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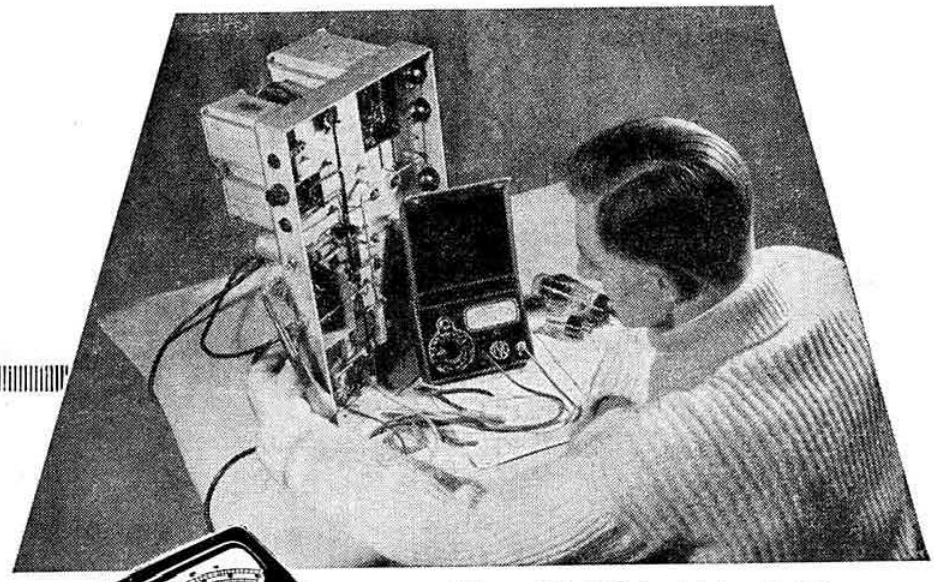

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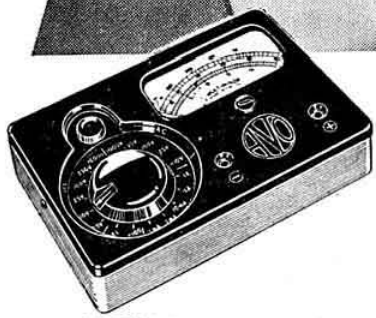

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Volume 35 No. 3
September 1959

R.S.G.B. BULLETIN

CONTENTS

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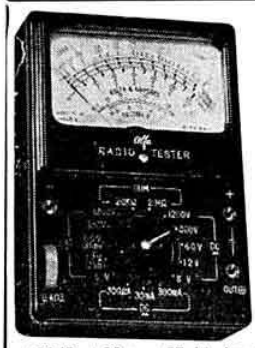

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Current Comment

discusses topics of the day

The Bulletin

BROWSING through the index to a volume of the BULLETIN can be an illuminating and gratifying experience—it is surprising how many items which have previously been passed over catch one's eye when their titles are assembled in methodical order. Although such an index is essentially a working guide to the store of information contained in the volume, it has the effect of making a collection of magazines into a book reflecting the many facets of Amateur Radio. Perhaps the most striking fact is the amount of information in a multitude of fields that is brought together in the space of a year and the compass of twelve issues.

The index to Volume 34, which members received with their BULLETINS last month, was no exception. That volume contained well over 100 technical and constructional articles and references, ranging from "Telemetering Information from Satellites" and "I.G.Y. Progress Report" (July 1958), "Non-resonant Television Aerials" (November 1958) and "Short Wave Propagation Time for Different Distances" (April 1959) to a "Versatile V.F.O./Transmitter" (June 1959). Test gear, transmitting and receiving equipment, aerials, power supplies, audio gear and workshop tools were all dealt with in a variety of articles which seem to take on an added interest once the twelve issues are bound into book form with their index. The competitive side of Amateur Radio was not forgotten: there were over 80 reports and references to contests, trophies and awards, and more than 250 miscellaneous articles and references relating to a surprising number of subjects of concern to the transmitting amateur and listening member alike, not to mention the BULLETIN's world renowned regular features such as *The Month on the Air* and *Four Metres and Down*, themselves chronicles of the progress of Amateur Radio.

Despite wars and disputes, the BULLETIN has continued to provide the broad survey of the whole field of Amateur Radio the founders had in mind when the first issue appeared in July 1925. Incidentally, since then, an issue has been published for *every* month, a record of which the Society may be justly proud.

Volume 35 holds promise of being worthy of its predecessors. The August issue contained articles the subjects of which are likely to have a considerable bearing on the development of the hobby in the years to come. The current issue, notwithstanding its late publication, is no less timely: s.s.b. transmission has been debated with some heat for many years whenever amateurs have met in person or on the air; more recently, the system appears to have become considerably more popular. Indeed, it might almost be said that sideband, as its devotees refer to it, is no longer a "dirty" word in amateur circles. Its advantages are well known but its technique remains a mystery to many of us brought up on ordinary amplitude modulation. The article which commences on the next page clearly expounds the design considerations behind the construction of the all-band single sideband transmitter to be described next month.

In the present crowded state of the amateur bands, any device which helps to make operating more pleasant is worthy of careful consideration. Last month's article on the Q Multiplier aroused much interest: the article on a fast break-in control unit in this issue is likely to receive at least equal attention. N.F.D. operators will find this article and the tabulation of results on the centre pages their special meat this month.

