened off the band because of the "mad chase" after dbs and noise factors by those already operating. '19162 and many others started on the h.f. bands by using 0-V-0 and the family broadcast aerial and "progressed from there". He suggests that this is the way to get people on to 2m. Something similar to the "Simplest Converter" recently described in *QST* is required and the simplest aerial could be a vertical half-wave! '19162 would like to see an article describing a cascode receiver. Field Day conditions were not good, G8UQ/P and G3ILI/P being the best signals heard.

B.R.S.20133 (Melton Mowbray) says that G3ALC is now active again from Oakham, Rutland. It is a long time since there has been a fixed 2m station in the smallest county.

G6XM (late of York) is going to a fixed QTH at Tollerton (Notts.) and it is expected he will lose no time in getting going again. **G3HRH** (Welwyn Garden City) who won a prize at the London V.H.F./U.H.F. Convention has been on 2m for about 6 months and is using 65 watts to a QQV06/40 into a home designed 5-over-5 on a 30 ft tower. The receiver comprises an R.S.G.B. converter with a 6BQ7A and crystal oscillator feeding into a "hotted up" BC348. '3HRH is always looking for QSOs on 2m.

G3EMU (Canterbury) says conditions have been in keeping with the weather—"pretty bad". He has worked G5KG, F3LO, F9EA/P, four ONs and PA0NO, and says it would be nice to work some Gs for once! **G3KHA** (Knowle, Bristol) had one or two good openings to the South-east, worked GC3EBK at S9 one night and F8MX/A at the same strength on August 9. Conditions were otherwise difficult to assess due to low activity. They do not generally appear as good towards the north as they were last year, but this may be due to the 5-over-5 which, being low angle, is inferior to the flat top when used in a screened direction.

G8LN (Plumstead) also says "sometimes conditions were good" but that the band was almost deserted. The best aerials (says '8LN) seem, on correlating results, to be stacked Yagis driven by slots, as stations so set up seem to be most consistent on the DX paths. A number of stations have been complaining about corrosion effects on aerials. '8LN says this can be completely overcome by using modern anti-corrosion techniques. G8LN would greatly appreciate reports of his signals over 50 miles distance. **G5MR** (Hythe, Kent) reports that during a phone QSO with F9EA/P on July 26 signals were at great strength, '9EA found he could receive '5MR with the feeder completely removed from his converter! A similar test was tried at '5MR, and the feeder was removed several feet and both sides connected straight to earth. Although the r.f. and mixer circuits are enclosed in a four sided chassis, F9EA/P's phone could still be read very satisfactorily at 78 miles! French stations worked for firsts included F9IW (Bayeux) and F9KZ/P (operating from Calvados). The weather for the "Rallye des points hauts" during the weekend of August 18-19 was very windy and '5MR had to lower his beam on the first day. An improvement on the Sunday allowed it to be raised again, but conditions

*21 Bridge Way, Whitton, Twickenham, Middlesex.

were poor and only five French stations were worked and three heard. F8MX (St. Valery-en-Caux) was busy working G stations during the R.S.G.B. Field Day and was receiving them better than '5MR, who says this is quite usual; he can sometimes work Paris stations which are inaudible to French coastal stations.

G8PX (Oxford) has raised the beam 5 ft and has consequently been working more stations and hearing more DX. The best contacts on 2m were F8MX, GW6NB/P (Radnor), and G5BD. **G3ILI** (Forest Hill), who has been testing s.s.b. on 2m, very much appreciates the help he has received from other operators. **G8VN** (Rugby) is moving to Leicester and will, it is hoped, operate again from there. The gear still works, as does the famous indoor aerial, but an outdoor one is envisaged when the station gets to Leicester.

B.R.S.18572 (Mitcham) found plenty of activity during Field Day (August 19) but conditions not very good.

G3JGJ (Plympton) who is looking for a daily sked with any short-wave listener or transmitting amateur, has had a quietish month. A highlight was his reception of F9EA/P at 559 on July 26. **G3CVO** (Great Baddow, Chelmsford) has been experimenting with 2m and 70cm driver stages, and offers the following "law":—"It matters not how thou goest about getting the drive, thou wilt not do better than 30mA at 250V for 2mA in 33,000 ohms at the p.a. grid". Given: any number of currently available valves. Best combination so far is 6J6 Squier oscillator to 72 Mc/s and EF91 doubler followed by a 5763 on 144 Mc/s (series tuned or pi-coupled). A QQV03/10 tripler is being used in a new portable rig for 70cm. G3CVO would like some information on methods of raising aerials when needed only, and how to clamp them then to rotating masts.

B.R.S.21034 (Lymington) has been working on the "converter of doubtful design" which is now much more conventional. An ECC84 direct coupled cascode r.f. stage is inductively coupled to a triode-connected 6AK5, with an i.f. of 10.7 Mc/s. The arrangement is working very well. During the second week of the *Short Wave Magazine* contest nothing very much was heard, although G5YV was logged as best DX. Midland stations at good strength were G2ATK, '3KFS '3JWQ and '6SN. July 26 was the best evening with a path which appeared to cover the whole of the West, Wales and Southern England and extending to France. F9IW and 9EA/P were both heard (S9) which is exceptional as France is screened by the Isle of Wight hills. G3FAN (Ryde) was heard working GI3CWY just before midnight.

G5MA (Great Bookham, Surrey) has had a contact with GI3CWY (Whitehead, Co. Antrim) and three more with GI3GXP (Kilkeel). GW6NB/P was worked in Radnor and Cardigan during his brief expedition. Other Welsh QSOs were with GW3BOC/P (Colwyn Bay) and '3FXR (Port Talbot). The best inter-G contacts were G3BW and '3AGA. Fifty counties have now been worked from the new QTH. **G5BM** (Highnam, Glos.) worked mobile during his holiday and found conditions extremely poor for most of the time and in general only locals were worked. The only DX station heard was F8MX on August 10 from Richmond Park, Surrey. Activity in Essex was extremely low—unlike the West Midlands where there always seems to be someone on!

G2CZS (Chelmsford) says the best spell of conditions was July 21-25 which included the "second leg" of the *S.W.M.* Contest. During this period the best QSOs were with G4BP/P (Scarborough) and G3IUD/P (Mow Cop, Cheshire) for a new county. On August 7 G2BMZ (Torquay) was raised. Very little was achieved during the 144 Mc/s Field Day on August 19 although a QSO was had with F8MX/A.

G6XX (Howden, Yorks), still active although on a reduced scale, raised GC3EBK out of a "dead band" on July 26. G5BM and '2CZS were worked on the 24th, with G2DDD and '3FIH heard on the 25th. On August 9 G6OX was worked and F8MX/P heard on phone.

News from Scotland

GM6WL (Glasgow) says there is still quite a bit of activity in spite of holidays. **GM3FGJ/P** went to a site near Bathgate (West Lothian) and gave a number of stations a new county. Owing to receiver trouble, some calls were missed. Conditions were slightly better on July 26 and G2NY (Preston) was a fine phone signal in Scotland. QSOs with GM3IBV, '6WL, '6XW and others were also made. On the same night G3IUD was heard at 449, and GM6XW worked GI3GXP (569 in Glasgow). On July 27 G2NY and GM3IBV were again in contact, but conditions were worsening. On August 9 GM6SR (Edinburgh) worked a great number of Glasgow stations, some of them for the first time.

News from the Channel Islands

A very welcome letter has been received from **GC3EBK** who has been a consistent station for a long time, and has really put the Channel Islands on the radio map. His best period recently was July 26 when G5YV, '3DVK and '3KUH (all in Yorkshire) were worked. ON4BZ was heard on July 8 at 589, but regrettably no QSO resulted. The EI2W—F8MX QSO was monitored with interest, although EI2W was not heard; F8MX and G6NB were.

First EI—F Contact on Two Metres

EI2W (Dublin) made his first appearance for several weeks on 144 Mc/s on the night of August 9 and was astonished to find an almost empty band, with F8MX coming in at S9, obviously unaware that he was being heard in Dublin—further proof that the advice of the old timers should be heeded—"look well over the band!"

EI2W came on the band at 21.00 G.M.T. and put out a CQ call. This was answered by G3KFD, and was followed later by a QSO with G3BPJ. At 2209 EI2W was surprised on tuning over the centre of the band to hear a Continental voice saying in good English, "I am now going over to 70cm," and signing F8MX. The voice was that of F9CQ operating his brother's rig from St. Valéry-en-Caux. EI2W had no way of getting in touch with F8MX, so decided to look for some station that could relay a message to F8MX. Luckily G6NB was heard at good strength and was worked at R5S9 both ways. He said he would call F8MX immediately on 70 cm; EI2W's luck held out, for G6NB came back to say that he had located the French station and that the latter would listen immediately. EI2W heard the French station at once, but F8MX took a little time to locate the Dublin station. G6NB stood by all the time and was able to tell the French station that he was being received in Dublin at S8. F8MX then located EI2W and two-way contact was made at 2323 G.M.T.

EI2W wishes to thank G6NB for his patience and help, without which, this QSO could never have been possible. It is hoped that Continental stations will look well over the band before throwing in the sponge—British stations also please note!

Seventy Centimetres

The only report this month is from G2XV (Cambridge) who has had contacts with G3HBW, '3IOO and '5UM. F8MX (St. Valéry-en-Caux) heard G2AIW's 2m harmonic on August 9!

Twenty-three Centimetres

The first R.S.G.B. 1250 Mc/s tests took place on September 2. Initial reports show that results in the London area were excellent, with contacts between home stations of up to about 25 miles. The results are described as far more encouraging than those of the first 420 Mc/s tests which did so much to stimulate interest in that band. Those known to have been active include G3GDR, G3HBW, G5CD, G5DT and G6NF. Reports from other parts of the country are awaited with interest.

A welcome letter from **G3BVU** (/A at Luton) mentions recent accomplishments in collaboration with G3CGQ and '3FUL also of Luton. During N.F.D. the transmitter was set up on Galley Hill, Luton, and G3FUL motored to Stewley 16 miles away where strong signals were received. The transmitter has since been set up in G3BVU's car, and on July 27 with '3CGQ and '3FUL on Galley Hill with the receiver '3BVU went to Stewley with the transmitter and worked cross-band (via 160). There were heavy thunderstorms and a very humid atmosphere. The 23cm report was only 339. On August 11 '3BVU visited Galley Hill and '3CGQ and '3FUL went to Brill, Bucks, 29 miles away. Immediate contact was established and lasted an hour. Signal strength at Brill was 599!!! Before bad weather sets in they are trying to increase the range. They hoped to be out again on September 2.

The present gear was built by G3FUL but it is hoped to have another "pot" oscillator with a 703A built by G3CGQ in operation soon. Congratulations are offered to all concerned, and further news is awaited with interest. G3BVU promises to answer any questions —*thanks* in advance OM.

GM6WL (Glasgow) reports that another test was carried out on August 26 between GM6ZV and '6WL on phone at a distance of seven miles. The 446 lighthouse tripler was duplicated and tried out at '6ZV.

For various reasons the gear could not be erected in the "good" window (facing '6WL) but had to be used in the shack itself, at the other end of the house, thus firing through two internal partitions besides the outside brick wall. Under these conditions they were pleased to receive an R5 signal, although strength was only about S5-6. Two-way attempts are expected soon with both transmitters and receivers in the most favourable positions.

Television DX

ZD4BM (G2ATU) has been hearing the B.B.C. London TV sound in the Gold Coast on a CR150. Predictions for long range reception of Band I television stations appear elsewhere in this issue. Reports will be most welcome.

* * *

This is all for now; reports for next month **not later than** September 21 please.

Worked and Heard on Two

B.R.S.6327 (Earlsfield) June 20–July 20.
Heard: G2BRR, 2DDH/P, 2DVD, 2HGR, 2NY, 3AUS, 3BEX/P, 3BFP/A, 3DGR, 3DLU, 3FAN, 5AU, 5RW, 5YV, 8IL, GW8UH.

B.R.S. 6327 (Earlsfield) July 20–August 19.
Heard: G2ADZ, 2AHY, 2HCG, 3AGA, 3AUS, 3BA, 3BEX/P, 3CGQ, 3DLU, 3FAN, 3FIB/P, 3GHO, 3IRA, 3IRS, 3KFT/P (5 miles s. Cheltenham), 3KHA, 5YV, 8IL, 8PX, GW3BOC/P, GW8UH.

B.R.S.16075 (Shirley, Southampton) June 20–July 19.
Heard: G2ADZ, 2BMZ, 2DDD, 2DSP, 2DVD, 2HIF/P (Stony Cross), 3AUS, 3AYL/P, 3DLU, 3FIH, 3GHO, 3GVF/P/M, 3HBW, 3HHY, 3HSD, 3IOO, 3IRS, 3JGJ, 3JZT, 3KHA, 3KPT, 2XV, 3XC/P (Bucks), 4GR, 5BM, 5DW, 5MA, 5YV, 6NB, 6OX, 8DA, 8UQ/P, 8VZ, GC3EBK, GW2ACW, 3FKO/P (Montgomery), 3GMN/P (Montgomery), 3GWA/P (Denbigh), GW3KEQ/P (Radnor), 8SU, 8UH.

B.R.S.16075 (Shirley, Southampton) July 22–August 18.
Heard: G2ADZ, 2ANS, 2DSP, 2HCG, 2HDZ, 2XV, 2BMZ, 3AGA, 3FIH, 3EMO, 3GHO, 3HHY, 3HRH, 3IEI, 3IRA, 3IRS, 3HBW, 3HA, 3KPT, 3KSR/P, 3MU, 3YZ/P, 3YH, 3XC, 5MA, 6FO, 6OU, 6NB, 8DA, GC2FZC, GI3CWY, GW8SU, GW8UH, F8MX/A.

B.R.S.18572 (Mitcham) July 7–July 8.
Heard: F9EA/P, G2AK, 2YB, 2ATK, 2BMZ, 2CIW, 2CZS, 2DDD, 2DSP, 2FMJ, 2HCJ/P, 2HIF/P, 2NY, 3ARX, 3AUS, 3BA/P, 3DLU, 3DMU, 3DOP, 3ENY, 3FAN, 3FIH, 3GJZ, 3IRA/P, 3KHA, 4JJ/P, 5AU, 5BM, 5CP, 5DW, 5US, 5YV, 8IL, GW3GMN/P, 3GWA/P, 3KEQ/P.

B.R.S.18572 (Mitcham) August.
Heard: F8MX, G2DDD, 2DSW, 2XV, 2HCJ/P, 3BEX/P, 3ERD/P, 3FIH, 3ION/P, 3KHA, 5BM/P, 5PP/P, 5YV.

B.R.S.19162 (Dewsbury) June 20–July 20.
Heard: G2AIW, 2CZS, 2DDD, 2RD, 2YB, 3FAN, 3FIH, 3HTY, 3HXS, 3IER, 3NT, 3XC/P, 4GR, 5BM, 5DS, 5DW, 8AL, 8IL, 8UG/P, GM3BDA/P, GW3BOC/P, 3GWA/P.

B.R.S.19162 (Dewsbury) August 6-19.
Heard: G2ADZ, 2CIW, 2XV, 3CGQ, 3FGT, 3GHO, 3ILI/P, 5KG, 5MA, 6OX, 8UQ/P.

B.R.S.20133 (Melton Mowbray) June 13–July 10.
Heard: G2BVW, 2FNW, 2HCG, 3FDF, 3JWQ, 3DLU, 3GSO, 3JXN/A, 4JJ/A, 5MA, 5ML, 5YV, 8CZ, 8SB/M (Rugby).

B.R.S.20133 (Melton Mowbray) up to August 15.
Heard: G2FNW, 2HCG, 3ALC, 3ERD/P, 3JWQ/P, 4JJ/P, 5YV, 5PP/P, 8CZ, 8QY/P, 8SB/P.

B.R.S.21034 (Lymington) July 7–July 15.
Heard: G2MV, 2RD/P, 2AHP, 2AIH, 2BMZ, 2BVW, 2CIW, 2CZS, 2DSP, 2DVD, 2HCG, 2HDZ, 2HIF/P, 3BA/P, 3XC/P, 3ECA, 3FAN, 3FIH, 3FJR, 3FQS, 3FZL, 3GGR/P, 3GHO, 3GKZ, 3GOP/P, 3GVF/P, 3HVO/P, 3ION, 3JFR, 3JWQ, 3JZG, 5AU, 5KW, 5MA, 5ML, 5NF, 5OB, 5YV, 6AG/M, 6NB, 8AL, 8IL, 8LN, 8UQ/P, GC3EBK.

B.R.S.21034 (Lymington) July 22–August 22.
Heard: F8MX, 9EA/P, 9IW, 9KZ, G2XV, 2YB, 2ADZ, 2AHP, 2AIW, 2ANS, 2ATK, 2BMZ, 2CZS, 2DDD, 2DVD, G3AUS, 3CGQ, 3ERD/P, 3FCQ, 3FIB/P, 3FIH, 3FMO, 3FQS, 3FWW, 3GHO, 3GOZ, 3GTH, 3HBW, 3HHY, 3HRH, 3IAM/P, 3IIT, 3ILI/P, 3IRS, 3IUL, 3JQN, 3JWQ, 3KEQ, 3KFS, 3KHA, 5BM, 5DW, 5KW, 5MA, 5ML/P, 5NF, 5PP/P, 5YV, 6AG, 6JK, 6NB, 6SN, 6OH, 6OX, 8AL, 8PX, GC2CNC, 2FZC, 3EBK, GW3ACW, 5BI, 8UH.

G2CZS (Chelmsford) June 23–July 16.
Worked: G2BMZ, 2HIF/P, 3BEX/P, 3FAN, 3FFV, 3FIH, 3GPT, 3GSO, 3ION, 3JWQ, 3KHA, 4GR, 5BM, 5YV, 8PX, GW3KEQ/P (Radnor). *Heard:* F8GH, 9EA/P, G2ADZ, 3AUS, 3HHY, 3KFD, 4JJ/A, GC3EBK.