Producing each issue of the BULLETIN is by no means a one man job—it represents the work of many people to turn out a magazine of this type every month for more than 34 years. There are the writers of the technical articles and commentaries, the members of the Technical Committee who "vet" articles prior to publication, the members of other Committees whose work results in reports and special articles on many topics, the contributors of reports on local affairs and band conditions, the draughtsman who prepares the diagrams, the printers and compositors, the advertisers—they all play their part in making the BULLETIN possible. For some of them it is their job or business of course, but fundamentally the pre-eminence of the Society's journal amongst British magazines for the radio enthusiast rests on the fact that it has a voluntary "staff" of nearly 10,000—the members of the R.S.G.B. whose co-operative efforts for the "mutual exchange of ideas," as it was expressed in July 1925, culminate in such worthwhile productions as the recently completed volume.

Reference to the volume index shows how successful this co-operation is.

London Lecture Meeting
Friday, October 16, 1959

"Practical Applications of Transistors for the Radio Amateur"

by T. D. Towers, M.B.E., M.A., B.Sc., Grad.Brit.I.R.E.
(Chief Development Engineer, Newmarket Transistors Ltd.)

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Buffet Tea 6 p.m. **Lecture 6.30 p.m.**
Members are invited to bring friends to this meeting

The G2DAF S.S.B. Transmitter

Full Coverage on Six Bands with 50 watts Peak Output
Part 1.–Design Considerations

By G. R. B. THORNLEY (G2DAF)*

MANY queries, both personal and on the air, indicate that the newcomer to s.s.b. and the A3 man who is contemplating "getting his feet wet," find difficulty in obtaining the help they require. While there is plenty of information on the construction of basic exciters for one or two band operation there is no information to lead on from that to the advisable requirements where all band coverage from 160 to 10m is required.

The transmitter to be described is the result of 12 months' practical s.s.b. operating experience with a filter type exciter and continuous experimental and development work during this period in an effort to solve the associated problems. The aim was to develop a method which would be inherently simple and straightforward and that could be duplicated by the average amateur without the necessity to buy expensive or specialized components, or to need elaborate test equipment for final alignment. All considerations in regard to coils and circuitry are from this view point. No attempt has been made to go into involved mathematical theory. The writer's opinions do not mean that it is not possible to use some other method. If the original development had been from a different approach the end result might have been different too.

The transmitter can be heard on the 80m band almost nightly and its circuitry has aroused considerable interest among s.s.b. operators already. At the time of writing three experienced 80m s.s.b. operators who have been sent a copy of the circuit have decided to build it and further requests for more details continue to be received.

Basic Requirements

The basic requirements for a modern s.s.b. transmitter are:

(1) Self-contained unit with 500 kc/s coverage in each of the six amateur bands from 160 to 10m.
(2) Direct frequency calibration on all bands with single knob frequency setting control.
(3) Ganged band-switching.
(4) Sideband switching without change of output frequency.
(5) High degree of frequency stability *and setting accuracy*.
(6) Suitable for A1, A3 or A3a transmission.
(7) Enough output to be used as a self-contained transmitter, or to drive fully any linear amplifier including grounded grid (50 watts peak).
(8) Better than average sideband and carrier suppression.
(9) A clean signal free from harmonic and third order products.
(10) Simple straightforward construction and alignment, without any " trick " circuits.

These requirements are often conflicting and it is felt that a discussion on the reasoning lying behind the development of the present circuitry will be of interest.

S.s.b. Generation

There are two basic methods of generating an s.s.b. signal—phasing and filter. The writer has constructed and operated exciters using both methods and has an open mind on the subject. It is however generally agreed that the filter method can achieve a greater degree of sideband and carrier suppression and is more stable over a long period. There is also the added advantage that experience gained in the construction of a crystal bandpass filter can often be put to good use by incorporating a duplicate in the receiver.

Sideband Switching

Sideband switching can be obtained in a number of ways:

(1) By tuning the v.f.o. above or below the operating frequency.
(2) By using harmonics of the carrier crystal.
(3) By switching two carrier crystals—one either side of the pass-band.
(4) By using separate heterodyning crystals and an additional mixer.

Tuning the V.F.O. This conflicts with the requirements of single knob frequency control.

Using Harmonics. In the writer's opinion the use of harmonics of the carrier crystal for sideband switching should be avoided. Fig. 1 shows a block diagram of this type of set-up. If for instance the sixth harmonic is selected to give low sideband output at the mixer anode, it can be seen that any leakage of the fundamental or second harmonic of the carrier frequency into the mixer M2 will produce the fourth harmonic and give high sideband output and degrade the sideband suppression of the filter. In other words this requires that the ratio of the generation of the wanted harmonic to the suppression of the unwanted harmonic should be as good as the filter. With normal amateur layout and construction it is difficult to prevent leakage into the mixer due to wiring capacity and common h.t. and l.t. feeds to the associated valves and components. Leakage of the carrier frequency also by-passes the carrier balance of the balanced modulator M1, and requires an additional carrier balance at the mixer M2. As this follows the filter, the usual 20db suppression (due to the positioning of the carrier crystal in relation to the filter response) is lost, and the balance in M2 becomes more critical. This balance is sensitive to both change of amplitude and phase of the heterodyning input. To maintain carrier suppression when switching sidebands requires that both the amplitude and the phase of this input remain constant.

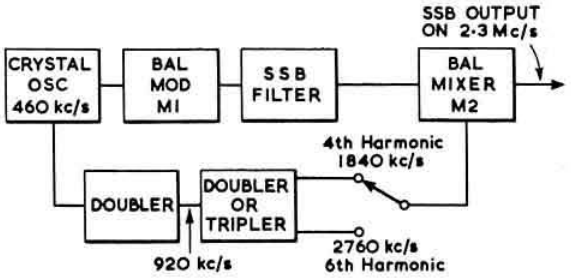


Fig. 1. Block diagram of sideband switching using harmonics of the carrier oscillator.

* *5 Janice Drive, Fulwood, Preston, Lancashire.*

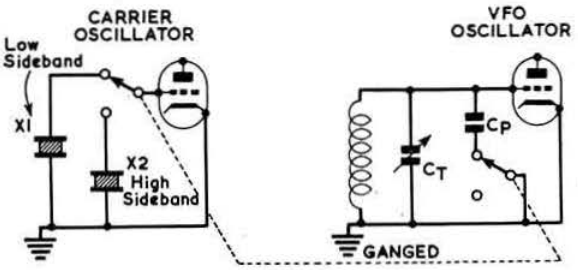


Fig. 2. Sideband switching circuit showing the method of correcting the v.f.o. frequency. CT is the normal tuning capacitor.

Switching Carrier Crystals. A bandpass crystal filter can be constructed to give good sideband suppression with a symmetrical response curve. If two carrier crystals are used —positioned either side of the passband—selection of the required crystal by means of a change-over switch will give either low or high frequency sideband output. This requires one more carrier crystal only and is simple and foolproof. Its disadvantage is that the output frequency of the transmitted signal shifts by the same amount as the carrier crystal spacing and this requires (if switching is done during a contact) correcting by re-tuning the v.f.o. Some method of ganging a frequency correcting device to the selector switch would overcome this objection (see Fig. 2).

It will be appreciated that the required capacity is not constant and will vary from one end of the band to the other, depending on the value of *CT* in use at the operating frequency. The writer has overcome this problem in a very simple manner. *CP* is made a variable capacitor of 5 pF maximum capacity and is ganged to a single pole six way Yaxley switch in such a way that during rotation from 0° (minimum capacity) to 85° X1 is selected, and during rotation from 95° to 180° (maximum capacity) X2 is selected. The panel is engraved as shown in Fig. 3. After a little experience the exact position in which to put the pointer for sideband switching—at any position of the main frequency setting control—is readily known.

Using Heterodyning Crystals. This method is good. The required heterodyning frequencies are remote from the carrier and sideband generation frequencies and the performance of the carrier balance and the sideband filtering circuits are not affected. It requires an additional crystal oscillator and mixer stage, and an additional intermediate frequency. At first sight this may appear an unnecessary elaboration; but in fact—apart from the sideband switching function—the use of an intermediate frequency confers considerable advantage and simplifies the required circuitry in those stages following the tunable output mixing process (the mixer taking the v.f.o. input).

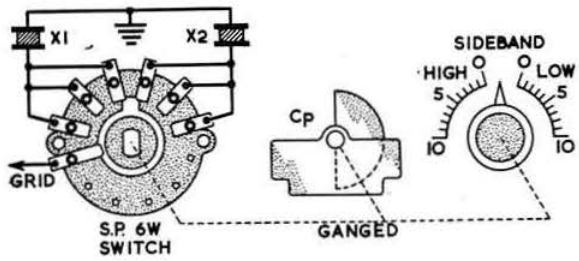


Fig. 3. Method of ganging a Yaxley switch, variable capacitor and control knob for sideband switching. If the v.f.o. mixing is additive, the carrier crystal on the high frequency side of the filter will be connected in position X2. If it is subtractive, the carrier crystal will be connected in position X1. The "high" and "low" sidebands may not be as shown—they could be reversed, depending on whether a further mixing process is used after the v.f.o. and its type, additive or subtractive.

Choice of Mixing Frequencies

Having decided to use a crystal filter exciter with 500 kc/s tunable coverage on six bands, it will be well to review the possible methods that could be used.

If two frequencies *F1* and *F2* are fed into a mixer it is important to remember that the mixer output will contain frequencies composed of the following:
F1; F2; F1 + F2; F2 − F1; 2F1 + F2; F2 − 2F1; F1 + 2F2; 2F2 − F1; 2F1 + 2F2; 2F2 − 2F1; 3F1 + F2; and in addition the harmonics of the two input frequencies. Assuming the inputs were 500 kc/s and 3,000 kc/s the mixer output would have these frequencies:
500, 3,000, 3,500, 2,500, 4,000, 2,000, 6,500, 5,500, 7,000, 5,000, 1,000, 1,500, 4,500, 6,000, etc. It will be seen, therefore, that a train of frequencies has been generated separated by *F1* (the lowest input frequency).

The response or selectivity curve of an average tuned circuit of the kind likely to be used is shown in Fig. 4.

The two frequencies most difficult to eliminate will be the two either side of the wanted output *FO: FO − F1* and *FO + F1*. The curve shown is actually that of the 80m coil in position in the writer's transmitter. The Q of the circuit can be determined from the formula $\frac{FO}{Fh - Fl} =$

$$\frac{\text{centre frequency}}{\text{bandwidth of selectivity curve at } \frac{1}{\sqrt{2}} \text{ of maximum response}}$$

$$= \frac{\text{centre frequency}}{\text{bandwidth at 3db points}}$$

In this particular case this gives a value of Q = 35. The response has been plotted with the coil and the associated capacitor *in situ* in the chassis and is affected by the shunt loading of the anode resistance of the valve, the shunt h.t. feed, and the following grid input resistance. It is considered by the writer to be more sensible to consider the function of the tuned circuit under actual operating conditions rather than to consider the unloaded Q measured on a Q meter. The response shown is believed to be a fair average of many tests taken on representative coils and at different frequencies.