G2CZS (Chelmsford) July 21-August 19.
Heard: G3ALC, 3ERD/P, 3HTY, 4JJ/A, 5PP/P, GC3EBK.
Worked: F8MX/A, G2BMZ, 2BVW, 2HCG, 3BA, 3FAN, 3IUD/P, 3KFT/P, 3KHA, 3KPT, 4BP/P, 4GR, 5BD, 5LL, 5YV, 6XX.

G3EMU (Canterbury) June 21–July 20.
Worked: F8GH, G2JF, 3FAN, 3GJZ, 3INU, 5KW, 5MR, 8VR/P, ON4BZ, PA0BL. *Heard:* DJ1DC, G2AIW, 2DDD, 3HDZ, 5KG, 5YV, 60X.

G3IGJ (Plympton) June 22–July 20.
Worked: G2ADZ, 3AUS, 3GAO, 3GRA, 3HPC, 3KDK, GC2FZC, GW8UH. *Heard:* G2BMZ, 3KFN, 3JYB.

G3JGJ (Plympton) July 21–August 20.
Heard: F9EA/P, G3FIH, 8IL. *Worked:* G2ADZ, 3GRA, 3KDK, 3KFH, 3MA/P (nr. Plymouth), 3XC/M (Plymouth), GC2FZC.

G3KHA (Bristol) July 20–August 19.
Heard: G2CVD/P, GW3GWA/P, GW6NB/P (Merioneth).
Worked: F8MX/P, F9EA/P, G2UJ, 2ADZ, 2AHL, 2AHY, 2AUD, 2CIW, 2CZS, 2DSP, 2DVD, 3JR, 3MA/P (W. Glos), 3WS, 3CGQ, 3FAN, 3FZL, 3GHO, 3GOZ, 3HRH, 3ION/P (Dorset), 3INU, 3JMS, 3JQN/A, 3KEQ, 3KEQ/P (nr. Guildford), 3KSR/P, 5DS, 5KW, 6AG, 6FO, 6NB/P (Radnor), 6OX, 8AL, 8IL, 8UQ/P, 8VZ, GC3EBK, GW2ACW, 3FXR, 8SU, 8UH, 8UH/P (Brecknock).

G5MR (Hythe) June 24–July 15.
Worked: F3CA, 3JN, 3SK, 8GH, 8LO, 9EA/P, 9FB, G2CIW, 2DDD, 2DSP, 2HDZ, 2JF, 2RD, 2UJ, 3BEX/P, 3BFP/A, 3CGQ, 3EMU, 3FCQ, 3FIH, 3FZL, 3IUD/P, 3JMS, 4GR, 4JJ/A, 5DS, 5KW, 5YV, 6FO, 6YP, 8BJ/P, 8IL, 8LN, 8PX, 8RK, 8VN, 8VR/P, GC3EBK, ON4BZ. *Heard:* F8OB, G2AHP, 2AIW, 2BMZ, 2CZS, 2HIF/P, 2WJ, 2XV, 2YB, 3AUS, 3DLU, 3FAN, 3FD, 3GHO, 3GJZ, 3HRH, 3IOO, 3IRA, 3JWQ, 3JZG, 3KHA, 3XC, 5BM, 6AG, 6NB, 6XH.

Region I V.H.F. Contest

Members who participated in the I.A.R.U. Region I European V.H.F. Contest organized by the German National Society, D.A.R.C. (held during the weekend September 8-9, 1956), are reminded that entries from the United Kingdom must be addressed to the R.S.G.B. V.H.F. Manager (Mr. F. G. Lambeth, G2AIW, 21 Bridge Way, Whitton, Twickenham, Middlesex).

United Kingdom entries received through any other source are liable to be disqualified.

R.S.G.B. at the National Radio Show

THE Society was again represented at the National Radio Exhibition, held last month at Earls Court, and the stand, under the managership of Fred Ruth (G2BRH) of Ilford, became a focal point for radio amateurs from all parts of the world and for would-be amateurs seeking technical advice on their problems and information concerning Society activities.

One section of the stand staged a typical amateur station, the gear being supplied by Eric Yeomanson (G3IIR) who also produced tape recordings of actual contacts with that station to which visitors could listen through earphones.

Among the display of pieces of transmitting, receiving and test apparatus made by members, the simple receiver designed by C. H. L. Edwards (G8TL) excited considerable interest. A duplicate model, built on the stand by Peter Smith, aged 15 (a school-boy member of the Society), enabled those new to constructional work to see the actual process of turning a batch of components into a finished receiver with the aid of a minimum of tools. Recordings of reception obtained with the prototype receiver on its several ranges were available on tape.

A brisk trade was done in the various Society and American publications. To those members who gave up their time to this aspect of the stand's activities, as well as to those who provided the answers to the wide variety of technical questions posed by visitors and to those who by their help behind the scenes made the whole project possible, go the thanks of the whole Society.—W.H.A.

A general view of the R.S.G.B. stand at the National Radio Show, Earls Court. Schoolboy Peter Smith is in the centre with Council Member C. H. L. Edwards, G8TL. F. Ruth, G2BRH, who was manager of the stand, is at extreme left.

London Members' Luncheon Club

MORE than 20 members and friends, including F9SO and VS2BD, attended the August meeting. In the absence of Stanley Vanstone (G2AYC), the chair was taken by Arthur Milne (G2MI).

The club will next meet on September 21 at 12.30 p.m. for 1 p.m. at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, London, W.C.1. Those intending to be present are asked to telephone Frank Fletcher (RUIslip 2763) or R.S.G.B. Headquarters (HOLborn 7373) at least 24 hours in advance.

Radio Amateurs' Examination

THE Radio Amateurs' Examination Course run by Glasgow Corporation Further Education Dept. at Allan Glen's School, Montrose Street, commences on September 18. Theory instruction will be given by A. Fraser (GM3AXX) on Tuesdays from 7 to 9.30 p.m. and Morse instruction by James Sey (GM8MJ) on Thursday evenings from 7 to 9.30 p.m. The fee for the entire course is 10s.

Lincolnshire Hamfest

THE Annual Lincolnshire Hamfest will be held at the George Hotel, Spilsby, on Sunday, September 23, 1956. The programme will include a junk sale and High Tea. During the afternoon a Mobile Rally will be held, the control station being G8GI/M on 1925 kc/s. Members will assemble from 1 until 2.15 p.m.

Tickets, price 6s. 6d. each, may be obtained not later than September 20 from N. T. Hodgson (G2ABK), 3 Council House, Main Road, Hundleby, Spilsby.

LONDON MEMBERS' LUNCHEON CLUB
will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, at 12.30 p.m. on Fridays, September 21 and October 19, 1956.
Telephone table reservations to HOL 7373 prior to day of luncheon. Visiting amateurs especially welcome.

Bristol " A " Station, G2IK/P. The C.R. (Roy Poeton, G3CTN) operates the transmitter watched by Dave Collins (B.R.S.19638). *(Photo by " Western Daily Press ")*

National Field Day 1956 Results

N.F.D. Shield Winners	.. ..	**Bristol (G2IK/P and G3RQ/P)**	**1186 points**
Runners-up	.. ..	**Stourbridge (G8GF/P and G3BMY/P)**	**1148 points**
Leading " A " station	.. ..	**Coventry (G5PP/P)**	**620 points**
Leading " B " station	.. ..	**Croydon (G6LX/P)**	**693 points**
Best 1.8 Mc/s score	.. ..	**Coventry (G5PP/P)**	**265 points**
Best 3.5 Mc/s score	.. ..	**Croydon (G6LX/P)**	**347 points**
Best 7 Mc/s score	.. ..	**Gravesend (G3IEW/P)**	**366 points**
Best 14 Mc/s score	.. ..	**Bristol (G3RQ/P)**	**363 points**
" Scottish N.F.D. Trophy " Winners	.. ..	**Edinburgh and Lothian (GM8FM/P and GM3UM/P)**	**652 points**
" Bristol Trophy " Winners	.. ..	**Boston (G6GH/P)**	**507 points**

Overseas station contributing most points to competing stations: ZC4CK/P-ZC4CK

Bristol " B " Station, G3RQ/P. Harry Gratton (G6GN) in the background with Vic Newport (G3CHW) in the foreground. *(Photo by BRS18165)*

ONCE again, emerging supreme among those Groups who used the twenty-four hours from 17.00 G.M.T. on June 2, 1956 to compile the 1000-plus scores now necessary to win high place in the National Field Day table was Bristol, triumphantly reclaiming the N.F.D. Shield. The Shield, first gained by this remarkably successful Group in 1952, and then held against all-comers in 1953 and 1954, was wrested from them by Gravesend in 1955, but now returns to its customary place, thanks to " Bristol fashion " operation from Hill Farm, Dundry, Somerset. From just over 400 contacts Bristol netted their highest-ever score of 1186 points: thus exactly equalling the all-time record set up by Gravesend last year.

In a hard-fought local " derby ", the Stourbridge Group successfully reversed their 1955 placings with Coventry, and thus finish as " runners-up " with a total of 1148 points. As some recompense, Coventry carry off both the " A " station honours and also the " Best on 1.8 Mc/s " listings. Croydon continued their run as " Leading ' B ' station ". Generally, the top scores tended to be higher than ever, despite the down-pointing of unofficial portables, with nine groups exceeding 1000 points, compared with seven last year. Few fresh Groups managed to break into the firmly entrenched top ranks, though Chingford made a spectacular rise from 26th to 12th place.

The division of contacts between the various bands responded as predicted to the " new look " of sunspots: after many years 7 Mc/s replaced 3.5 Mc/s as the highest scoring band (Gravesend netted 366 points); while 14 Mc/s jumped from the bottom place it has occupied for some time almost to equal 7 Mc/s (Bristol's 363 points was more than double that of their 1954 score): highest scores on 3.5 Mc/s (Croydon's 347 points) and 1.8 Mc/s (Coventry's 265 points) were well down on 1955 points (when top scores were 439 and 325 points respectively). But although 14 Mc/s scores climbed up so sharply, the capricious fates that govern radio conditions played a sardonic joke on those who in anticipation of better DX had erected elaborate low-angle-radiation Vees and the like: for although the band stayed open throughout the night, DX signals were few and far between during the best part of the day, the band being filled by semi-local stations often less than 200 miles away. As a result, many of the points on this band were gained, most freakishly, from inter-N.F.D. portable station working. For example, Bristol gained only one-third of their 14 Mc/s points from DX and two-thirds from U.K. and European contacts, including almost 100 points from inter-G working. The full DX story is told in an accompanying table which shows the prefixes worked during each hour of the contest. Altogether more than 300 different DX stations were contacted by N.F.D. portables, including some 250 in all call areas of the United States.

In this " English summer " of " two fine days and a thunderstorm ", weather conditions were, relatively speaking, good: many groups enjoyed hours of impeccable sunshine. High winds, which seriously interfered with aerial plans, were the chief cause of complaint. Some groups report a shortage of operators: many others deliberately restrict turns at the key to those with proven contest experience; finding that two or three skilled operators can keep a station on the air

Psn.	Group	Call-sign(s)		1.8 Mc/s	3.5 Mc/s	7 Mc/s	14 Mc/s	"A"	"B"	Total score
1	Bristol	G2IK/P	G3RQ/P	214	283	326	363	540	646	1186
2	Stourbridge & District	G8GF/P	G3BMY/P	237	311	266	334	503	645	1148
3	Coventry	G5PP/P	G5SK/P	265	311	355	207	620	518	1138
4	Croydon	G3IRP/P	G6LX/P	198	347	237	346	435	693	1128
5	Hove & District	G3CUY/P	G3BEX/P	261	278	354	204	539	558	1097
6	Weston-super-Mare	G5TN/P	G5DV/P	237	262	340	253	577	515	1092
7	Derby / Slough	G4CO/P	G8QZ/P	249	278	267	229	527	496	1023
		G2HOX/P	G6CJ/P	232	281	280	230	513	510	1023
9	Gravesend	G6VC/P	G3IEW/P	190	259	366	205	449	571	1020
10	Gloucester	G3MA/P	G2RT/P	225	263	238	262	488	500	988
11	Cambridge	G8PB/P	G5DQ/P	28	293	323	320	351	613	964
12	Chingford	G3YF/P	G8JM/P	190	287	312	151	502	438	940
13	Edgware & Hendon	G5FG/P	G2IM/P	202	330	242	164	444	494	938
14	Pontefract	G6MF/P	G3US/P	191	287	247	205	438	492	930
15	Coulsdon & District	G2DN/P	G2KU/P	260	241	314	107	574	348	922
16	East Molesey	G6MB/P	G8SM/P	245	320	172	178	565	350	915
17	Cardiff	GW5BI/P	GW8NP/P	200	220	265	214	420	479	899
18	Norwood & District	G3IIR/P	G2RX/P	191	200	342	137	391	479	870
19	Cheltenham	G3CGD/P	G3YZ/P	253	290	166	134	543	300	843
20	Reigate & Redhill	G5LK/P	G2AJS/P	191	205	307	139	396	446	842
21	Sutton & Cheam	G2AYC/P	G8DF/P	259	215	257	110	474	367	841
22	Sheffield	G8NN/P	G5TO/P	215	286	230	100	445	386	831
23	Hull / Wirral	G3GWT/P	G2CPS/P	203	288	168	167	371	455	826
		G2AMV/P	G8BM/P	245	254	200	127	445	381	826
25	Mitcham	G2ANW/P	G3HQX/P	259	241	226	97	500	323	823
26	Stroud	G5HC/P	G3FFN/P	186	246	251	134	432	385	817
27	York	G3DTA/P	G3FTS/P	202	266	238	91	440	357	797
28	Chelmsford / Luton & District	G3DCS/P	G4VF/P	185	256	201	151	441	352	793
		G5RZ/P	G2RU/P	245	277	155	116	400	393	793
30	Ilford	G3HIW/P	G2QI/P	183	284	286	35	469	319	788
31	Neath, Port Talbot & District	GW2AVV/P	GW3BQY/P	242	197	265	81	507	278	785
32	East Ham	G2ZZ/P	G4CM/P	232	234	266	48	466	314	780
33	Hexham & District	G4LA/P	G5RI/P	171	202	240	145	373	385	758
34	Peterborough	G2NJ/P	G3FUR/P	204	271	107	171	311	442	753
35	South Birmingham	G8PN/P	G6KI/P	236	210	198	98	434	308	742
36	Scarborough	G3DQ/P	G3KS/P	220	171	235	109	391	344	735
37	Nottingham	G3AKU/P	G2FRY/P	202	192	258	67	460	259	719
38	Blackpool	G8GG/P	G5NI/P	156	258	215	83	414	298	712
39	Barnsley & District / Medway	G3ABS/P	G5IV/P	204	214	178	112	382	326	708
		G3KNO/P	G2BP/P	51	217	225	215	276	432	708
41	Bath	G2ZR/P	G6UR/P	224	212	236	32	436	268	704
42	Grimsby & Cleethorpes	G2FT/P	G4XC/P	233	235	175	59	408	294	702
43	Norwich	G2YU/P	G3IIE/P	155	256	233	45	411	278	689
44	Lincoln	G4BU/P	G3EBH/P	243	265	140	37	383	302	685
45	Southampton	G5LR/P	G3KJ/P	204	223	194	58	427	252	679
46	Bury / Exeter	G2GA/P	G8PW/P	180	269	194	30	449	224	673
		G3ID/P	G5QA/P	191	209	224	49	400	273	673
48	Edinburgh & Lothian	GM8FM/P	GM3UM/P	190	126	278	58	316	336	652
49	Liverpool	G8DI/P	G6YQ/P	201	211	148	87	412	235	647
50	Tunbridge Wells & Tonbridge	G3JRD/P	G3GUK/P	115	264	91	175	206	439	645
51	Falkirk	GM6XW/P	GM4MF/P	122	227	183	111	305	338	643
52	Stockport	G3BY/P	G3AUB/P	163	220	223	33	386	253	639
53	Newark	G3ITG/P	G3ELJ/P	195	216	191	31	411	222	633
54	Chester	G3HEU/P	G3EXT/P	140	188	235	49	375	237	612
55	Glasgow	GM8MJ/P	GM3CSM/P	133	91	194	190	224	384	608
56	Thanet	G2JF/P	G2IG/P	253	343	–	–	253	343	596
57	Belfast / Shefford & Bedford	GI5UR/P	GI3GAL/P	164	137	211	82	301	293	594
		G2DPQ/P	G3HXO/P	198	234	50	112	248	346	594
*	Guildford & Woking	G6BZ/P	G5US/P	192	213	121	52	313	265	578
59	Kingston-on-Thames	G3GXG/P	G3JPI/P	167	151	199	57	318	256	574
60	Torbay	G3GDW/P	G2GK/P	172	182	164	45	354	209	563
61	Rotherham	G3ELG/P	G4BD/P	149	161	192	51	310	243	553
62	Southport & Formby	G3EFA/P	G2ART/P	155	163	224	9	318	233	551
63	Wrexham	GW3GWA/P	GW3INV/P	245	154	129	–	374	154	528
64	Lowestoft	G2UK/P	G3ETP/P	200	164	152	–	352	164	516
65	Boston	G6GH/P	—	229	278	–	–	507	–	507
66	Portsmouth	G6NZ/P	G8BU/P	111	130	224	37	241	261	502
67	Southgate, Finchley & District / Welwyn Garden City	G3DGN/P	—	213	–	271	–	484	–	484
		G5UM/P	G2CN/P	113	251	120	–	364	120	484
69	Oxford	G2DU/P	—	159	305	–	–	464	–	464
70	Swindon	G3KEU/P	G2BUJ/P	105	138	187	25	243	212	455
71	Bexley & Bexleyheath	G3ISX/P	G2ATD/P	137	137	158	19	274	177	451
72	Aberdeen Town / High Wycombe	GM4GX/P	GM3HTL/P	139	71	193	46	210	239	449
		G5WW/P	—	260	189	–	–	449	–	449
74	Cannock & Lichfield	G3HRR/P	G3ABG/P	183	221	34	–	217	221	438
75	Doncaster & District	G3GQ/P	G2BOJ/P	148	155	104	–	303	104	407
76	North West Sussex	G8OS/P	—	209	193	–	–	402	–	402
77	Slaithwaite	G8NF/P	—	215	179	–	–	394	–	394
78	Dundee	GM3IMU/P	GM4HR/P	35	121	216	4	156	220	376
79	Dunfermline	GM3EGW/P	—	92	–	270	–	362	–	362
80	Bradford	G3KEP/P	—	168	189	–	–	357	–	357
81	Worthing	—	G3HQQ/P	–	–	234	113	–	347	347
82	Acton, Brentford & Chiswick	G5LQ/P	—	120	225	–	–	345	–	345
83	Harlow & District	G6UT/P	—	202	139	–	–	341	–	341
84	Enfield & District	G3IZQ/P	—	169	–	167	–	336	–	336
85	Preston	G3DWQ/P	—	182	147	–	–	329	–	329
†	South Shields & District	G8AO/P	G6VG/P	–	80	201	41	201	121	322
86	Dorchester	G2TZ/P	—	143	160	–	–	303	–	303
87	Retford & Worksop	—	G3BTU/P	–	234	–	58	–	292	292
88	Solihull & District	G5QI/P	—	248	12	–	–	260	–	260
89	Ballymena	—	GI3DZE/P	–	225	–	–	–	225	225
90	Danbury	G3KPJ/P	—	105	111	–	–	216	–	216
91	Leicester	G3AWM/P	—	147	66	–	–	213	–	213
92	Romford	—	G2FWJ/P	–	211	–	–	–	211	211
†	Dorking & Leatherhead	G3HZJ/P	—	101	87	–	–	188	–	188
93	Bromley & Beckenham	G6HD/P	—	15	161	–	–	175	–	175
94	Lewisham	G2DHV/P	—	76	94	–	–	170	–	170
95	Plymouth	—	G3GRA/P	–	137	–	–	–	137	137
96	Maidstone	G8LZ/P	—	111	–	–	–	111	–	111
97	Ayr & District	GM3KET/P	GM4PW/P	51	‡	41	‡	51	41	92