The two frequencies it is desired to eliminate are 500 kc/s removed. Plotting the 500 kc/s point on the response curve gives an attenuation of 20db and it is noted that the ratio

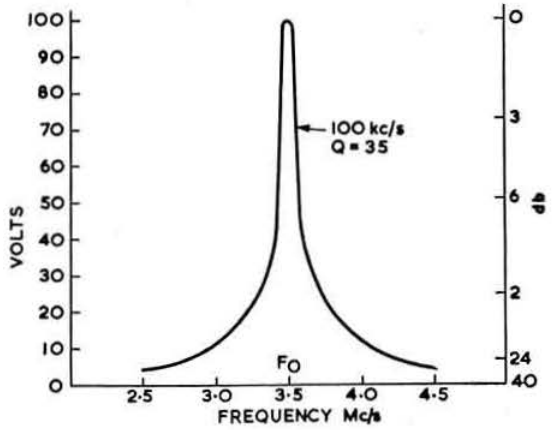


Fig. 4. Resonance curve for an 80m coil.

FO : FI is 7 : 1. A tuned circuit with equal Q value resonant at 7·0 Mc/s would have the same response curve and is shown by Fig. 4 by doubling the frequency scale. However 500 kc/s off tune is now a ratio of 14:1 and the attenuation has dropped to 14db. If the circuit were resonant at 1·75 Mc/s, 500 kc/s off tune would be a ratio of 3·5 : 1 and the attenuation would have increased to 25db.

It is therefore clear that the lower the ratio *FO : FI* the better the attenuation from the tuned circuit. If two tuned circuits are used, coupled to give the highest possible selectivity without too much loss of gain (a practical compromise is to reduce coupling to 0·5 of critical) the total attenuation is approximately 1·6 times that of a single tuned circuit, and in this case would be 20 × 1·6 = 32db.

Looked at the other way round it can be seen that if an attenuation of 32db is required from two coupled tuned circuits in the mixer anode, the ratio of the lowest input frequency to the required output frequency should not exceed a ratio of 7 : 1. In the writer's opinion 35db is the lowest possible value that should be used for satisfactory operation. Inspection of the resonance curve shows this is equivalent to a ratio of 6 : 1 (22 × 1·6 = 35·2db). Practical experience with two coupled tuned circuits following the mixer also bears this out—it is possible to go to a ratio of 8 : 1 (i.e. direct from the carrier frequency into the 80m band; or direct from 80m to 10m) but it is safer and results in a cleaner output to keep within the ratio of 6 : 1.

To sum up:

(i) In the interests of constructional simplicity it is desirable to keep the number of tuned circuits at the mixer output to two.

(ii) Assuming two coupled tuned circuits and normal Q values the multiplying ratio of the mixing process should not exceed 6 : 1.

(iii) With the usual value of carrier crystal 450 – 465 kc/s a 6 : 1 ratio sets the upper limit of the first multiplying process to 2·7 Mc/s.

(iv) A lower value than 6 : 1 will give greater attenuation of the unwanted products and therefore a cleaner output.

(v) The lower multiplying ratio can be obtained either by increasing *FI*, or reducing *FO;* or a combination of both.

Wideband Couplers

The elimination of ganged tuned circuits by the use of wideband couplers is naturally an attractive proposition to the designer. However like all things in radio they have their limitations. Before the final choice is made, it will be of interest to review the various considerations involved.

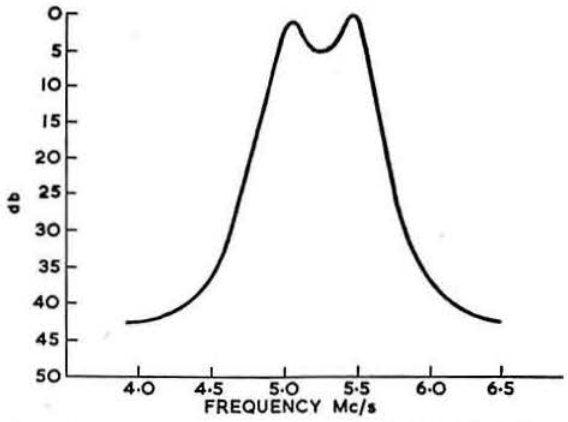


Fig. 5. Frequency response of a nominally 500 kc/s wide bandpass coupler.

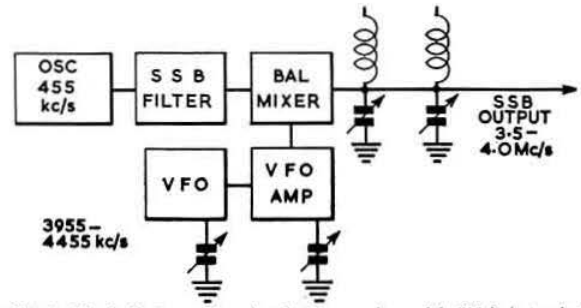


Fig. 6. Block diagram of a simple 80m exciter with 500 kc/s tuning range.

Fig. 5 shows the response of a two circuit wideband coupler with 500 kc/s bandwidth. It will be noted that the attenuation falls off gradually and that there is considerable response out to several hundred kilocycles beyond the passband limits.

As a starting point let it be assumed that it is possible to design a multi-element 500 kc/s bandpass filter with almost vertical sides, and that this is to be used. The input frequencies to the mixer are 455 kc/s s.s.b. and 3955 to 4455 kc/s from the v.f.o. to give a basic output of 3·5 to 4·0 Mc/s. It will be seen that if 3·5 Mc/s output is required the v.f.o. would be set at 3955 kc/s. This is, however, within the filter passband so that the heterodyning frequency it is desired to eliminate would be passed on to the following stages. Should an output of 4·0 Mc/s be required the third order product (*F2 — 2F1*) at 3545 kc/s would also be within the passband. In practice, in order to attenuate the unwanted products satisfactorily, it would be necessary to narrow the passband to come inside 3955 and 3545 kc/s and in order to have some margin of safety to allow for alignment tolerance in the filter response. In view of possible changes of carrier crystal frequency it would in practice have to be reduced to about 350 kc/s wide. The average amateur constructed wideband coupler is unlikely to have an idealized response curve while with a simple two circuit filter the slope of the sides is less steep and the attenuation of unwanted products not so great and the margin of safety will have therefore to be correspondingly greater. A reasonable figure would be a bandwidth not greater than one-third of the lowest input frequency to the mixer. If a bandwidth of 500 kc/s is required this implies that the lowest input frequency to the mixer is not less than 1·5 Mc/s.

To sum up:

(i) Assuming a simple two circuit wideband coupler, the bandwidth cannot be greater than one-third of the lowest input frequency to the associated mixer.

(ii) If this ratio is made greater the attenuation of the unwanted products will be improved.

A block diagram of a simple exciter in which the 455 kc/s s.s.b. output is to be mixed with a v.f.o. tuning 3955 to 4455 kc/s to give a basic output in the 80m band is shown in Fig. 6. As wideband couplers cannot be used and the selectivity of two tuned circuits is necessary to eliminate the unwanted products, it would be necessary for these circuits to be tunable throughout the band. A v.f.o. run at low level for reasons of stability would probably require an amplifier to give the necessary level of heterodyning input voltage to the mixer. As one of the basic requirements is a single knob frequency setting control the design would require a four gang tuning capacitor with series padding capacitors on the two oscillator sections and the work involved in obtaining accurate tracking throughout the range.

Heterodyning to Other Bands

Where the transmitter is required to cover all six amateur bands from 160 to 10m the apparently simple method is to

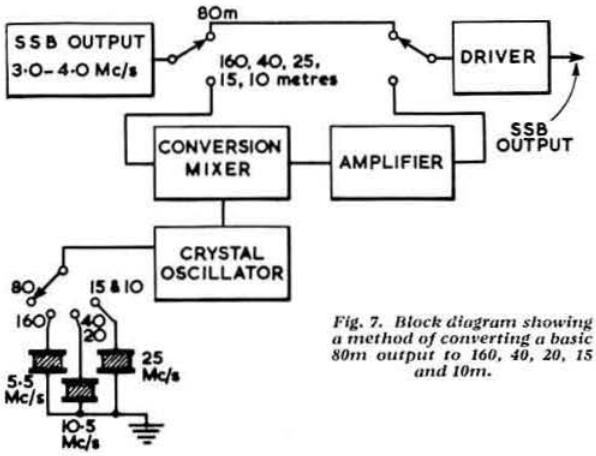


Fig. 7. Block diagram showing a method of converting a basic 80m output to 160, 40, 20, 15 and 10m.

arrange the basic output in the 80m band and to use a conversion mixer and oscillator with three switched crystals —10·5 Mc/s to give a difference frequency output on 40m and an additive output on 20m; 25 Mc/s to give difference output on 15m and additive output on 10m; and 5·5 Mc/s to give difference output on 160m.

The disadvantages are as follows:

(1) Switching of the output which has to be connected to the driver for basic 80m operation, and to go to the conversion mixer—and the mixer output to the driver grid—for operation on other bands. (See Fig. 7.) This method can become complicated particularly if balanced high impedance output and inputs are required. If the switching is at low impedance a link winding will also be required on each associated coil.

(2) Because the s.s.b. output is below the heterodyning frequency on three bands, and higher on the other two bands, the basic coverage has to be doubled to 1,000 kc/s in order to obtain a 500 kc/s coverage on each band. This increases the v.f.o. ganging difficulties and also reduces by half the bandspread of the main tuning dial.

(3) It will be seen that when operating on 40m the second harmonic of the basic 80m s.s.b. output will be within the passband of the driver and linear amplifier circuits. This is the worst fault of this system.

(4) Where the basic exciter has a 500 kc/s coverage from 3·5 to 4·0 Mc/s, 160m s.s.b. output is often obtained by heterodyning with some convenient crystal frequency. Remembering the 160m band has a bandwidth of 200 kc/s from 1·8 to 2·0 Mc/s, consideration of the factors involved will show that the lowest frequency that can be used for heterodyning is 5·5 Mc/s and the highest is 5·8 Mc/s. This is the difference between the heterodyning frequency and the 80m basic output. Unfortunately the mixing process will produce the second harmonic of the 80m s.s.b. output and this will also be heterodyned by the crystal oscillator to give a spurious distorted signal. When the v.f.o. is altered this signal changes frequency at twice the rate of the wanted signal and in the opposite direction. Table I has been compiled to show this clearly.