* Disqualified for irregularities. † Invalid—late entry. ‡ Invalid—log incomplete.

for 24 hours at high efficiency. The starlight shift of 0100-0400 usually proves the most difficult to man—Bath appears to have solved the problem neatly by giving this "stint" to G3GOX, a YL operator!

The co-operation of so many Commonwealth and European portables was most welcome. Bermuda was particularly active, with signals from VP9AN/P, VP9AX/P, VP9CI/P and VP9CL/P audible throughout the night. VS1GL/P, VS9AS/P and VP6RV/P (operating under N.F.D. conditions with 5 watts input) were also worked by a number of stations anxious to collect 12 points. ZC4CK operating both as a portable and also later as a fixed station (it was remarkable how some of those who worked him continued to hear that "/P" even after he went over to mains operation!) gains the award for the overseas station contributing the most points to competing stations. As usual, Swiss, German, Belgian and Irish portables contributed substantially to the enjoyment of the occasion.

Best on the Bands

1.8 Mc/s		7 Mc/s	
Coventry ...	... 265	Gravesend	... 366
Hove ...	... 261	Coventry ...	... 355
High Wycombe	... 260	Hove ...	... 354
Coulsdon ...	... 260	Norwood ...	... 342
Mitcham ...	... 259	Weston-s-Mare	... 340
Sutton & Cheam	... 259	Bristol ...	... 326
Cheltenham	... 253	Cambridge	... 323
Thanet ...	... 253	Coulsdon ...	... 314
Derby ...	... 249	Chingford ...	... 312
Solihull ...	... 248	Reigate & Redhill	307
3.5 Mc/s		**14 Mc/s**	
Croydon ...	... 347	Bristol ...	... 363
Thanet ...	... 343	Croydon ...	... 346
Edgware & Hendon	330	Stourbridge	... 334
East Molesey	... 320	Cambridge	... 320
Stourbridge	... 311	Gloucester	... 262
Coventry ...	... 311	Weston-s-Mare	... 253
Oxford ...	... 305	Slough ...	... 230
Cambridge	... 293	Derby ...	... 229
Cheltenham	... 290	Medway ...	... 215
Hull ...	... 288	Cardiff ...	... 214

Who used What

The gear and the operators that achieved the leading positions were:

Bristol "A": 6L6 v.f.o.—QV04-7 doubler—807 p.a. 1.8 Mc/s half-wave dipole, 7 Mc/s two half-wave dipoles. AR88D receiver. Power source 1½ kW 230 V 50 c/s Diesel-electric generator. Operators G2IK, '2FYT, '3CTN, '6RB.

Bristol "B": 6SK7—6F6-6F6 v.f.o.—6V6 buffer/doubler—6J5 doubler—807 p.a. 3.5 Mc/s half-wave doublet. 14 Mc/s two half-wave dipoles (one N-S, one vertical). Super Pro SP400X receiver. Power source as "A" station. Operators G3RQ, '3CHW, '6GN.

Stourbridge "A": 1.8 Mc/s 6AG7 Clapp v.f.o.—KT8 p.a. 7 Mc/s 6AC7 Clapp v.f.o.—6AC7 doubler—TT15 p.a. 1.8 and 7 Mc/s half-wave centre-fed dipoles. HRO receiver. Power source 12-volt accumulators and rotary converter. Operators G2OG, '3JSK, '8GF.

Stourbridge "B": 3.5 Mc/s SP61 v.f.o.—SP61 buffer—KT8 p.a. 14 Mc/s 6AC7 Clapp v.f.o.—6AC7 doubler—832 p.a. 3.5 Mc/s dipole, long-wire and 14 Mc/s ground plane. CR100 receiver. 12 volt rotary converter from accumulators with 12 V petrol-electric charger on site. Operators G3AAQ, '3BMY.

Coventry "A": Z77—Z77—5763—5763—807 p.a. 250 ft. and 130 ft. end-fed, 7 Mc/s half-wave dipole.

The Medway Group. From right to left, G2BP, G3BSU, G3BRJ, G2CBA (A.R.), G3KNO, G3KSL and George. In front, the very willing junior helpers.

AR88 plus BC453 receiver. Petrol electric generator. Operators G2FTK, '5PP, '5SK, '6TD.

Croydon "B": EF80 v.f.o.—EF80 b.a./f.d.—EF80 b.a./f.d.—2E26 p.a. Three 138 ft. end-fed aerials, spaced 120°, used separately. Much modified AR88D receiver with mechanical filter, product detector, etc. Rotary generator and vibrator. Operators G3BFP, '4QK, '6LX.

Gravesend 7 Mc/s: EF91 e.c.o.—EF91 b.a.—6V6 f.d.—807 p.a. Centre-fed 66 ft., 38 ft. high. HRO receiver. Petrol generator 230 V 60 c/s. Operators G3IEW, '3JLB.

How You Summed it up

"Vee beam (414ft per leg), carefully sited, was of little use . . . very windy, almost gale force, showers" —*Glasgow.* "Boiling tomato soup at two o'clock in the morning has to be tasted to be believed! . . . . Weather conditions, cool but dry, just right for heaving heavy accumulators around Taplow Court." — *Slough.* "High winds upset aerial arrangements . . . . thoroughly

G2BRR at the key and G4AP logging at the Swindon station G3KEU/P. G2BUJ is standing second from left. Although two receivers are visible they were not used simultaneously!

Leading " A " stations

Coventry	620
Weston-s-Mare	577
Coulsdon & District	574
East Molesey	565
Cheltenham	543
Bristol	540
Hove & District	539
Derby	527
Slough	513
Boston	507
Neath, Port Talbot & District	507
Stourbridge & District	503
Chingford	502
Mitcham	500
Gloucester	488
Southgate, Finchley & District	484
Sutton & Cheam	474
Ilford	469
East Ham	466
Oxford	464

(Nine stations using 1.8/7 Mc/s; eleven stations using 1.8/3.5 Mc/s grouping.)

tired, but ready for next June . . . . 14 Mc/s skeleton slot (13ft top, 39ft sides, centre-fed) made with 18 gauge wire worked well during tests but we had not allowed for wind . . . it did land VP9, W1,3,4."—*Rotherham.* " Panic stations at 1630 G.M.T. Saturday when h.t. generator blew up! Vibrator pack hastily set up: rated at 45 mA, receiver took 75 mA, but still going strong."—*Liverpool.* " High winds . . . . heifer trouble again! Head rubbing caused loss of up to 6 ft. of aerial height."—*Cheltenham.* " Last minute improvisation necessary to replace a p.e. set . . . battery receiver, small rotary and hurricane lamps."—*Maidstone.* " Weather again kind . . . . two hours after we finished, down came the rain."—*Coulsdon.* " Top section of mast snapped during erection." — *Bury.* " Gap between 0409 and 0512 caused by large cow becoming entangled in the guy wires, eventually bringing dipole and receiving aerial down." — *Nottingham.* " Height 5ft above sea level . . . weather fine and sunny. — *Grimsby and Cleethorpes.* " Co-ax fed dipoles used because all other elaborate aerials (e.g. Vee beams) had failed to work properly other years."—*Norwich.* " Fault in transmitter oscillator . . . . lost several hours."—*Tunbridge Wells and Tonbridge.* " Generator trouble . . . . off for 12 hours . . . . roll on next year."—*Medway.* " Very good operating . . . no swishing v.f.o.s. . . . enjoyed by all."—*Enfield.* " How anyone can get out on 20 m with 5 watts completely beats me ! " — *Stockport* operator. " Temporary breakdown of the generator at 2230 G.M.T. coincided with arrival of local police to investigate noise."—*Dorking and Leatherhead.* " Why do the Russians always have contests at the same time as ours ? " —*Pontefract.* " Some 3.5 Mc/s contacts spoilt by 'phone stations operating in c.w. portion of the band." — *Southampton.* " Bottom end of 3.5 Mc/s band overpopulated but despite stay on 3.6 Mc/s had to go l.f. to get points." — *Edinburgh.* " Interference from " A " station harmonic will be suppressed next year."—*Wirral.* " By error picked up 15 ft instead of 20 ft alloy scaffold poles . . . as a result aerial 10 ft lower than intended."—*Grimsby.* " Usual lack of operators—only 3 for 2 stations." — *Blackpool.* " Home-station QRP

The Slough team. From left to right, G2HOX, G6NA, G6CJ, G3GYD, G3COJ, G3XH and G3FGF.

G3JQJ operating the Pontefract B station while G3ESP (T.R.) looks on intently.

(Photo by W. C. Collins, Hemsworth)

Leading " B " stations

Croydon	693
Bristol	646
Stourbridge & District	645
Cambridge	613
Gravesend	571
Hove & District	558
Coventry	518
Weston-s-Mare	515
Slough	510
Gloucester	500
Derby	496
Edgware & Hendon	494
Pontefract	492
Cardiff	479
Norwood & District	479
Hull	455
Reigate & Redhill	446
Peterborough	442
Tunbridge Wells & Tonbridge	439
Medway	432

(Twelve stations using 3.5/14 Mc/s; eight stations using 7/14 Mc/s grouping.)

equipment is not the thing for N.F.D. . . . must get down to building special purpose gear in the months when N.F.D. is normally far from our minds."—*Cannock and Lichfield.* "Wish to thank fixed stations for quick contacts and then clearing the frequency."—*High Wycombe.*

The Chingford B station G3YF/P.

Some Comments on the Rules

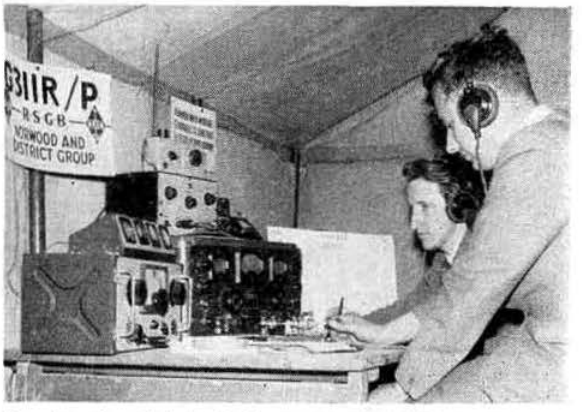
"Giving four points to GM, GW etc. on 1.8 Mc/s gives them unfair advantage as they can claim the extra point for almost all contacts."—*Norwood.* "Extra points most welcome."—*Edinburgh.* "Why give GW, GM extra point?"—*Ilford.* "All stations in the British Isles should count for same number of points."—*Bexley and Bexleyheath.* "GW stations, less than a mile from here, have surprising advantage."—*Wirral.* (*Judges' Note:* The extra point was to compensate for the longer distances which outlying stations have to cover resulting in the band being open for less time; it is recognised that in some marginal cases a degree of hardship occurs, but that there is no great advantage to GM, GC, etc. is shown by the relatively low placings of outlying stations on this band.) "Disqualify all stations who jump the gun or are slow in stopping."—*Pontefract.* "Include 21 Mc/s."—*Peterborough* member. "Club call signs should be allowed and choice of frequency from 1.8–28 Mc/s."—*Lewisham.* "Since many people work five-day week, how about starting 5 hours earlier?"—*Bath.* "Still consider a v.h.f. band should be alternative to 14 Mc/s."—*Luton.* "Drum up more Commonwealth activity . . . . list of stations as supplied is useless."—*Glasgow.* "List of stations extremely useful."—*Sheffield.* (*Note:* it is regretted that there were some errors in the list, but scores have been adjusted accordingly.) "P.a. valves should be limited to 8–10 watts anode dissipation."—*Weston-super-Mare.* (*Note:* this suggestion is frequently received. It should however be realised that a valve with 10 watts anode dissipation can be run at over 25 watts power input within its ratings; for Morse operation for 24 hours even this figure could be greatly exceeded. To ensure a 5 watts input it would be necessary to specify a valve with an anode dissipation of less than 1.5 watts—and then, if a Group wished to cheat on power, who could be certain that the valve listed was in fact used? It is surely better to leave the choice of valve open and trust the Groups and the T.R.s to see that the power limit is not exceeded.) "No comment on the rules, whatsoever, they will do fine for next year."—*Cannock and Lichfield.*

N.F.D. DX

G.M.T.	Prefixes worked by N.F.D. Portables
1700	(14) W1, 2, VE8
1800	(14) W1, 2, 3, 6, 8, VS1
1900	(14) W2, 3, VS1, ZC4
2000	(14) KV4, VS2, UA9, ZC4
2100	(14) W1, 2, VS1, 2, JA, VE1, VP6, 4X4, LU, PY
2200	(14) W1, 2, 3, 4, 8, VE2, VS1, 6, VP6, CX, PY
2300	(7) ZC4; (14) W1, 2, 3, 4, 8, VE1, KG, VP6, ZC4, LU, YV
0000	(7) W2, 3, ZC4; (14) W2, 3, 4, 8, 9, 0, VE1, VP4, 9, CO, YS
0100	(7) W2, 3, 4, ZC4; (14) W1, 2, 3, 4, 8, 9, VE2, VP9, CO, PY
0200	(7) W2, 3, 4, ZC4; (14) W1, 2, 4, 8, 9, VP6, 9, KP4, TI
0300	(7) W1, 2; (14) W1, 2, 3, 4, 8, 9, VP9, CE, CX, PY
0400	(7) W3, 4; (14) W1, 2, 3, 4, 8, 9, VP9, ZC4, VK7, CO, LU
0500	(7) VK2, ZL3; (14) W1, 2, 3, 4, 5, 6, 7, 8, 9, 0, VE8, VP9, FA, VK3, 5
0600	(7) ZL4; (14) W1, 2, 3, 4, 6, 7, 8, 9, 0, VE6, VP9, VK5
0700	(14) W1, 4, 5, 6, 7, 8, 0, VE6, VP9, 5A4, FA, ZC[illegible] VK2, 3, 7, ZL4
0800	(14) W0, VP9, ZC4, 5A4
0900	(14) VP9
1000	(14) W1, VP9
1100	(14) W0
1200	(14) W2, 9, VS2
1300	—
1400	(14) W2, 3, CN8
1500	(14) W1
1600	(14) W1, 2, CN8, ZC4, VS2, 9
1700	(14) W2, 9, VE3, VO, ZC4

"Bristol Trophy" List—Top Ten

Boston	507
Southgate, Finchley & District	484
Oxford	464
High Wycombe	449
North West Sussex	402
Slaithwaite	394
Dunfermline	362
Bradford	357
Worthing	347
Acton, Brentford & Chiswick	345



Deserting the v.h.f. bands for a moment, G3FZL is here seen operating the Norwood Group station G3IIR/P while G3IWA acts as logkeeper.