Many existing exciters are peaked to give maximum output at the h.f. end of the 80m band. There is therefore the temptation to use this frequency with either a 5·7 Mc/s (or the easily obtainable 5·72 Mc/s) crystal to give output in the 160m band in the s.s.b. channel 1·9 to 1·925 Mc/s. Under these conditions the spurious output is either on or very close to the wanted output. If any adjustment is made to the main tuning, either initially to find a clear channel or to avoid interference, the spurious output will move twice as fast and in the opposite direction. Whilst it is appreciated that this output will not be as strong as the wanted one, it will most certainly be radiated by the aerial with sufficient strength to cause interference to stations in a wide area. It can at certain settings of the main tuning actually be on the wanted output frequency and put severe distortion on the transmitted signal.

The safe choice would be to run the 80m basic exciter from 3·0 to 3·2 Mc/s with a 5·0 Mc/s crystal. This will give a 160m output of 1·8 to 2·0 Mc/s. The spurious output at its nearest position will be 400 kc/s away and will be attenuated to a reasonable level by the selectivity of the amplifier valve output circuit.

(5) The use of a basic 80m exciter to heterodyne to 160 and 40m is not a satisfactory method. Its use should be confined to heterodyning to 20, 15 and 10m only.

TABLE I

Basic 80 metre s.s.b. output	Second harmonic of basic 80 metre output	Heterodyning crystal frequency	160 METRE OUTPUT	
			Wanted	Spurious
Mc/s	Mc/s	Mc/s	Mc/s	Mc/s
3·5	7·0	5·5	2·0	1·5
3·6	7·2	5·5	1·9	1·7
3·7	7·4	5·5	1·8	1·9
3·6	7·2	5·6	2·0	1·6
3·7	7·4	5·6	1·9	1·8
3·8	7·6	5·6	1·8	2·0
3·7	7·4	5·7	2·0	1·7
3·8	7·6	5·7	1·9	1·9
3·9	7·8	5·7	1·8	2·1
3·8	7·6	5·8	2·0	1·8
3·9	7·8	5·8	1·9	2·0
4·0	8·0	5·8	1·8	2·2

The use of a neutral frequency for the initial *tunable* s.s.b. generation eliminates all these difficulties. It enables the output to be permanently connected to the conversion mixer, and it also overcomes the difficulty of bandspread.

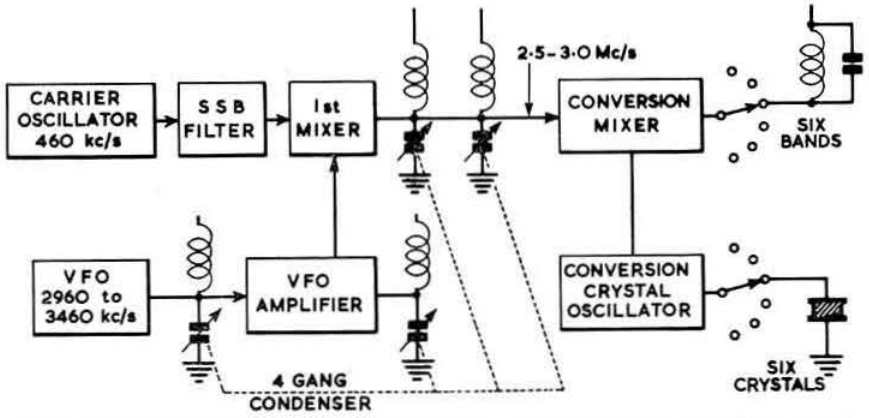


Fig. 8. Block diagram of an exciter with ganged tuning. The output on a neutral frequency of 2·5 to 3 Mc/s feeds into a conversion mixer and oscillator for all-band output.

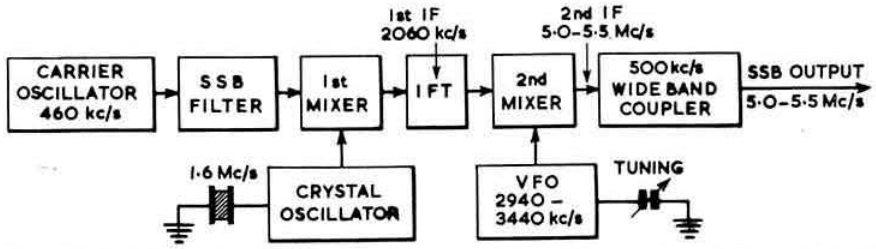


Fig. 9. Block diagram of an exciter with output on a neutral frequency using a single tuned circuit and a 500 kc/s wide bandpass filter.

Using a Neutral Frequency

The term " neutral frequency " is defined as the *tunable* s.s.b. output available at the anode of the mixer receiving the v.f.o. input.

The apparently simple method of starting off in the 80m band has been found to be not so simple after all and it will be of interest therefore to look at the considerations affecting the preferred method—that of using a neutral frequency.

The first requirement is to find some band 500 kc/s wide, clear of the amateur bands to be used, and preferably midway between two of them, as high in frequency as possible but not exceeding the safety factor of a 6 : 1 multiplying ratio. (With a carrier frequency of 460 kc/s this sets an upper limit of 2·76 Mc/s.) A reasonable choice would be 2·5 to 3·0 Mc/s. The v.f.o. could operate either above or below the output frequency. The block diagram of such an arrangement is shown in Fig. 8. A tunable coverage of 500 kc/s is required and two tuned circuits will be necessary at the anode of the mixer M1 to eliminate the unwanted products. With an input frequency of 460 kc/s a wideband coupler cannot be used and the circuits will have to be continuously tuned. This exciter is basically a good design but it has the complication of requiring four ganged tuned circuits.