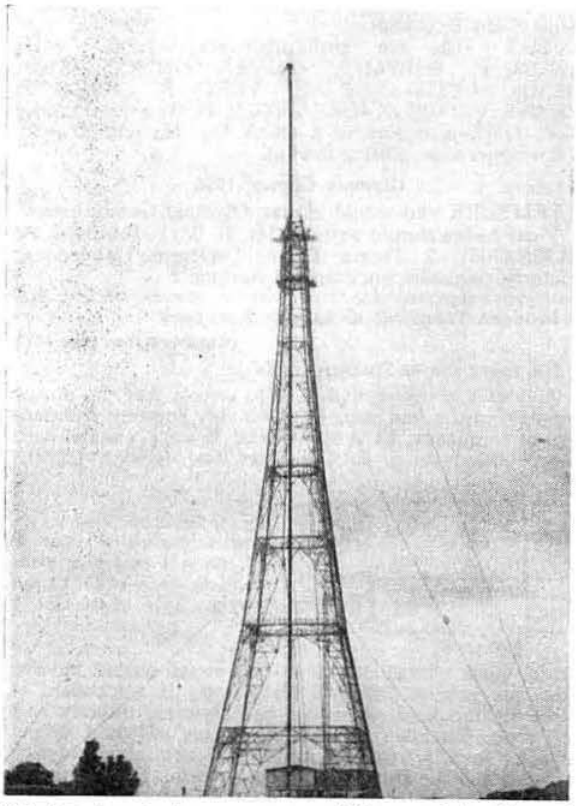
(Photo by G3IIR)

From the Judges' Table

Whilst it is appreciated that many Groups and members take part in Field Day primarily with a view to pleasant activity in congenial company, without worrying overmuch about the question of points (it would indeed be a sad day were the social and lighter sides to be completely overshadowed by the spirit of competition), nevertheless the judges have no alternative but to regard each log as that of a serious entrant and potential award winner. Unfortunately at times this becomes difficult, for instance when checking entries it soon becomes very clear that an appreciable number of operators and/or those who prepare the logs for submission have never really studied the current rules. Every year several logs have to be completely re-scored, as the points claimed for the various types of contacts have little if any relationship with those given in the rules. No question of cheating is involved . . . most often the number of points claimed is less than those due.

Then there is time. Since it is now a G.P.O. regulation that all amateur logs be kept in G.M.T. most operators should have no difficulty in working to it. Yet quite a number of logs are submitted in B.S.T., while a few, whose operators are perhaps reviving war-time memories of open-air working, are in what appears to be Double Summer Time! No points have been deducted (*this year*) for such errors, but they seriously delay checking.

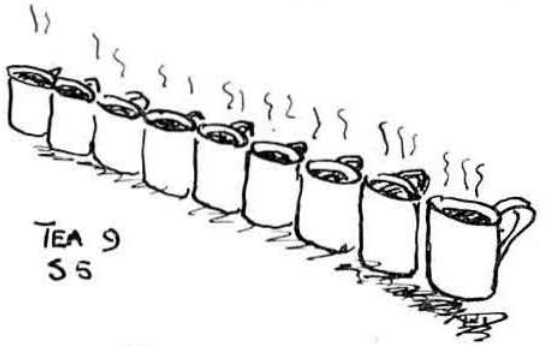
Problem Picture



This imposing structure was not specially erected for Norwood Group although the aerial system did conform with the " rules and spirit " of N.F.D.!

(Photo by G3IIR)

Again, there is the accuracy of the logs. And here, it should be stressed that these remarks do not apply to a fair number of Groups who regularly produce really excellent logs. But those others! Sometimes this must be due to rusty Morse combined with a dislike of asking for repetitions or QRS in front of colleagues, but much more often do the faults seem to be due to the failure to transfer correctly to the log sheets what has been sent or received. The use of log-keepers is one dangerous practice, illegible handwriting another, particularly where the logs are copied out later. An often repeated example of bad logging is where a transposi-



tion occurs between the signal reports sent and received. Since the operator's code group is seldom transposed (for obvious reasons) this form of error can in most instances be clearly pin-pointed as a logging rather than an operating error . . . . but it loses entrants many points just the same!

Of ever-growing importance—and this is true of almost all contests at the present time—is the number of occasions when contacts complete with signal reports and code groups are claimed by station " X " with station " Y " when actually " Y " is working " Z ". Here again it is fairly easy to identify the culprit: it is the use by " Y " of that much abused procedure signal " BK " as a means of saving the time required to send his call-sign and that of the station with which he is in contact. The time is surely coming when good operators must decide to eschew this practice altogether during contests even if, as in the minority of cases, they are really equipped to work full break-in.

Otherwise the operating this year was generally very

The Ilford B station with G6HU operating and G3IRR keeping the log.

good, though some careless letter formation, particularly in the sending of call-signs, is reported. A certain amount of band-edge crossing, particularly on 7 Mc/s, has been drawn to the notice of the Committee, and this important matter will need the attention of all operators if we are not to run into serious trouble. Few rough notes were reported—and these were usually put right within a short time—but there seemed an increasing number of "jumpy" notes and a good deal of chirp from poor voltage regulation.

Map showing approximate location of the Groups who participated in the 1956 N.F.D. Event.

A breach of the rules that is rare but which does arise from time to time in N.F.D. (it once cost a Group the Shield) is operation by a non-member or by someone whose subscription has lapsed. This, of course, usually occurs without the knowledge of the T.R. and in such instances it is the practice to deduct all points gained by the operator in question. This year such deductions have lost Glasgow their chance of retaining the Scottish Trophy which, as a result, goes to Edinburgh and Lothians. A more serious matter altogether, since it involves an element of attempted concealment of deliberate wrong-doing, was brought to our attention by the T.R. of the Guildford group. It was found that during the night a member had "loaned" his name-code to a non-member and later signed the log for these contacts. The Committee has recommended to Council that this entry be disqualified. (The recommendation has been accepted and the entry disqualified —EDITOR.)

This year's new "summary sheets", though regrettably placing some additional burden on those who valiantly prepare the entries on behalf of their Groups, proved an outstanding success from the viewpoint of the judges, and were largely responsible for allowing the summary of results to be announced in the August issue of the BULLETIN.

Check logs are gratefully acknowledged from G3ABM/P, G3BPM/P, G3FAU, G3INQ, G3WP, G5AO, G8TL—G8TL/M, VP6RV/P, VS1GL/P, VS2DZ, VS2FB, ZC4CK—ZC4CK/P. The late Jimmy Catt, G5PS also sent in a check log. He passed away a few hours after posting the log.

Contests Diary

1956

October 6–7	-	Low Power Contest
October 6–7	-	VK/ZL DX Contest[1] (organized by N.Z.A.R.T.)
October 13–14	-	VK/ZL DX Contest[1] (organized by N.Z.A.R.T.)
October 20-22	-	*CQ* World Wide DX Contest[1]
October 27-29	-	*CQ* World Wide DX Contest[1]
November 10–11		Top Band Contest No. 2
November 24–25		R.S.G.B. 21–28 Mc/s Phone Contest[2]

[1] For details, see page 128, this issue.
[2] For rules, see page 480, R.S.G.B. Bulletin, May, 1956.

Olympic Games, 1956

MEMBERS who would like an Olympic Games motor-car badge should write to Mr. F. W. T. Featherstone (B.R.S.4703), 2 Tarata Drive, Doveton, Dandenong, Victoria, Australia, enclosing £1 sterling.

A Modern Transmitter for the Amateur

(Continued from page 103)

V.f.o. Input Power Measurements

A circuit is shown in Fig. 3 to ensure that the power supplied to the first stage is reasonably constant irrespective of frequency. L1 is 60 turns of 36 s.w.g. enamel wire close wound on a $\frac{5}{8}$in. diameter former with L2 (10

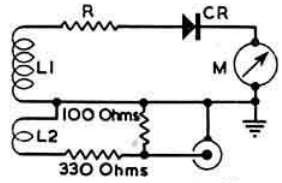


Fig. 3. Circuit for checking the level of the power input to V1. CR is a germanium diode while the values of L1, L2 and M are given in the text.

turns) close wound adjacent. The meter should have a f.s.d. not greater than 500 microamps. If a standard is available the instrument can be calibrated directly and the range extended by having various switched values of R1. However, for the purpose of obtaining constant drive it is adequate in its present form. To use it the driving oscillator should be terminated with the instrument and the output power arranged to be constant over the required frequency band by adjustment of the circuit constants in the oscillator.

Society News

Election of Council, 1957

IN accordance with Article 55 of the Society's Articles of Association the Council have nominated the following Corporate Members to fill the vacancies in the Council which will occur on December 31 next:—

Officers:

President	Mr. D. A. Findlay, G3BZG
Executive Vice-President	Mr. L. E. Newnham, G6NZ
Honorary Treasurer	Mr. W. R. Metcalfe, G3DQ
Ordinary Members:	Mr. C. H. L. Edwards, G8TL
	Mr. J. H. Hum, G5UM
	Mr. A. O. Milne, G2MI
	Mr. W. A. Scarr, G2WS

Not later than October 24 next, any 10 Corporate Members may nominate any other Corporate Member to serve on the Council by delivering their nomination in writing in a single document to the Secretary, together with the written consent of such nominee to accept office if elected but each such nominator shall be debarred from nominating any other person for this election.

As a consequence of his nomination for the office of Honorary Treasurer, Mr. W. R. Metcalfe will resign as Zone A Representative on December 31, 1956.

Zonal Representatives

Not later than October 24 next any 10 Corporate Members resident in Zones A, B and E, may nominate any other duly qualified Corporate Member to serve as a Zonal Representative on the Council by delivering their nomination in writing in a single document to the Secretary together with the written consent of such nominee to accept office if elected, but each such nominator shall be debarred from nominating any other person for this election.

Candidates for Zonal Representative must be resident within the Zone for which they are nominated and the nominators must be resident in that Zone.

The Zones concerned in the forthcoming election comprise the following Regions:—

Zone	Regions
A	1 and 2
B	3 and 4
E	10 and 11

The present Zone B Representative (Mr. H. W. Mitchell, G2AMG) is eligible for re-election. The office of Zonal Representative in Zone E is at present vacant.

Society Trophies

SOCIETY Trophies have been awarded by the Council for the current year to the following members:—

ROTAB: Mr. P. J. Broom, G5DQ, in recognition of his consistent DX work over a period of many years and for his regular support of B.E.R.U. Contests and National Field Day events.

Wortley Talbot: Mr. G. A. Jeapes, G2XV, in recognition of his pioneer work on 420 Mc/s and experimental work on other v.h.f. bands.

Courtenay Price: Messrs. I. Waters, G3KKD/T and I. Howard, G2DUS, in recognition of their outstanding work in the field of Amateur Television culminating in consistent transmission of live pictures over a 38 mile path using home-constructed equipment.

Founders: Mr. A. W. Timme, G3CWW, in recognition of his distinguished services to the Society in connection with the Contests Committee.

Calcutta Key: Dr. A. C. Gee, G2UK, for outstanding service to the cause of international friendship through the medium of Amateur Radio.

***B.E.R.U. Senior Rose Bowl:** Mr. G. J. Dent (VQ4AQ), winner Senior Contest.

***B.E.R.U. Junior Rose Bowl:** Mr. J. C. van Wyk (ZS6R), winner Junior Contest.

B.E.R.U. Receiving Rose Bowl: Mr. A. R. Smith (B.R.S.20206), winner Receiving Contest.

Col. Thomas Rose Bowl: Mr. F. J. U. Ritson (G5RI), leading U.K. station in B.E.R.U. Senior Contest.

N.F.D. Shield and Replica: Bristol Group.

N.F.D. Shield Replicas: Coventry and Croydon Groups.

Scottish N.F.D. Trophy: Edinburgh and Lothians Group.

Bristol N.F.D. Trophy: Boston Group.

**Due to the risk involved in sending the Silver Rose Bowls abroad, miniatures only will be forwarded to the winners. Their names will, however, be engraved on the respective Bowls.*

Norman Keith Adams Prize and Bevan Swift Memorial Premium

ACTING on the advice of the Technical Committee, the Council has decided to award the Norman Keith Adams Prize for 1956 to Mr. G. A. Bird (G4ZU), author of a paper entitled "The Minibeam". This paper was considered to be the most original published in Volume 31 of the Society's Journal.

Also acting on the advice of the Technical Committee, the Council has decided to award the Bevan Swift Memorial Premium for 1956 to Mr. A. L. Mynett (G3HBW), author of a paper entitled "Transmission Line Tuned Tank Circuits". His paper was considered to be the most meritorious published in Volume 31 of the Society's Journal.

Varney Trophy

THE Council has been pleased to accept from Mr. R. L. Varney, G5RV (now in Venezuela), a silver trophy which will be awarded annually to the Corporate Member of the Society who, in the opinion of the Council, acting on the advice of the Technical Committee, has contributed to the Society's Journal the most meritorious article on the subject of Amateur Radio interference.

The Council have unanimously accepted a recommendation of the Technical Committee to award the Varney Trophy for 1956 to Mr. R. H. Hammans (G2IG) for his article "Diagnosis of TVI," published in the June, 1956, issue of the R.S.G.B. BULLETIN.

Frequency Measuring Test

THE first of a series of Frequency Measuring Tests to be held on the last Sunday of each month will take place on Sunday, September 30, using the 12.00 B.S.T. transmission from GB2RS as the frequency to be measured. GB2RS will be found within a few kilocycles per second of 3600 kc/s.

Following the telephony news bulletin but before the summary in Morse code, there will be a three-minute transmission consisting of periods of about 15 seconds when the carrier will be unmodulated, separated by the telephony announcement, "Frequency Measuring Test from GB2RS."

Measurements should be made as accurately as possible during this three-minute period and the results posted to reach R.S.G.B. Headquarters not later than Tuesday, October 2.

Results of the test will be announced in the news bulletin from GB2RS on Sunday, October 7.

DX Listeners' Century Award

THE following rules governing the issue of the new DX Listeners' Century Award have been approved by the Council:—

(1). The Award may be claimed by any person not holding an Amateur Radio transmitting licence who submits evidence that he has received signals from Amateur Radio stations located in at least 100 countries.

(2). The Award will be issued free of charge to members of the R.S.G.B. and to non-members on payment of the standard fee.

(3). The List of Countries for which cards may be submitted will be the same as that used for the A.R.R.L. DX Century Club Certificate except that cards from Ruandi-Urandi (OQ0) and Sicily (IT) will be accepted. Cards from unlicensed foreign stations operating in British Antartic territories will not be accepted.

(4). Stickers will be available for every 25 additional countries confirmed.

(5). The general rules governing R.S.G.B. certificates and awards will apply to this Award.

Region 3 Representative

BECAUSE of ill-health Mr. J. Timbrell, B.Sc. (G6OI) of Kinver, near Stourbridge, Worcs, has been compelled to resign as Region 3 Representative, an office he has held since January, 1954.

Members everywhere, and especially those in Region 3, will be sorry to learn of Mr. Timbrell's illness and will join Headquarters in wishing him a speedy recovery.

Bye-election

Not later than October 31, 1956, any ten Corporate Members resident in Region 3 may nominate any other duly qualified Corporate Member resident in the Region for the office of Regional Representative by delivering their nomination in writing to the General Secretary together with the written consent of such person to accept office if elected.

In the event of more than one person being nominated a Ballot will be conducted, details of which will be published in the November, 1956, issue of the BULLETIN.

Region 9 Representative

MR. H. A. Bartlett (G5QA) of Exeter, who has held the office of Region 9 Representative for many years, has advised Headquarters that he will be resigning from that office at the end of the current year.

Bye-Election

Not later than October 31, 1956, any ten Corporate Members resident in Region 9 may nominate any other duly qualified Corporate Member resident in the Region for the office of Regional Representative, by delivering their nomination in writing to the General Secretary, together with the written consent of such person to accept office if elected.

In the event of more than one person being nominated a Ballot will be conducted, details of which will be published in the November, 1956, issue of the BULLETIN.

LONDON MEETINGS

The following programme of meetings at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, has been arranged.

October 26, 1956: "MORE ABOUT THE ANTENNA-MATCH" by **F. Hicks-Arnold (G6MB).**

November 30, 1956: "1250 Mc/s OPERATION." Discussion opened by Members of the London U.H.F. Group.

December 14, 1956: **Annual General Meeting and Presentation of Trophies.** (To be held in the Lecture Theatre of E.L.M.A. in same building as I.E.E.)

January 25, 1957: **Presidential Address followed by Lecture and Demonstration of MINIATURE AERIALS by F. Charman, B.E.M. (G6CJ).**

March 1, 1957: "MODERN AMATEUR COMMUNICATION RECEIVER DESIGN," by **R. G. Lane (G2BYA).**

March 29, 1957: "MOBILE OPERATION." Discussion opened by F. W. Crabtree (G3BK), C. H. L. Edwards, A.M.I.E.E. (G8TL) and R. G. Shears (G8KW).

Amateur (Sound) Licence Amended

THE following announcement appeared in the *London Gazette* on August 17, 1956:—

"TO ALL HOLDERS OF AMATEUR (SOUND) LICENCES. The Postmaster-General hereby gives you notice that with effect from the 15th day of August, 1956, the terms, provisions and limitations of all Wireless Telegraphy Licences granted by him on or after the 1st day of June, 1954, and before the date of this notice of the type and under the title of 'Amateur (Sound) Licence' shall be varied as follows:—

The following new Clause 1 (1) (c) shall be added:—

"to use the Station, as part of the self-training of the Licensee in communication by wireless telegraphy during disaster relief operations or during any exercise relating to such operations conducted by the British Red Cross Society, for the purpose of sending to other amateur Stations such messages as the Licensee may be requested by the said Society to send, and of receiving from any other amateur Station such messages as the person licensed to use such other amateur Station may be requested by the said Society to send".

Clause 16 (2) shall be amended to read as follows:—

"Nothing in this licence shall be deemed to authorise the use of the Station for business, advertisement, or propaganda purposes or (except as provided by clause 1 (1) (c) hereof) for the sending of news or messages of or on behalf of, or for the benefit or information of, any social, political, religious or commercial organisation, or anyone other than the Licensee or the person with whom he is in communication".

1215-1300 Mc/s Band Extended

FOLLOWING a request made by the Society the Post Office has agreed to extend the 1215-1300 Mc/s band up to 1325 Mc/s on a basis of non-interference with other services. The raising of the upper limit of the band to a higher frequency will enable amateurs to operate on harmonically related frequencies in the 144, 420 and 1250 Mc/s bands. This was not possible whilst the upper limit of the later band was 1300 Mc/s.