Reverting back to the considerations affecting the required coil circuitry and summing up:

(1) Frequency multiplication must not be more than 6 : 1 for a carrier frequency of 460 kc/s. This limits the first mixer output to 2·76 Mc/s maximum.

(2) Wideband coupler bandwidth not more than one-third of the lowest input frequency to the associated mixer. For 500 kc/s bandwidth the lowest input frequency that can be used is 1·5 Mc/s to the mixer.

These requirements can be met by using an intermediate stage of mixing as shown in Fig. 9. The advantages are as follows:

(i) Frequency multiplication does not exceed the ratio of 5·5 to 1.

(ii) The lowest frequency input to the mixer feeding into the wideband coupler is more than four times the bandwidth of 500 kc/s.

(iii) If the oscillator input to the first mixer is made switchable with one crystal 2060 kc/s less 460 kc/s and the second crystal 2060 kc/s plus 460 kc/s switching crystals will change the sideband output without changing the output frequency. (The fifth basic requirement.)

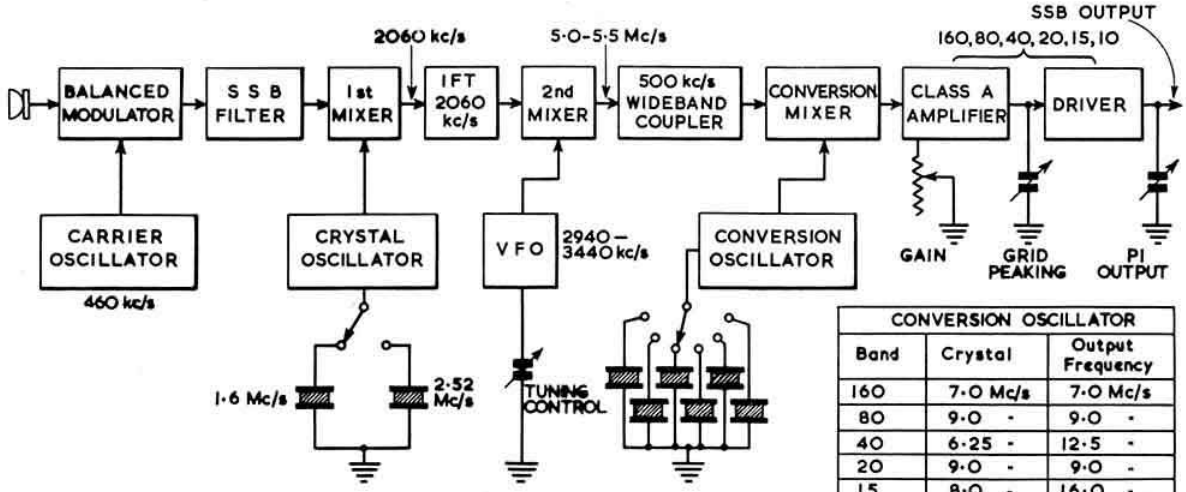
(iv) As the push-pull anode type of mixer used has a higher conversion efficiency than the parallel anode type, a lower v.f.o. output voltage is satisfactory and a v.f.o. amplifier is not required. This simplifies the tuning to one coil and one variable capacitor.

(v) The conversion mixer anode circuit is pre-tuned and set to peak at the centre band position on each range. This rise in output compensates the dip (of the order of 5 to 6db) at the centre of the wideband coupler response curve. The overall s.s.b. output from the exciter rises by approximately 3db at the centre of the 80m band and is virtually constant throughout the required tuning range on the 160, 40, 20, 15, and 10m bands.

A block diagram of the final design is shown in Fig. 10.

Choice of Mixer Valve

It is important in the mixing process that the amplitude of the sideband output of the mixer faithfully follows the amplitude of the sideband input to the mixer. In order to be able to obtain this linearity the heterodyning input must be



CONVERSION OSCILLATOR		
Band	Crystal	Output Frequency
160	7·0 Mc/s	7·0 Mc/s
80	9·0 -	9·0 -
40	6·25 -	12·5 -
20	9·0 -	9·0 -
15	8·0 -	16·0 -
10	11·5 -	23·0 -
or 10	11·75 -	23·5 -

Fig. 10. Block diagram of the final design for an all-band s.s.b. transmitter. The conversion mixer and oscillator automatically give the correct sideband output (low for 160, 80 and 40m; high for 20, 15 and 10m). Sideband switching is included as a useful operating convenience but may be omitted if desired.

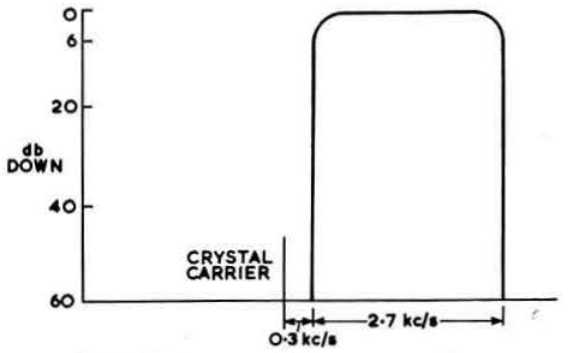


Fig. 11. Ideal audio response of a bandpass filter.

considerably stronger—of the order of 12 to 20db—than the peak sideband input. The anode tuned circuit could not sufficiently attenuate this strong input, and it is therefore advisable—in fact essential—to use a balanced type mixer (double diode, triode, tetrode or pentode) in which the heterodyning voltage can be fed in in such a way that " balance " (attenuation) can be obtained in the output circuit.