Technical Articles Wanted

THE Editor will be pleased to consider for publication articles which have a bearing on any aspect of Amateur Radio, including Amateur Television. Short articles of a constructional nature are particularly required.

Council Proceedings

Résumé 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, July 16, 1956, at 6 p.m.

Present.—The President (Mr. R. H. Hammans in the Chair), Messrs. W. H. Allen, H. A. Bartlett, C. H. L. Edwards, K. E. S. Ellis, D. A. Findlay, F. Hicks-Arnold, J. H. Hum, R. G. Lane, W. H. Matthews, W. R. Metcalfe, A. O. Milne, H. W. Mitchell, L. E. Newnham, W. A. Scarr, J. Taylor, John Clarricoats (General Secretary) and John A. Rouse (Deputy General Secretary).

Mr. H. A. M. Clark was present by invitation during the discussion on the Stresa Conference.

Membership

(a) *Resolved* (i) to elect 44 Corporate Members and 4 Associates.

(b) The Secretary reported that of the 597 members whose subscription became due on April 1, 1956, 72 became 3 months overdue on June 30, 1956. Of this number 12 were London, 42 were Country, and 15 were Overseas Members and 3 were Associates. Of those overdue 8 London, 26 Country and 11 Overseas members held call-signs.

(c) The Secretary reported that 12 of the members referred to in (b) above wrote to resign during the three weeks ended July 14, 1956. Of this number one gave no reason for resigning, seven stated they had lost interest in Amateur Radio, one gave personal reasons, one had resigned for financial reasons and one was suffering from ill-health.

Membership as at June 30, 1956

The Secretary reported that the membership of the Society as at June 30, 1956, was 8,102 (Licensed Members 5,141, B.R.S. Members 2,714, Associates 247) compared with 8,159 (Licensed Members 5,046, B.R.S. Members 2,849, Associates 264) a year earlier. The drop of 57 was the lowest recorded for many years.

Stresa Conference

Messrs. Milne, Clark and Scarr reported on the Stresa Conference.

After general discussion it was agreed to consider the Recommendations of the Conference at the August, 1956, Meeting of the Council.

Radio Amateurs' Examination

It was reported that the G.P.O. had come to the conclusion having regard to the increasing importance of good wireless discipline at a time when the radio spectrum is becoming rapidly more congested, that greater emphasis needs to be placed on those parts of the Radio Amateurs' Examination syllabus which deal with such matters as licensing conditions, operating procedure and the control of interference.

A draft of the revised scheme for the examination was submitted.

The effect of the G.P.O. proposals would be that an applicant for an amateur licence would need to obtain a minimum qualifying standard in the subjects mentioned. This is not the case with the present scheme of examination.

Resolved to inform the G.P.O. that the Society agrees to the proposal to give greater emphasis to those parts of the R.A.E. syllabus which deal with licence conditions, operating procedure, the control of interference, etc.

Service Exemptions

It was reported that the G.P.O. had been looking into the related question of the exemptions from the Radio Amateurs' Examination which are at present permitted. The G.P.O. had found that many of the Service qualifications are by no means easy to compare satisfactorily with the standards considered to be appropriate for a United Kingdom amateur. Of necessity none of them adequately cover the subjects referred to above under "Radio Amateurs' Examination." In these circumstances the G.P.O. propose to inform the Service Departments of their intention to discontinue the post-war exemption system but as the system originated with a suggestion from the R.S.G.B. the G.P.O. were anxious to receive the views of the Society before making an approach to the Services.

After a proposal that qualified Services personnel be required to pass only Part I of the R.A.E. (i.e., that part which relates to licence conditions, operating procedure and the control of interference, etc.), had been rejected, it was *Resolved* that the G.P.O. be informed that the Society supports the proposal to discontinue the post-war exemption system.

DX Listener's Century Certificate

Resolved (i) to offer a DX Listener's Century Certificate free to non-transmitting members as a means of encouraging short-wave listening, (ii) to offer the certificate to non-members on payment of a nominal fee.

R.S.G.B. Certificates

To meet increased production costs and higher postage rates it was *Resolved* that the charge made to non-members for R.S.G.B. certificates shall be increased to 7s. ($1).

"Intruders"

It was reported that Major D. W. J. Haylock (G3ADZ) had provided valuable information for the Stresa Conference on the activities of non-amateur stations heard operating in "exclusive" amateur bands. Major Haylock's report was submitted to the Administrative Committee of the Conference and as a result of the subsequent discussion a special sub-Committee was set up to prepare a recommended form of procedure for reporting "intruders." The sub-Committee's report had been approved by the Conference.

Resolved to thank Major Haylock for his valuable report and to enquire from him whether he would be willing to undertake the work of organizing a group of qualified official receiving stations to prepare reports on persistent intruders.

Amateur Radio Exhibition, 1957

The President, Mr. Scarr and the Secretary reported on a meeting which they had had with Mr. P. A. Thorogood.

Resolved (i) to give Mr. Thorogood a reasonably free hand to organize an Exhibition in London during the autumn of 1957, which would be designed to cater for constructors, experimenters and amateurs with a view to increasing R.S.G.B. membership.

(ii) to accept Mr. Thorogood's offer to pay to the Society the sum of £100 for the privilege of being granted permission to organize the Exhibition.

(iii) to invite Mr. Thorogood to submit a formal contract to the Society as soon as possible.

(iv) to request Mr. Thorogood to submit occasional progress reports to the Council.

DX Convention

Resolved (i) to agree in principle to the holding of a DX Convention in London.

(ii) to appoint Messrs. D. A. Findlay, F. G. Lambeth, J. D. Kay, F. Hooson, G. A. Bird and P. R. Solder, to serve on the DX Convention Committee and that the Committee be given power to co-opt.

R.A.E.N.

It was reported that the Postmaster General had agreed in principle to participation by the R.A.E.N. in British Red Cross Society rescue work and relief exercises run by the Red Cross.

It was further reported that a meeting between representatives of the Society and the G.P.O. would be held on July 23 to discuss the details of the arrangements. (At the meeting the R.A.E.N. Committee was represented by Lt.-Col. Dunn (Chairman), Dr. A. C. Gee (Vice-Chairman) and Mr. C. L. Fenton (Hon. Secretary). Mr. A. O. Milne (representing the G.P.O. Liaison Committee), the General Secretary and the Deputy General Secretary were also present.—EDITOR.)

Accident Emergency Service

Resolved to take no action on a suggestion put forward by Mr. P. Goudime that the Council should set up some form of monitoring service to assist communications in the event of an accident occurring on, for example, a lonely road. Mr. Goudime suggested that amateurs who possess mobile equipment should be permitted to operate on the national network of the Automobile Association (85 Mc/s).

It was agreed to inform Mr. Goudime that his proposals would contravene the terms of the amateur as well as the broadcast licence.

Mr. E. Brown, G3CSP, of Sheffield

Mr. Metcalfe and the General Secretary reported upon further difficulties which had arisen in connection with this case.

Reports of Committees

Resolved to receive and adopt as Reports the Minutes of Meetings of the R.A.E.N. Committee (June 30, 1956), *ad hoc* Committee (July 10, 1956) and Exhibition (Home Constructors' Section) Committee (July 11, 1956). Action was taken on the various recommendations contained therein.

The meeting terminated at 9.50 p.m.

First 144 Mc/s Field Day, 1956

IT is regretted that the 144 Mc/s Field Day entry of Mr. R. H. Pounder (G3DVQ) was omitted from the table of results published in the August issue. G3DVQ/P operated from near Guildford, Surrey, and scored 2,245 points from 43 contacts. Best contact was 85 miles. This score would have given G3DVQ/P the 27th position in the table.

"Aerial Reflections"

ON page 59 of the August issue of the BULLETIN, in which the Reflex Aerial was described, the last sentence of the section headed "Construction for 440 and 1250 Mc/s" should have read "The velocity factor of both these cables is 2/3, so the quarter wavelength should be $1970/f$ inches, or 4½in. for 440 Mc/s and 1½in. for 1250 Mc/s; the shortest possible joints should be used."

Radio Amateur Emergency Network

By C. L. FENTON (G3ABB)*

RELEASE of the news of the approval by the Postmaster General of co-operation between the Radio Amateur Emergency Network and the British Red Cross Society, has certainly caused an awakening of interest in the Network throughout the country. Many letters of congratulation have been received but none of criticism!

As stated last month, the names and addresses of all E.C.O.s will now be passed on to the B.R.C.S. for the use of their Regional Officers, who will then approach the nearest E.C.O., if contact has not already been made by the E.C.O. In some cases this information has already been given, at the direct request of certain Red Cross directors. In this connection it must again be stressed that individual members should not make an approach to their local B.R.C.S. headquarters. Form groups and nominate E.C.O.s, so that they can be the liaison with the Red Cross authorities.

No Priority Claims to Frequencies

The attention of all R.A.E.N. members is drawn to the fact that official recognition of the Network *does not give them priority claim to any frequencies.* No such claim must be made except in case of genuine emergency. Emergency calling frequencies should, however, continue to be monitored.

R.A.E.N. Rally

The rules for this year's Rally—to be held on October 21—will be found elsewhere in this issue. Those who intend to participate are reminded that authorized test phrases and approved log sheets must be obtained from the Hon. Secretary, R.A.E.N. Committee, prior to the date of the contest. Each request should be accompanied by a stamped addressed envelope.

Lectures on Red Cross Organization

Co-operation between R.A.E.N. and the British Red Cross Society makes it advisable for members to be aware of the general organization of that society. Lectures on this subject can be arranged through the writer.

Group News

The E.C.O. for Pembroke Dock, recovering from a recent illness, appeals for more members, as does the E.C.O. for Stratton-on-the-Fosse, near Bath. It is hoped to revive activity in the Stirlingshire area of Scotland, the E.C.O. apologizing for a recent slackening off due to pressure of work.

In Armoy, Northern Ireland, the group has mobile equipment available, including 10 metre handy-talkies and ZC1 Mk. IIs in cars. Incidentally, the group wish to thank the designer of the handy-talkie (Bernard Howlett) for his assistance in procuring many of the components required.

E.C.O. Resignations and Appointments

Mr. H. Hunt has resigned as E.C.O. for Acle, nr. Norwich, and Mr. A. Swindon as E.C.O. for Sidcup, Kent. Mr. G. Lancefield (G3DWQ), 35 Brixton Road, Frenchwood, Preston, Lancs., has been appointed acting E.C.O. for the Preston area.

The need for new members and E.C.O.s in all parts of the British Isles continues, and the Hon. Secretary will be pleased to hear from volunteers.

Items for inclusion in the next R.A.E.N. column should reach the writer not later than September 20.

* "*Niarbyl*," *Gay Bowers, Danbury, Chelmsford, Essex (Phone: Danbury 518)*

Representation 1957-1958

Election of County Representatives

IN accordance with established practice, an election of County Representatives is due to take place this year with effect from January 1, 1957.

Nominations

Not later than October 31 next, any ten Corporate Members resident in a particular County (or Group of Counties, as the case may be) may nominate any other duly qualified Corporate Member resident in that County (or Group of Counties) for the office of County Representative, by delivering their nomination in writing to the General Secretary, together with the written consent of such person to accept office if elected.

Period of Office

County Representatives will hold office for a period of two years as from January 1, 1957.

Confirmation of Appointment

County Representatives will only be confirmed in their appointment if the total membership in the County (or Group of Counties) they propose to represent is in excess of 25.

Vacancies

In the event of no nomination being received prior to November 1, 1956, from the Corporate Members resident in a particular County (or Group of Counties) the Council reserves the right to make an appointment.

Ballots

In the event of more than one person being nominated for a particular office a Ballot will be conducted, details of which will be published in the November, 1956, issue of the R.S.G.B. BULLETIN.

Resignations

If for any reason an elected or appointed Representative wishes to resign his office he should notify Headquarters who will advertise the vacancy. Local Members cannot automatically appoint another member to undertake the duties of a Representative who has resigned.

The Council reserves the right to call upon any Representative to resign his office if, in their opinion, he is considered to be unsuitable or unsatisfactory.

Local Societies

It is not permissible for local societies, whether affiliated to the R.S.G.B. or not, to nominate members to serve as R.S.G.B. Representatives.

Present County Representatives

All present County (or District) Representatives go out of office on December 31, 1956.

Regions and Counties

The following is a list of the Regions and Counties (or Districts) forming them:—

Region 1 (North Western). — Cheshire; Cumberland; Lancashire (East); Lancashire (West); Westmorland; the Isle of Man.

Region 2 (North Eastern).—Durham, Northumberland; Yorkshire (East); Yorkshire (North); Yorkshire (West).

Region 3 (West Midlands).—Herefordshire; Shropshire; Staffordshire; Warwickshire; Worcestershire; Birmingham (Postal Area).

Region 4 (East Midlands).—Derbyshire; Leicestershire and Rutland; Lincolnshire; Northamptonshire; Nottinghamshire.

Region 5 (Eastern). — Bedfordshire; Cambridgeshire; Essex (outside London Region); Herefordshire (outside London Region); Huntingdonshire; Norfolk; Suffolk.

Region 6 (South Central).—Berkshire (outside London Region); Buckinghamshire (outside London Region); Gloucestershire (excluding the Bristol Area); Hampshire; Oxfordshire; Wiltshire; the Channel Islands.

Region 7 (London).—London North; London South; London South-East; London South-West; London East; London West.

Notes.—(1) In the London Region the six Representatives concerned are known as District Representatives.

(2) The London Region covers the whole of Middlesex and Surrey and all other territory within 25 miles radius of Charing Cross.

Region 8 (South Eastern). — Kent (outside London Region); Sussex.

Region 9 (South Western).—Bristol; Cornwall; Devonshire; Dorset; Somerset.

Region 10 (South Wales).—Brecknockshire; Carmarthenshire; Pembrokeshire and Cardiganshire; Glamorgan; Monmouthshire and Radnorshire.

Region 11 (North Wales).—Anglesey and Caernarvonshire; Denbighshire; Flintshire; Merionethshire and Montgomeryshire.

Region 12 (North Scotland).—Aberdeen, Banff and Kincardine; Angus and Perth; Moray and Nairn; Inverness, Ross, Sutherland, Caithness, Orkney and Shetland.

Region 13 (East Scotland).—Berwick; Peebles; Roxburgh and Selkirk; East, Mid- and West Lothian; Fife and Kinross.

Region 14 (West Scotland).—Argyll and Dumbarton; Ayr, Bute, Dumfries, Kirkcudbright and Wigtown; Clackmannan and Stirling; City of Glasgow (Postal Area), Lanark and Renfrew.

Region 15 (Northern Ireland). — Antrim; Armagh; Down; Fermanagh; Londonderry, Tyrone.

Radio Research 1955

RADIO Research 1955 (H.M.S.O., 3s. 6d.) describes the work carried out by the Department of Scientific and Industrial Research last year. Of particular interest are the reports on long hop transmissions, semi-conductors, ferrites and long-distance v.h.f. propagation by scattering.

Changes of Address

When notifying Headquarters of a change of address, Society Representatives should state clearly that they *are* Representatives. Frequently a change of address is received and entered on a member's record card but as no mention is made in the notification that he is a Representative the master file of Representatives is not corrected.

Tests and Contests

144 Mc/s Contest, 1956

CONDITIONS during the contest were almost universally reported as excellent, and this is reflected by the 50 per cent increase in the score of the winner, H. Beaumont (G5YV), who repeats his success in last year's event.

Although the number of entries received (from less than 15 per cent of the stations reported as active) was lower than for the 1955 contest, this would appear to be accounted for largely by the rule barring entries from portable stations. It is interesting to note that in spite of this change in the rules rather more portable stations (33) were active than usual to support the fixed-station contest and return the compliment for the support given by fixed stations in the 144 Mc/s field days. Few comments were made on this change in the rules, and the Contests Committee would be glad to hear from operators who have strong views for or against portable participation in this contest.

At one end of many of the longest-distance contacts was GI3GXP, including the furthest distance reported, a 360-mile contact with G3FAN. Contacts were made with Belgium, Eire, France and Holland.

G8DA commented favourably on the prevalent use of c.w. "for a change," and G2DVD rather despairingly on the high level of activity during the contest period as compared with the "usual half-dozen." Although several other competitors commented on this point, a careful check reveals that the total number of stations active was about 60 fewer than last year. Shortly after the contest ended G2DVD's station was struck by lightning and some damage was suffered, but the v.h.f. gear escaped unscathed.

G5YV made 99 contacts at an average distance of over 126 miles per contact. The runner-up, G3FAN, had 98 contacts at an average of over 103 miles.

Power input varied from 10 watts to an 832 (G4JJ/A) to 150 watts to push-pull 826s (G5MA). The 829 and its variations, 829B and 3E29, were used by over 50 per cent of the stations submitting entries; other valve types used were: 832, QQV06/40, p/p 826, p/p TT11, RK34, QQV03/20. A review of aerials shows that the Yagi is losing ground slightly and that colinear stacks and skeleton-slot arrays are gaining in popularity. Converters with tunable oscillators were favoured over crystal-controlled converters in the ratio of about two to one.

Check logs are acknowledged from F8GH, G2UJ, G3BA/P, G3BEX/P, G3CNF, G3DO/P, GW3GWA/P, G3KZS/P, G3MI, G8UQ/P.

Position	Call-sign	Location	Best QSO (miles)	Points
1	G5YV	Morley, Leeds, Yorks.	213	12489
*	G5KW	Well Hill, Kent	—	10594
2	G3FAN	Ryde, Isle of Wight	360	10141
3	G5MA	Gt. Bookham, Surrey	305	6780
4	G5DW	Ashcott, Somerset	260	6675
5	G2CIW	Cambridge	220	5402
6	G2DVD	Slinford, Sussex	200	5387
7	G3FIH	Bath, Somerset	169	5209
8	G5BM	Highnam, Glos.	137	4709
9	G2HDZ	Pinner, Middlesex	244	4692
10	G5DS	Surbiton, Surrey	245	4522
11	G4JJ/A	Nr. Chesterfield	190	4453
12	G3JWQ	Ripley, Derbys.	166	4237
13	G3JZG	Willenhall, Staffs.	225	3847
14	G2AIH	Tattenham Corner, Sy.	182	3153
15	G5MR	Hythe, Kent	220	3122
16	G3KHA	Knowle, Bristol	130	2965
17	G4GR	Marshfield, Mon.	189	2950
*	G2RD	Wallington, Surrey	—	2652
18	G8DA	Exeter, Devon	187	2296
19	G2CZS	Chelmsford, Essex	195	1915
20	G3KPT	Kingswood, Bristol	165	1806
21	G2DCI	Sutton Coldfield, Warks.	135	1070
22	G5HN	Reading, Berks.	167	1010
23	G8LN	Plumstead, London	160	491

*Entry invalid; received late. Claimed score shown.

VK/ZL DX Contest, 1956

THE New Zealand Association of Radio Transmitters and the Wireless Institute of Australia invite all amateurs to participate in this year's VK/ZL contest. Rules for overseas stations follow those for previous years and may be summarized as follows.

1. Sections.—Phone: 24 hours from 10.00 G.M.T. Saturday, October 6, to 10.00 G.M.T. Sunday, October 7.
C.W.: 24 hours from 10.00 G.M.T. Saturday, October 13 to 10.00 G.M.T. Sunday, October 14.

2. Scoring. One point will be scored for each contact on a specific band with any VK/ZL district. The final score will be derived by multiplying the total contacts on all bands by the total number of VK/ZL districts worked on all bands. These are ZL1, 2, 3, 4; VK1, 2, 3, 4, 5, 6, 7, 9.

3. Serial Numbers will consist of six figures (five for phone), made up of the RST report plus three figures which should commence with 001 and increase by one for each successive QSO—e.g. 002, 003, etc.

4. Logs. (a) Must show in this order: date, time in G.M.T., call-sign of station contacted, serial sent, serial received, band. Please underline each new VK/ZL district when contacted and use separate logs for each band used.

(b) **Summary Sheet** to show—call-sign, name and address (use block letters), details of rig, TOTAL SCORE by showing total of districts worked on all bands and total contacts on all bands. (Districts multiplied by contacts = Total Score.) Sign a declaration that all rules were obeyed.

5. Awards. Attractive certificates to the highest scorer in each country, and to each call area in the U.S.A. Other certificates will be awarded depending upon the number of logs received from each country and the activity on each band.

6. Listeners' Section. To count for points, a VK or ZL station must be heard in a contest QSO, and the following details noted in the log —date, time in G.M.T., call of the station heard, call of the station being called, RS(T) of station heard, serial number sent by the calling station, band. Scoring is on the same basis as for the transmitting section and the log should be similarly set out.

7. Logs should be posted to reach **NZART, Box 489, Wellington, N.Z.**, on or before January 21, 1957.

CQ World-wide DX Contest

THE operating periods for the CQ World-wide DX Contest (formerly the International DX Contest) are as follows:—

Telephony Sections: 02.00 G.M.T., October 20, to 02.00 G.M.T., October 22.

Telegraphy Sections: 02.00 G.M.T., October 27, to 02.00 G.M.T., October 29.

Serial numbers to be exchanged will consist of the RST (or RS) report followed by the number of the Zone in which the competitor is located. Stations in Zones 1 to 9 will prefix their Zone numbers with zero, i.e., 01, 02, etc.

Contacts may be made in any band from 1.8 to 28 Mc/s. Three points will be scored for contacts between stations in different continents and one point for contacts with stations in the same continent. Contacts between stations in the same country score no contact points but may be made for the purpose of Zone and/or country multipliers. Only one contact with the same station on one band counts for points. A multiplier of one is allowed for each Zone contacted on each band and a multiplier of one for each country worked on each band.

The contest will be divided into the following sections:—(a) Single operator phone; (b) Multi-operator phone; (c) Single operator c.w.; (d) Multi-operator c.w.; (e) Novice c.w. There will also be an inter-club competition in which the club scores will be the combined scores of members participating.

Entries, which must be postmarked not later than December 1, 1956, should be sent to the Contest Committee, *CQ Magazine*, 67 West 44th Street, New York 36, N.Y., U.S.A.

Regional & Club News

Amateur Radio Club of Nottingham.—The club, which is the radio section of the Sherwood Community Association, took part in the annual Sherwood garden party, G3IQM operating on 3.5 Mc/s phone with the help of G3JKO and A. E. Gwynne. The club station G3EKW is active. *Hon. Secretary:* J. W. Rayner, 28 Tettenbury Road, Basford, Nottingham.

Bexleyheath.—Council Member W. H. Matthews (G2CD), Zonal Representative for South Eastern England, will be the chief speaker at a meeting to be held on October 18 at The Congregational Hall, Chapel Road, Bexleyheath. Mr. Matthews will answer questions and discuss Society policy. All local members are invited to attend.

Bristol.—At the August meeting a lecture on "Keying" was given by R. G. Lane (G2BYA) who will open a discussion on the design of a simple TVI-proof transmitter for the DX bands at the meeting on September 21. On October 5 there will be a recorded talk on "Aerials" by F. J. Charman, B.E.M. (G6CJ). Slow Morse classes are held on Tuesdays at 7.30 p.m. at 53 Yew Tree Drive, Kingswood, under the direction of G3KPT. *Hon. Secretary:* D. F. Davies (G3RQ), 51 Theresa Avenue, Bishopston, Bristol, 7.

British Amateur Television Club (Chelmsford Group). — G2DUS/T was due to describe and demonstrate his new flying spot slide scanner on September 13. The next meeting will be at G3CVO/T on October 11 at 7.30 p.m., when G3VI will conclude his series of talks on 70 cm r.f. equipment. *Hon. Secretary:* M. Barlow (G3CVO), 10 Baddow Place Avenue, Great Baddow, Essex.

Crystal Palace & District Radio Club.—On September 15 David Deacon (G3BCM) will give a talk on his home-built transmitter-receiver. At the meeting on October 20 at 7.30 p.m. in Windermere House, Westow Street, S.E.19, G. A. Bird (G4ZU) will describe his four band Minibeam.

Edinburgh Amateur Radio Club.—Weekly meetings on Wednesdays at Unity House, Hillside Crescent, have commenced and visitors and prospective members are invited to attend. Full details of activities may be obtained from the *Hon. Secretary:* M. Darke (GM3KGK), 44 Howe Street, Edinburgh, 3.

Harrow.—Meetings of the Radio Society of Harrow are held on Fridays at 8 p.m. in the Science Laboratory, Raxeth Manor Secondary Modern School, Eastcote Lane, South Harrow. On September 21, G2TA will give a talk on valve theory. *Hon. Secretary:* S. C. J. Phillips, 131 Belmont Road, Harrow Weald, Middlesex.

Midland Amateur Radio Society.—Meetings are held on the third Tuesday in each month at the Birmingham Institute, Paradise Street, Birmingham, commencing at 7.30 p.m. *Hon. Secretary:* C. J. Haycock (G3JDJ), 360 Portland Road, Edgbaston, Birmingham, 17.

Newbury & District Amateur Radio Society.—The Society's winter programme of lectures opens on September 28 at Elliott's Canteen, West Street, Newbury, when the speaker will be The Astronomer Royal (Dr. R. v. d. R. Woolley), whose subject will be "Astronomy and Cosmology." The Annual Hamfest will take place on October 14. Tickets for both these events may be obtained from the *Hon. Secretary:* John Henderson, The Bungalow, Brook Street, Great Bedwyn, Marlborough, Wilts.

Oxford & District Amateur Radio Society.—The next meeting of the Society, on October 10, will be held at the new headquarters at the Cherwell Hotel, Water Eaton Road, Oxford, N. *Hon. Secretary:* J. Hickling (G3GCS), 33 Chestnut Road, Botley, Oxford.

Plymouth Radio Club.—Meetings are held on alternate Tuesdays at 7.30 p.m., at the Virginia House Settlement, Barbican, the next being on September 18. *Hon. Secretary:* C. Teale (G3JYB), 3 Berrow Park Road, Peverell, Plymouth.

Rotherham Radio Club.—The club meets on the first Wednesday in each month at 7.30 p.m. in the Photographic Society's Room, "The Crofts," Moorgate. Morse classes have commenced and instruction for the R.A.E. will start shortly. *Hon. Secretary:* J. H. Johnson (G3ECV), 2 West Street, Rotherham.

Shefford & District Amateur Radio Society.—Meetings at Digswell House are arranged for 7.30 p.m. on September 21, September 28 (Transmitter demonstration by G. R. Johnson), October 5 ("Photo-sensitive Devices," by J. Atkins) and October 12 (Film-strip Lecture).

South Manchester Radio Club. — "The Propagation of Radio Waves" is the title of the talk to be given by N. Ashton (G3DQU) at the meeting on September 21. The A.G.M. will be held on October 5. A course in preparation for the Radio Amateurs' Examination will start on October 18 at 8 p.m. and be continued on succeeding Monday evenings under the supervision of G3DQU. All meetings are held at Ladybarn House, Mauldeth Road, Fallowfield, Manchester, 20.

Members of the Spen Valley Amateur Radio and Television Society inspected the M/V Prince Philip during the Society's annual outing to Grimsby.

(Photo by Eric J. Green, Grimsby)

Forthcoming Events

REGION 1

Region 1 O.R.M. — November 11, Bradford Hotel, Liverpool.
Blackpool (B. & F.A.R.S.). — September 25, 7.30 p.m., 35 Whitegate Drive, Blackpool.
Bury (B.R.S.).—October 9, 8 p.m., George Hotel, Kay Gardens.
Chester (C. & D.A.R.S.).—Tuesdays, 7.45 p.m., Tarran Hut, Y.M.C.A.
Crosby. — Tuesdays, 8 p.m., over Gordon's Sweetshop, St. John's Road, Waterloo.
Lancaster (L. & D.A.R.S.).—October 3, 7.30 p.m., George Hotel, Torrisholme.
Liverpool (L. & D.A.R.S.).—Tuesdays, 8 pm., Room "G," Wavertree Community Centre, Penny Lane, Liverpool, 18.
Manchester (M. & D.R.S.).—October 1. 7.30 p.m., Brunswick Hotel, Piccadilly, Manchester. **(S.M.R.C.).**—Fridays, 7.45 p.m., Ladybarn House, Mauldeth Road, Manchester, 14.
Preston (P.A.R.S.).—Wednesdays, 7.45 p.m., 48 High Street, off Lancaster Road, Preston.
Rochdale (R.R.T.S.).—Fridays, 7.45 p.m., 1 Law Street, Sudden.
Southport.—Thursdays, 8 p.m., Sea Cadets Camp, Esplanade, Southport.
Stockport (S.R.S.). — September 26, October 10, 24, 8 p.m., Blossoms Hotel, Buxton Road, Stockport.
Warrington (W.A.D.R.S.). — September 20, October 4, 18, 7.30 p.m., King's Head Hotel, Winwick Street.
Wirral (W.A.R.S.).—September 19, October 3, 17, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

Barnsley.—September 28, Lecture, 7.30 p.m., King George Hotel.
Bradford.—September 25, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
Doncaster. — October 2, 7.30 p.m., Y.W.C.A., Cleveland Street.
Gateshead.—Mondays, 7.30 p.m., Mechanics' Institute, 7 Whitehall Road.
Hull.—Second and last Tuesdays, 7.30 p.m., "Rampant Horse," Paisley Street.
Leeds.—Wednesdays, 7.30 p.m., 4 Woodhouse Square.
Newcastle.—October 2, 7.45 p.m., Liberal Club, Pilgrim Street.
Pontefract.—September 20, 8 p.m., Queen's Hotel, Tanshelf.
Rotherham.—Wednesdays, 7 p.m., Photographic Society's Club-room, "The Crofts," Moorgate.
Scarborough. — Thursdays, 7.30 p.m., B.R. Rifle Club, West Parade Rd.
Sheffield (S.A.R.C.).—September 26, 8 p.m., Dog & Partridge, Trippet Lane.
Slaithwaite.—Fridays, 7.30 p.m., 3 Dartmouth Street.
South Shields (S.S. & D.R.C.).—September 26, 7 p.m., Trinity House Social Centre.
Spenborough.—Summer Recess.
York.—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

Birmingham (South).—October 5, 7.30 p.m., "A" Committee Room, Cadbury Bros., Bournville Lane. **(M.A.R.S.).**—September 18, 7 p.m., Midland Institute. **(Slade).**—September 14, 28, October 12, 7.45 p.m., Church House, High Street, Erdington.
Coventry.—September 28, 7.30 p.m., Priory High School, Wheatley Street, **(C.A.R.S.).**—September 17, October 1, 7.30 p.m., 9 Queen's Road. **(Courtaulds).** — Wednesdays, 5-8.30 p.m., Courtauld's, Ltd., Foleshill Road.
Malvern.—October 1, 8 p.m., "Foley Arms."
Redditch.—September 20, October 2, 8 p.m., "Scale and Compass," Birchfield Road.
Solihull.—September 17. October 1, 7.30 p.m., Defence H.Q., Sutton Lodge, Blossomfield Road.
Stoke.—September 26, 8 p.m., "Lion's Head," John Street, Hanley.
Stourbridge (St.A.R.S.).—October 2, 8 p.m., King Edward VI School.
Walsall.—September 26, October 10, 8 p.m., Technical College, Bradford Place.
Wolverhampton. — September 24, October 8, 8 p.m., Nechell's Cottage, Stockwell End.

REGION 4

Alvaston. — Tuesdays, Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Boulton Lane, Alvaston, Derbys.
Chesterfield.—Tuesdays, 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D. & D.A.R.S.).—Wednesdays, 7.30 p.m., Room 4, 119 Green Lane, Derby.
Ilkeston (I. & D.A.R.S.).—Thursdays, 7 p.m., Room 5, Ilkeston College of Further Education, Field Road.
Leicester (L.R.S.).—September 24, October 8, 7.30 p.m., 140 High Cross Street.
Lincoln (L.S.W.C.).—No meeting in September.
Mansfield (M. & D.A.R.S.).—No meeting in October.
Newark (N. & D.A.R.S.).—October 7, 7 p.m., North Gate House, North Gate, Newark.
Northampton (N.S.W.C.). — Fridays, 7 p.m., Club Room, 8 Duke Street.
Nottingham.—September 21, October 19, 7.30 p.m., Basford Hall Miners' Welfare, Nuthall Road, Cinderhill.
Peterborough.—October 3, 7.30 p.m., 21 Hankey Street.
Retford.—October 4, 7 p.m., Sun Inn, Cannon Square.

REGION 5

Chelmsford.—October 2, 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.
Great Hallingbury. — Sunday, September 16, 2.30 p.m., "Normandale," New Barn Lane. (G6UT's Annual Ham Party, Ladies welcome.)

REGION 6

Cheltenham.—October 4, 8 p.m., Great Western Hotel, Clarence Street. **(C.A.R.S.).**—Wednesdays, 8 p.m., Club Room, St. Mark's Community Centre, Brooklyn Road.
Gloucester (G.R.C.). — Thursdays, 7.30 p.m., The Cedars, 83 Hucclecote Road.
Oxford (O. & D.A.R.S.). — September 26, 7.30 p.m., Club Room, "Magdalen Arms," Iffley Road. October 10, Cherwell Hotel, Water Eaton Road.
Portsmouth. — Tuesdays, 7.30 p.m., British Legion Club, Queen's Crescent, Southsea.
Southampton.—October 6, 7 p.m., 1 Prospect Place, Above Bar, Southampton.
Stroud.—Wednesdays, 7.30 p.m., Subscription Rooms.

REGION 7

London (L.M.L.C.).—September 21, October 19, 12.30 p.m., Bedford Corner Hotel, Bayley Street, Tottenham Court Road, W.C.1.
London (U.H.F. Group).—October 4, 7.30 p.m., Bedford Corner Hotel.
Bexleyheath (N.K.R.S.).—September 27 ("The Mini Beam," G4ZU), Upper Geddes Hall; October 11, 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
Finsbury Park, — September 18, October 23, 7.30 p.m., 164 Albion Road, N.16.
Guildford & Woking.—September 23, 3 p.m., Royal Arms Hotel, North Street, Guildford.
Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road.
Slough.—October 2, QTH from G2HOX, 13 Quaves Road, or G3GYD, 5 Parklands Avenue, Slough.
Southgate, Finchley & District.—October 11, 8 p.m., Arnos School, Wilmer Way, N.14.
Welwyn Garden City.—October 9, 7.30 p.m., "Red Lion," Hatfield. (Annual Dinner.)

REGION 9

Bath.—September 24, October 22, 7.30 p.m., R.N.V.W.R. H.Q., 12 Pierrepoint Street.
Bristol.—September 21, October 19, 7.15 p.m., Carwardine's Restaurant, Baldwin Street.
Exeter.—October 5, 7 p.m., Y.M.C.A., St. David's Hill.
Falmouth (W.C.R.C.). — Alternate Tuesdays, 7 p.m., Technical Institute, Falmouth.
North Devon.—October 4, G3BO, Rosebank, Westcombe, Bideford.
Plymouth.—September 18, October 2, 16, 7.30 p.m., Virginia House Settlement, Barbican.
Torquay.—September 15, October 20, 7.30 p.m., Y.M.C.A., Castle Road.
Weston-super-Mare.—October 10, 7.30 p.m., Sea Cadets Hall, Alfred Street.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 10

Cardiff.—October 8, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff.
Neath & Port Talbot.—October 2, 7.30 p.m., Royal Dock Hotel, Briton Ferry.

REGION 14

Falkirk & Stirling.—September 28, 7.30 p.m., The Temperance Café, High Street, Falkirk.
Glasgow.—September 28, 7.15 p.m., Christian Institute, 70 Bothwell Street, Glasgow, C.2.

REGION 15

Belfast.—October 26, 8 p.m., Y.M.C.A. (Discussion on N.F.D.).

Affiliated Societies

THE following are additions and alterations to the list of Affiliated Societies published in the October 1955 issue of the BULLETIN:—

Army Wireless Reserve Amateur Radio Society, c/o J. A. Bladon, 28 Jack Lane, Davenham, Northwich, Cheshire.

Bailleul Radio Society, 3 Training Battalion, R.E.M.E., Bailleul Camp, Arborfield, Berks.

1366 (City of Chester) Squadron Air Training Corps Amateur Radio Club, (G3KZK), Old Wrexham Road, Chester.

The Honorary Secretary of the Norwich & District Radio Society is now D. Youngs (G3JIE), 53 Salisbury Road, Thorpe Road, Norwich.

The Honorary Secretary of the R.A.F. Changi Amateur Radio Club is now B. Gauntlett, c/o S.C.S., R.A.F. Station Changi, Singapore 17.

The Honorary Secretary of the Wirral Amateur Radio Society is now L. I. Powell, 549 Woodchurch Road, Birkenhead.

Representation

County Durham

Mr. J. R. Tyzack (G3ELP), 101 Birchington Avenue, South Shields, has been appointed to the vacant office of Durham County Representative.

West Hartlepool

Mr. L. Foden has given notice that he wishes to resign as T.R. for West Hartlepool with effect from November 15, 1956. Nominations for his successor should be sent to reach Headquarters by not later than October 31, 1956.

Lincolnshire

Mr. L. J. Coupland (G2BQC) has resigned as C.R. for Lincolnshire. Nominations for his successor should be sent to reach the General Secretary by not later than October 31, 1956.

Change of Address

The address of Mr. E. Smith (T.R. for South Shields) is now 151 Cheviot Road.

R.A.E.N. Rally 1956

Rules

1. The Rally is open to all R.A.E.N. members, who will be divided into three groups:—

(a) Out stations (R.A.E.N. members operating portable or mobile);
(b) Fixed stations (R.A.E.N. members operating from home stations);
(c) Receiving stations (R.A.E.N. members operating as receiving stations at home or as outstations).

2. The Rally will take place on Sunday, October 21, 1956, from 0900 to 1200 G.M.T., 1400 to 1700 G.M.T. (telephony) and from 1800 to 2100 G.M.T. (Morse code A1). Operation will be in the 1.8, 3.5, 28, and 144 Mc/s bands. R.S.G.B. band planning must be observed. Licensed power must not be exceeded.

3. Outstation equipment will not be connected in any way to public mains electricity supply and must be located at least one mile from home, or other normal fixed station site.

4. Scoring—Transmitting Sections.

Contacts will score points as follows :—

Outstation to outstation—5 points.
Outstation to fixed station—3 points.
Outstation to non-R.A.E.N. Station—1 point.

Fixed station to outstation—3 points.
Fixed station to fixed station—2 points.
Fixed station to non-R.A.E.N. Station—1 point.

Ten scoring contacts only will be allowed with non-R.A.E.N. stations during the rally.

No station may be worked more than once on each band by the same mode of sending. (G3XXX, G3XXX/P and G3XXX/M count as one station for scoring purposes.)

The best two periods' scores will be counted for placing.

5. Each participant will, on application to his E.C.O. (or the Honorary Secretary, R.A.E.N. Committee in cases where participants have no E.C.O.) be issued with a test phrase. This test phrase will be passed to the first R.A.E.N. station contacted, in exchange for the test phrase from that station. The test phrase received will be passed to the next R.A.E.N. station contacted, in exchange again, and so on. No test phrase will be passed to non-R.A.E.N. stations. E.C.O.s should make application for block issues of test phrases to the Honorary Secretary, R.A.E.N. Committee, by not later than October 12, 1956.

6. Stations will call "CQ RAEN from R.A.E.N. Station . . . ." and sign "from R.A.E.N. station. . . ."

7. Printed log sheets will be issued at the same time as the test phrases, by the Honorary Secretary, R.A.E.N. Committee, to all participants through E.C.O.s in cases where there is an ECO.

Completed entries for all the periods worked, must be returned to the Honorary Secretary, R.A.E.N. Committee, postmarked not later than Monday, November 12, 1956. Location and signal reports must be given, received and logged.

Participants should complete, on the top sheet of their log, the details of their station, in the appropriate spaces provided. The declaration must be signed.

8. Receiving Stations—Scoring and Logs.

Receiving stations will score three points per R.A.E.N. Station heard in contact, provided that the details required by the printed log sheet are correctly recorded therein.

Receiving stations operating portable or mobile will receive a bonus of one point per R.A.E.N. station correctly logged.

Logs must be submitted on printed sheets obtained from the Honorary Secretary, R.A.E.N. Committee through ECOs, or direct where participants have no E.C.O. The details and declaration required should be completed and signed on the top sheet only.

Entries should be posted to reach the Honorary Secretary, R.A.E.N. Committee and should be postmarked not later than Monday, November 12, 1956.

9. Awards will be made to the participants who score the highest number of points in each of the groups :—Outstations, Fixed Stations and Receiving Stations.

More Members means More Services

Slow Morse Practice Transmissions

B.S.T.	Call	kc/s	Town
Sundays			
09.00	G3GYV	1900	Hartford, near Northwich
09.30	G3BKE	1900	Newcastle-on-Tyne
10.00	G6MH	1990	Southend-on-Sea
10.30†	G3DGN / G3GZB	1930	North London
11.00	G2FXA	1900	Stockton-on-Tees
12.00	G3LP	1850	Cheltenham
12.00	G3KAN	1850	Northampton
12.00	GI5UR	1860	Belfast
21.00	G2FIX	1812	Nr. Salisbury
22.00	G3ARM	1919	Guildford
Mondays			
18.30	G3KPJ	1970	Chelmsford
19.00	G3NC	1825	Swindon
21.00	G3BLN	1900	Bournemouth
22.15	G2BRH	1900	Ilford
Tuesdays			
18.30	G2FXA	1900	Stockton-on-Tees
18.30	G3KPJ	1970	Chelmsford
19.00	G2HDR	1860	Bristol
20.30	G3GDZ	1905	Kingsbury, N.W.9
21.00	G3EFA	1855	Southport
21.45†	G3ETP / G3JMX	1875 / 1860	Lowestoft
22.30†	G3IIR / G3GQK	1915	Norwood
Wednesdays			
18.30	G3GCY	1830	R.A.F., Dishforth
19.00	G3HUB/A	1902	Chelmsford
22.30	G3FBA	1910	Bath
Thursdays			
19.00	G3NC	1825	Swindon
20.00–†...	G2ABR	1919	Hull, Yorks.
21.00 ...	G3FCY / G3GWT / G3KTO		
20.30	G3JQM	1878	Barwick, Yeovil
22.30	G3ADZ	1940	Southsea
Fridays			
19.00	G3BLN	1900	Bournemouth
20.00†	G2FNI / G3EGX / G3ERB	1875	Wirral
20.30	G3ICX	1915	Sutton Coldfield
21.30†	G3KLZ / G3INW (or G3KSS) / G3KEP	1860	Bradford / Bradford / Bingley
Saturdays			
13.00	G2FXA	1900	Stockton-on-Tees
21.00	G3HWI	1987	Blackburn, Lancs.

† *Alternately.*

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

Can You Help?

● A. S. Bragg (B.R.S.11262), 118 Wallace Road, Ipswich, Suffolk, who wishes to borrow the manual for Hallicrafters S27U receiver (27.8 to 143 Mc/s)?

● R. J. Farren (B.R.S.20804), Wilcocks Cottage, Cowfold, Horsham, Sussex, who wishes to borrow the manual for the R.C.A. AR88D receiver?

● A. McGhie (GM3AUE), Rosedale, Isle of Whithorn, Wigtownshire, who urgently requires the circuit diagram and any other details of the Communications Receiver type RL75?

● A. Parker (G3KH), 133 Station Road, Cropston, Leicester, who urgently requires a pair of new or secondhand 35T valves? All enquiries have so far failed to locate a source of supply.

City and Guilds Broadsheet

CITY and Guilds of London Institute is now publishing a periodical *Broadsheet* which reports the Institute's many activities.

Uganda Broadcasting Service

RECEPTION reports on the Uganda Broadcasting Service's transmissions on 5026 and 7110 kc/s will be welcomed by R. J. Davey (G3CIU), Chief Engineer, P.O. Box 142, Kampala.

North Eastern Scotland Regional Meeting

SATURDAY, SEPTEMBER 29, 1956
IMPERIAL HOTEL,
STIRLING STREET, ABERDEEN

Programme

Assemble	2 p.m.
Business Meeting	2.30 p.m.
Tea	4 p.m.
Lecture "The Antennamatch" by Frank Hicks-Arnold, G6MB	4.30 p.m.
Dinner	7.30 p.m.

Tickets price 15/- can be obtained on application to the Region 12 Representative, Mr. Len Hardie, GM2FHH, 91 Inchbrae Drive, Aberdeen, or other local representatives. Last date for applications September 25, 1956.

Messrs. K. E. S. Ellis, G5KW, and J. Taylor, GM2DBX, will represent the Council at the Business Meeting.

Silent Keys

DEREK BOLTON (G3DVB)

We much regret to record the death of Derek Bolton (G3DVB) as a result of a road accident in East Africa where he was working for his employers, The Automatic Telephone & Electric Co., Ltd. Derek was a leading personality amongst Merseyside radio amateurs and his loss will leave a gap difficult to fill. He was for many years President and Chairman of the Merseyside Radio Society and at one time Town Representative for Liverpool.

Our sympathy is extended to his parents and his fiancee, who is the sister of G3GST. G2AMV.

LEONARD FRYER (GM2FR)

With sorrow we record the death on August 13, 1956, of Mr. Leonard Fryer, GM2FR, of Cupar, Fife.

Len Fryer will be especially remembered by pre-war members as author of the monthly feature "Contemporary Literature."

He had been a member for 24 years up to the time of his death.

Deepest sympathies are extended to Mrs. Fryer and to her family.

JOHAN LAGERCRANTZ (SM5SV)

We deeply regret to record the death, following a motor accident on August 18, 1956, of Johan Lagercrantz of Stockholm.

Educated in England, Johan spoke and wrote perfect English. He had travelled widely in Europe and the United States where he had extensive business connections, particularly in the commercial v.h.f. communications field in which the firm which bore his name specialized.

He was an acknowledged expert in and a great enthusiast for all things radio, and although in recent years his call was not often heard due to the demands of his ever-growing business, he was well known in the amateur movement in Sweden.

In Johan's untimely death, those who were privileged to know him well have lost a true and staunch friend. We offer our condolences to his wife and children and to his parents. G2UJ.

W. T. REES (GW3CR)

It is with regret that we record the death of Mr. W. T. Rees (GW3CR) of Gilfach Goch, Glamorgan. Bill, who was active on all bands until going into hospital a few months ago, will be missed by members in the Rhondda area and remembered by them for his unassuming manner and readiness to help.

During the 1914-18 war he served in the Wireless Section of the Royal Flying Corps at the same time as the General Secretary. He was also on war service during 1939-45.

Our sympathies are extended to his wife and family on the passing of a grand old-timer. GW2FOF.

South Western Regional Meeting

SUNDAY, OCTOBER 7, 1956
OSWALD'S HOTEL
BABBACOMBE, TORQUAY

Programme

Assemble	11 a.m.
Lunch	1 p.m.
Business Meeting	2.30 p.m.
Tea	5 p.m.

Tickets 12/6 each from L. Mays (G2CWR), 320 Torquay Road, Preston, Paignton, and W. H. Baker (G3JD), 46 Dower Road, Torquay.

The Immediate Past President (Mr. H. A. Bartlett, G5QA), the Penultimate Past President (Mr. A. O. Milne, G2MI), the Zonal Representative (Mr. R. G. Lane, G2BYA) and the General Secretary will be in attendance.

Letters to the Editor . . .

QWU and Contests

DEAR SIR,—As one engaged professionally in developing u.h.f. and s.h.f. equipment I derive the most pleasure and relaxation from Amateur Radio by operating on the near d.c. bands, chasing DX and entering contests.

In connection with the latter I should like to raise two points. Firstly, I consider J. H.'s *Current Comment* in the June BULLETIN as an invitation to the fellow who hopes to win the contest to cut his own throat. " QWU " sent to a station already worked *in your own log*, does not necessarily mean that you are entered in his log as worked. He may have misread or miswritten your call-sign, or he may not have heard you give an acknowledgment on his last " over." If you send QWU you must also send time to make it mean anything, so which takes the less time " G5UM de G2HPF QWU 2135 G.M.T. BK." or " G5UM de G2HPF 579043 BK? "

Obviously the latter even if you omit the G.M.T., so what time have you saved? In cases where you are called by a station already worked it is, therefore, quicker to work him again and claim only one point for the two contacts.

My second point is could not all societies organizing contests send a full list of results to competitors? A nominal charge of two I.R.C.s should cover any expense involved.

Yours faithfully,
HARRY LOWE (G2HPF).

Chelmsford, Essex. (*Town Representative*)

From Oscillator Stability to Brass-pounding

DEAR SIR,—Dr. Koster's article on a converter for a broadcast set raises a point that also occurs with v.h.f. reception, but for a different reason. To hold a c.w. note steady at v.h.f. requires a high degree of stability in the various oscillators. This snag, and the lack of a b.f.o. in Dr. Koster's design can easily be overcome by simply modulating the local oscillator in any of the usual ways with the desired audio note. If a separate oscillator is not convenient, feeding the oscillator with unsmoothed h.t. will at least enable the signals to be read, but they will of course be T1 all the time!

And may I now cross swords with Mr. Evans (GW8WJ) on the subject of brass-pounding? As one who has a healthy dislike for c.w. except in dire necessity, I must admit to not possessing a key jack in any transmitter except my 2m and 70cm ones. Although a " young stager " by Mr. Evans's lights, I am one of those who believes in using the band and system most convenient for the object in hand—which is usually to harangue the unsuspecting contact on the subject of TV. This I cannot and will not do on c.w. and if 160m is not satisfactory, I use 2m or 80m as the case may be. I am afraid that I do not feel that I am in the wrong, in spite of Mr. Evans—but then I use duplex, or even triplex, to save time, so I am doubly, or even trebly damned!

Yours faithfully,

Great Baddow, Essex. M. BARLOW (G3CVO).

N.F.D. Results

DEAR SIR,—Having complained by correspondence at the late publication of N.F.D. results last year (1955) may I hasten to congratulate all concerned in the prompt announcement of leading stations in this year's (1956) N.F.D. (August BULLETIN, page 80).

Please convey to the Contest Committee my personal appreciation for what is indeed a noble effort.

Well done R.S.G.B. and voluntary helpers.

Yours faithfully,

South Norwood, London. DAVID DEACON (G3BCM).

Our aim is to double the membership

Mobile Converter.—What is believed to be the first British-made mobile converter covering all amateur bands from 3.5 to 28 Mc/s has just been announced by the Minimitter Company. Each band is spread over practically the whole of the full vision slide rule type dial. The complete unit, which measures only 8in. by 7in. by 6¼in., weighs 4 lb and is finished in silver-grey hammer finish with black fittings. The converter has a built-in power supply for home station use and requires only 150-200 volts at 15 mA and 6.3 volts at 0.6 amp for mobile. Models are available for use with receivers tuning to either 1.5 or 6 Mc/s. A descriptive leaflet is available from the Company at 37 Dollis Hill Avenue, London, N.W.2.

Component Catalogue.—Southern Radio and Electrical Supplies, Sorad Works, Redlynch, near Salisbury, have issued a new illustrated 54-page catalogue (No. 10) giving information on a wide range of equipment, components, tools and test gear for the radio amateur and constructor. The catalogue also contains a useful list of Amateur Radio prefixes and Zones. Copies may be obtained by post, price 6d. each.

Signal Shifter.—The work involved in building an all-band transmitter can be greatly reduced by incorporating a Geloso Signal Shifter, an Italian-made unit comprising a Clapp v.f.o. and multiplier stages giving output on 3.5, 7, 14, 21 and 28 Mc/s. Two models are available, one to drive a single 807, the other to drive a pair of 807s or similar valves in parallel. Details of this and other Geloso equipment can be obtained from K.W. Electronics, Ltd., 136 Birchwood Road, Wilmington, Dartford, Kent.

Triode Valves for Microwave Links.—Mullard, Ltd., are now manufacturing triodes for use at frequencies up to 4000 Mc/s. These new valves, the EC56 and EC57, are of disc-seal construction and are distinguished by embodying dispenser cathodes. Apart from giving large emission current densities, this permits precision grinding of cathode surfaces and the employment of very small inter-electrode clearances. A useful result is that the valves generate very little electrical noise and can therefore be used to advantage in sensitive receivers.

New Valve for U.H.F. Mobile Use.—The QQV02-6 is a new Mullard miniature double tetrode power amplifier on a B9A base which will function efficiently up to 500 Mc/s. It has a mutual conductance of 7 mA/V per section and delivers 3.5 watts output when operated at maximum ratings with anode and screen modulation. The centre-tapped heater can be operated from either 12.6 or 6.3 volts; the h.t. needed is only 180 volts.

Flying Lead Valve Assemblies for Chassis Mounting.—Brimar are now producing a range of flying-lead valves assembled on moulded bases suitable for chassis mounting and using the same fixing holes as the corresponding valveholders for plug-in valves. Both screened and unscreened types are available with the bases moulded in either nylon-loaded P.F. or in P.T.F.E.

Polyurethane Foam. — " Stick-a-fix " self-adhesive polyurethane foam, originally used as a draught and dust excluder in the domestic field, is being produced in thicknesses and widths suitable for the mounting of radio and electronic components such as speakers, escutcheons and cathode ray tubes. It is claimed that as the material is inorganic it is insect and bacteria resistant and unaffected by light. Details may be obtained from Sealdraught, Ltd., Chandos House, Buckingham Gate, London, S.W.1.

Home Entertainment Equipment.—The Grundig " Balmoral " radiogram, which uses five loudspeakers, covers long, medium and short waves as well as Band II f.m. broadcasting in addition to being a three-speed auto-change record player. Philco are manufacturing an all-transistor record player which plays 1500 45 r.p.m. record sides on only four U2 torch batteries. The unit can also be used as a baby alarm and Morse practice set.

New Members

Corporate Members, Home (Licensed)

G2AIQ †H. C. L. BARNETT, Marigolds Hotel, Rustington, Sussex
GW2AXT J. K. COUSINS, 14 Earl Street, Abertillery, Mon.
GM3CHX †A. E. JORDAN, 43 Tulloch Road, Perth, Scotland.
G3GUP †E. T. HOWELL, 12 Saffron Way, Walderslade, Chatham, Kent.
G3HKH †M. J. HARRISON, "The Wanderer", Ravensbury Road, St. Paul's Cray, Kent.
G3IWL C. E. GODSMARK, 211 Manwood Road, Crofton Park, London, S.E.4.
G3JPN †P. WEST, 31 Wheeleys Road, Edgbaston, Birmingham, 15.
G3KJU G. E. GRIMMER, 58 Kirkley Run, Lowestoft, Suffolk.
G3JKX M. J. STREET, 277 King's Road, Rayners Lane, Harrow, Middlesex.
G3KMB K. BARNES, 49 Lyell Street, Scarborough, Yorkshire.
G3KMV R. N. BIRCHALL, Dairy House Farm, Colley's Lane, Willaston, Nantwich, Cheshire.
G3KOR R. HALHEAD, 102 Waldgrave Road, Liverpool, 15.
G3KPS F. A. SMITH, 5 Shelley Avenue, Boldon Colliery, Co. Durham.
GW3KWA J. L. PARRY, 21 Penrhos Road, Bangor, Caernarvonshire, N. Wales.
G3KWC D. PAGE, 1 New Cross Road, Stamford, Lincolnshire.
GM3KWN W. C. NICOLL, 32 Durham Square, Portobello, Midlothian.
G3KXQ S. A. FLOYD, 116 Southview Drive, Westcliff-on-Sea.
G3KYJ G. D. WARDELL, 22 Sidmouth Street, Newland Avenue, Kingston-upon-Hull, Yorks.
G3KYS R. KENDALL, 23 Southport Drive, Walney Island, Barrow-in-Furness.
G3KYT K. SCHOFIELD, 201 Upholland Road, Orrell, nr. Wigan, Lancashire.
G3KYX †C. MAXWELL, M.B., Ch.B., 1 Summerdale Terrace, Liverpool, 15
G3KYZ D. J. CLARKE, Sgts. Mess, Royal Air Force, St. Eval, Wadebridge, Cornwall.
G3KZS G. F. D. EDWARDS, Brook House, 31 Ladywood Road, Four Oaks, Sutton Coldfield.
G3KZF T. CROWTHER, 12 Cliff Street, Budlington, Yorks.
G3KZQ G. GODDARD, 28 The Acre, Glossop, nr. Manchester.
G6OV †S. C. E. ASH, 14 Harcourt Road, Redland, Bristol, 6.
G6OX, B. H. QUENTIN, 14 Ennismore Gardens, East Molesey, Surrey.

Corporate Members, Overseas (Licensed)

DL2ZJ A. A. HENSON, O.M.C. Flight, 2 G.S.U., R.A.F. Sundern, 2nd T.A.F., B.A.O.R. 39.
DL4BD, W3DSC V. N. TOTH, Bridge Company, 17th Armd. Engr. Bn. APO 42, U.S. Army.
DL4BX R. F. SNYDER, Field Station 8611 DU, APO 34, U.S. Army.
DL4KAB C. L. HUMPHRIES, 7332nd Tech. TNG Group, Box D-23, APO 191, U.S. Air Force, Europe.
DL4ME D. M. MOORE, FLD STA 8611 DU, APO 34, U.S.A. Army.
F3SK P. MILLOT, 78 Avenue Del'Egalite, Asnieres (Seine), France.
LA1NF K. O. HAUG, Heriot-Watt College, Chambers Street, Edinburgh, 1.
PA0IK S. F. C. HEERMA VAN VOSS, 52A Rapenburg, Leyden, Holland.
VK6ZAA W. J. HOWSE, 53 Ellen Street, Fremantle, West Australia.
VS9AH R. J. HENNING, 2734441 LAC, Saltpans, R.A.F. Khormaksar, Aden.
W1HZE C. R. BROWN, RFD Gilman Street, Yarmouth, Maine, U.S.A.
W1QBP E. P. BONO, 23 Evans Road, Stoneham, Mass, U.S.A.
W2BYY J. F. BRANDT, 55 Biltmore Drive, Rochester 17, N.Y., U.S.A.
W2OXR R. E. GROSS, 11 Belmont Terrace, Staten Island, New York, U.S.A.
W3UXX J. R. SHUTE, 130 Henderson Avenue, Norwood, PA., U.S.A.
ZB2Q S. G. WILLIAMS, Room B20, Signals, R.A.F. New Camp, Gibraltar.
VU2SX R. CONESA, St. Xavier's College Technical Institute, Cruickshank Road, Bombay 1, India.
ZC4TB H. A. C. BLAKE, 48 Edward Road, Northolt, Middlesex.
ZS5MM J. A. SMITHIES, P.O. Wintershoek, Natal, S. Africa.

Corporate Members (British Receiving Stations)

10167 K. J. W. CREAMER, 14 Brynland Avenue, Bristol, 7.
17189 W. J. CUNNINGHAM, 207 Queen's Road, Cheetham, Manchester, 8, Lancs.
18132 K. P. B. WOOD, 82 Avenue Road, St. Neots, Hunts.
21033 C. B. C. HILL, 48 Crowther Avenue, Calverley, nr. Leeds, Yorks.
21034 J. R. PAUL, Hopefield, Wainsford Road, Lymington, Hants.
21035 P. WILKES, No. 2 Police House, Police Station, Immingham, nr. Grimsby, Lincs.
21036 D. G. MONTGOMERY, 59 Warwick Avenue, S. Harrow, Middlesex.
21037 K. H. RICHARDSON, 2 Gosport Street, Barrow-in-Furness, Lancs.
21038 J. McCANN, 10 Southfield Crescent, Coatbridge, Lanarkshire, Scotland.
21039 The Revd. J. L. R. CRAWLEY, St. Anthony's Vicarage, Enslin Gardens, Newcastle-on-Tyne, 6, Northumberland.
21040 R. HOLDEN, 5 Yardside Road, Kilmaurs, Ayrshire, Scotland.
21041 G. A. WARD, 8 Bilsby Close, Ermine Estate, Lincoln
21042 H. S. PEARCE, 90 Priory Road, West Bridgford, Notts.
21043 D. MILNE, 21 Trinity Crescent, Edinburgh, 5, Scotland.
21044 J. M. ASPINALL, 97 Mayfield Road, Dagenham, Essex.
21045 T. W. ROBINSON, 40 Rotherham Avenue, Luton, Beds.
21046 R. OLDFIELD, 197 Coldhams Lane, Cambridge, Cambs.
21047 W. B. ATKINSON, 2 Bowland Road, Denton, Manchester, Lancs.
21048 S. H. ROBINSON, 240 Earlham Road, Norwich, Norfolk.
21049 P. A. H. EVANS, The Bungalow, Pound Lane, Hanwood, Shrewsbury, Shropshire.
21050 T. R. NORTON, 41 Alvin Street, Gloucester.
21051 A. J. HARMSWORTH, High Cox Lease, Lyndhurst, New Forest, Hants.
21052 J. NIGH, 107 Ambleside Avenue, Westbury-on-Trym, Bristol.
21053 D. T. VEREY, 17 Summerville Gardens, Cheam, Surrey.
21054 A. E. DEARDER, 58 Furnival Street, Worksop, Notts.
21055 R. CLEMENTS, 19 Davington Gardens, Dagenham, Essex.
21056 P. E. H. BAILEY, 29 Chapel Grove, Addlestone, Surrey.
21057 J. WRIGHT, 14 Swan Street, Loughborough, Leics.
21058 N. V. PATEL, 63 Linden Gardens, London, W.2.
21059 M. HIRST, 3 Hill, Holmfirth, nr. Huddersfield, Yorks.
21060 *K. W. CANNON, 58 Bakers Avenue, Leyton, London, E.17.
21061 *G. H. WELLS, 21 Ivanloe Avenue, Nuncaton, Warwicks.
21062 K. N. KEEBLE, 5 Rugby Road, Kingsbury, London, N.W.9.
21063 †J. C. CHARLES, 144 Church Road, Hove, 3, Sussex.
21064 †A. D. C. BAKER, 134 Brigstock Road, Thornton Heath, Surrey.
21065 P. ORMEROD, 27 Alness Road, Whalley Range, Manchester, 16
21066 D. JACKSON, 11 Back Lane, Sileby, Leics.
21067 R. W. BEVAN, 52 Allport Road, Cannock, Staffs.
21068 F. A. G. BELLFIELD, 30 Springfield Road, Welling, Kent.
21069 A. M. SADLER, 5 Keyford, Frome, Somerset.
21070 H. H. GARNER, School House, Abridge, nr. Romford, Essex.
21071 L. W. ROCHE, 49 Webbs Road, London, S.W.11.
21072 T. J. PALMER, 199 Bo'ness Road, Grangemouth, Stirlingshire.
21073 P. L. MANN, 39 Outwoods Street, Burton-on-Trent, Staffs.
21074 S. W. P. COLLIER, 12A St. Michaels Place, Brighton, Sussex
21075 G. C. A. COLLIER, Flat C, 7 Earls Court Gardens, London, S.W.5.
21076 C. FORRISTER, Caravan Site, H12, Oldchurch Road, Romford, Essex.
21077 E. R. PERRY, 51 Clissold Crescent, Stoke Newington, London, N.16.
21078 D. R. WILLIS, 34 Aberdare Road, Abercynon, Glamorgan.
21079 B. PRICE, 69 Pershore Road, Edgbaston, Birmingham, 5, Warwicks.
21080 J. W. HEAD, 119 Albert Road, Leyton, London, E.16.
21081 N. C. BUNT, L.D. Airport, Wick, Caithness.
21082 D. M. B. TAYLOR, Rosebank Hotel, Thurso Street, Wick, Caithness.
21083 D. E. PURCHESE, 44 Chesterfield Road, Barnet, Herts.
4912 †W. G. DOBBIE, 32 Limeside Avenue, Rutherglen, Glasgow, Scotland.

Corporate Members (British Empire Receiving Station)

927 C. K. VAN LARE, c/o 2 Apsley Villas, Cotham, Bristol, 6.
928 †G. P. LOVELOCK (4035697 Sgt.), Sgts. Mess, Royal Air Force, Nicosia, BFPO53, Cyprus.
929 D. C. D. POTTER, Officers Mess, R.A.F. Oldenburg, B.A.O.R. 25.
930 THAM YEN THIM, 46/48 Campbell Street, P.O. Box 30, Penang, Malaya.

Corporate Members (Foreign Receiving Stations)

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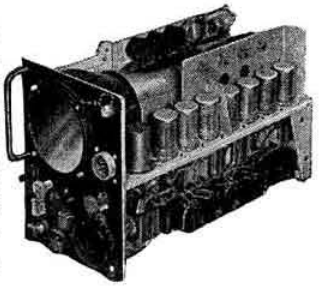

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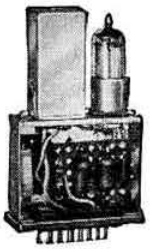

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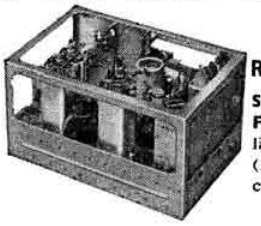

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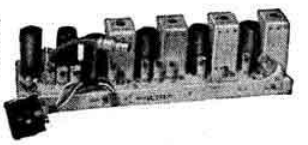

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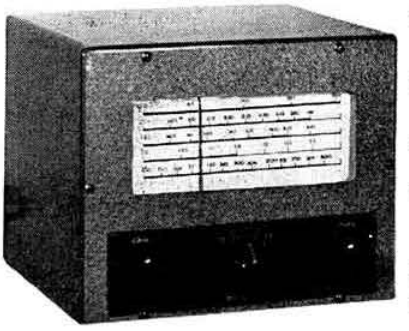

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(Continued on page 140)

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U.H.F. Superhet R1294 10-60 cm., requires two EF50's for perfect working order. Front panel soiled, but good bargain at £5. Prefer buyer collects. Smith, 150 Wanstead Park Avenue, London, E.12. (100

UNUSUAL opportunity: AR88LF complete "S" meter, handbook. 2kW Variac meters, transformers, chokes, valves, resistors, etc. Accept any reasonable offer for lot or part. Call or write. Will deliver over wide area. Hague, 21 Ellingham Road, Chessington, Surrey. (114

WANTED about six HY1231Z valves, also gen. on 62MK II transceiver; prices, to G3FXF, 11 Cecil Street, Huddersfield. (92

WANTED BC610 Hallicrafters, E.T.4336 transmitters, and spare parts for same. Best prices. P.C.A. Radio, Beavor Lane, Hammersmith, W.6. (626

WANTED: HRO coils, receivers, power packs, AR88Ds, AR88LFs, SX28s, BC348s, AR77s, and many other types, also laboratory test equipment and R54/APR4, TN17, TN18 and TN19 units. Details please to R. T. & I. Service, 254 Grove Green Road, Leytonstone, London, E.11 (LEY 4986).

WANTED. Small cheap portable transmitter or light transmitter/receiver. Battery or mains. Top band preferred. With modulator, power supply, ready for use. Collect London area. Box 97, The National Publicity Co., Ltd., 36/37, Upper Thames Street, London, E.C.4. (97

25W. Modulator; Woden UM1 and DT1; 2 x 6L6; Carbon or m.c. input; offers, G3DZZ, 60E Lewis Buildings, Liverpool Road, London, N.1. (96

APPOINTMENTS SECTION

Situations Vacant

CHIEF TECHNICIAN required by POSTS AND TELEGRAPHS DEPARTMENT, NIGERIA FEDERAL GOVERNMENT for one tour of 12 to 24 months in first instance either (a) with prospect of permanency salary scale (including Inducement Addition) £1,014 rising to £1,284 a year; or (b) on temporary terms salary scale (including Inducement Addition) £1,170 rising to £1,488 a year with gratuity at rate of £150 a year. Outfit allowance £60. Free passages for officer and wife. Assistance towards children's passages and grant up to £150 annually towards maintenance in U.K. Liberal leave on salary. Candidates must have had wide practical experience of modern radio technique and equipment, in particular V.H.F. equipment, and preferably also V.H.F. multichannel equipment. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/41905/RC. (104

DEPUTY RADIO MONITORING OFFICER required by HONG KONG GOVERNMENT Defence Department for one tour of three years in first instance. Salary scale (including expatriation pay and present temporary allowance at rate for single men) equivalent to £1,277 rising to £2,216 a year. Additional temporary allowance of £125/£251 a year (married men) and £209/£418 (family men). Gratuity at rate equivalent to £150/250 a year. Free passages. Liberal leave on full salary. Candidates, preferably single, must be qualified ex-R.N. or R.A.F. SIGNALS OFFICERS with at least four years experience in morse code reception, direction finding theory and practice, H.F. direction finding both static and portable, and organising and running a radio Monitoring Unit or receiving station. They should also possess a simple knowledge of charts, maps and position finding. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote: M2C/41902/RC. (98

EXPERIMENTAL ENGINEER—The well-known manufacturers of "Avo" Electrical, Electronic and Nucleonic Instruments require a resourceful electrical engineer, age 20-50. Permanent and progressive position. Must (a) hold

APPOINTMENTS SECTION (Contd.)

H.N.C., O.N.C. or equivalent in electrical engineering; (b) have had practical experience of designing and building delicate electrical instruments; (c) have a good command of English. Write in confidence, giving details of experience and salary required, to:—H. S. Macadie, Acweeco Ltd., 92-96 Vauxhall Bridge Road, London, S.W.1. (102

G5UM requires young amateur as editorial assistant on the three editions of "The Murphy News". Some flair for writing obviously essential but other editorial techniques will be taught. £400 p.a. to start with. Write Jack Hum, Murphy Radio Ltd., Welwyn Garden City, Herts. (123

RADIO MAINTENANCE TECHNICIAN required by POLICE DEPARTMENT, GOVERNMENT OF NORTHERN RHODESIA, for one tour of 36 months in first instance. Salary, according to age and experience, in scale £705 rising to £1,200 a year. Free passages. Liberal leave on full salary. Candidates, aged 25 to 35, must possess academic qualifications in Mathematics and Physics of matriculation standard, together with sound knowledge of installation and maintenance of modern low and medium powered V.H.F. static and mobile equipment. H.F. transmitters and receivers, petrol generators and diesel electric sets. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/41913/RC. (115

WIRELESS TELEGRAPHY OPERATORS required by FALKLAND ISLANDS GOVERNMENT Wireless Station for one tour of three years in first instance. Salary scale (including expatriation allowance) £390 rising to £500 a year. Commencing salary according to experience. Free passages. Liberal leave on full salary. Candidates must be SINGLE and possess P.M.G. Certificate. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/41891/RC. (94

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