Filter Requirements

The output of the balanced modulator is composed of a double sideband suppressed carrier signal. This is fed into the input of the crystal bandpass filter whose function is to " suppress " one sideband and pass the other within the audio limits required for intelligible speech—300 to 3000 c/s. Filter response is normally measured at the 6db points and has to be 2700 c/s wide with the carrier frequency positioned so that it is 300 c/s from the filter passband. The ideal frequency response would be as shown in Fig. 11. The practical frequency response of a simple half lattice filter is shown in Fig. 12. Because of the slope of the skirt response the carrier positioning must be a compromise. It is generally considered that a good balance of audio response can be obtained when the carrier is positioned at a point 20db down the slope of the response curve as shown. Final adjustment should be made for the most pleasing quality.

The sideband filter can be simple or complex. There are many possible combinations. It can use two crystals or as many as eight—the choice is determined almost entirely by the amount of sideband suppression that is required. For convenience it is a good idea to use crystals within the tuning range of standard i.f. transformers as this saves winding special coils. Suitable FT241A 54th harmonic crystals are available as " surplus " at attractive prices. The filter bandwidth is determined mainly by the crystal spacing and the number of sections used, but is also affected by the amount of capacity used for neutralizing. Table 2 is based on the writer's experience and is compiled as a guide.

A small amount (of the order of 1 to 3 pF) of neutralizing capacity across the h.f. crystal(s) steepens the response curve but it also brings up the side lobes and must therefore be used with very great care. The better method is to leave out the neutralizing capacity and use one or more shunt crystals. This will steepen the filter response curve and reduce the side lobes as well. It will naturally produce an asymmetrical response and can therefore only be used where sideband switching is obtained later in the exciter after the filter.

Where the constructor does not feel disposed to attempt edge grinding of FT241A crystals, or does not possess a BC221 or similiar frequency meter with sufficient accuracy for measurement purposes, it is possible to find a correct combination of carrier and filter crystals by using a combination of 54th harmonic and 72nd harmonic crystals. Certain channel numbers are still available, and the writer is grateful to G4MN who offered the suggestions shown in Table 3.

TABLE 2

	Single half lattice filter with neutralizing	Single half lattice with shunt crystal. No neutralizing	Two half lattice filters with neutralizing	Two half lattice with 2 shunt. No neutralizing
Crystal spacing for 2·7 kc/s bandwidth	1·85 kc/s	1·6 kc/s	2·4 kc/s	2·2 kc/s
Carrier crystal spacing	0·85 kc/s	0·8 kc/s	0·5 to 0·6 kc/s	0·4 kc/s
Suppression	30db	35db	40db	45 to 55db
Type of response	Symmetrical		Symmetrical	

TABLE 3

Marked frequency	Function	Frequency	Filter crystal spacing	Carrier crystal spacing	Sideband output of filter
Mc/s		kc/s	kc/s	c/s	
32·7	Filter	454·166			
24·4	Filter	451·851	2·315		High
32·5	Carrier	451·388		463	
24·5	Filter	453·703			
32·5	Filter	451·388	2·315		Low
32·7	Carrier	454·166		463	

The spacings shown in Table 3 are suitable for a two half lattice section filter. It should however be pointed out that to obtain a really good response curve the pairs of filter crystals should be matched to within a few cycles of each other. However where perfection is not required the table will be useful. Further consideration of filter design and construction is outside the scope of these notes but more information is given in the references below.

Constructional details of the complete all band s.s.b. transmitter will be given in Part 2.

References

" Half Lattice Crystal Filters," William E. Good, W2CVI. *Single Sideband for the Radio Amateur.*

" Crystal Lattice Filters," C. E. Weaver and J. N. Brown, *Single Sideband for the Radio Amateur.*

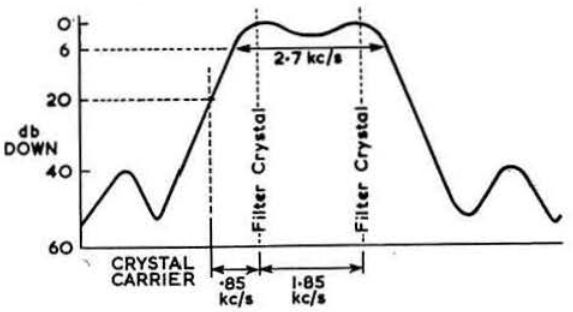


Fig. 12. Practical response of a bandpass filter.

An Electrical Latching Switch

By R. C. HILLS, B.Sc.(Eng.), (G3HRH)*

ONE of the commonest styles of microphone in use at amateur stations today is that which incorporates in the microphone casing some form of switch, operated by manual pressure. This switch almost invariably comprises a simple on/off action, the single pair of contacts being wired to complete the control circuits for the whole station, thus enabling complete send/receive changeover to be made by the one switching action.

Since transmissions from amateur stations may last up to 10 minutes without a break, it is desirable to provide a bi-stable switch in order to avoid the necessity of continuously depressing the operating arm. This is usually achieved by means of an ordinary toggle action, but one or two patterns of handset, such as the Army type 7 contain a simple pressure switch with a spring return and do require constant pressure. Some may be fitted with a form of mechanical hook to retain them in the " on " position but not all lend themselves to this modification.

The microphone in use with the author's mobile equipment consists of a standard Post Office pattern telephone handset which incorporates a pressure operated spring return switch in the hand-bar. Since the author frequently operates

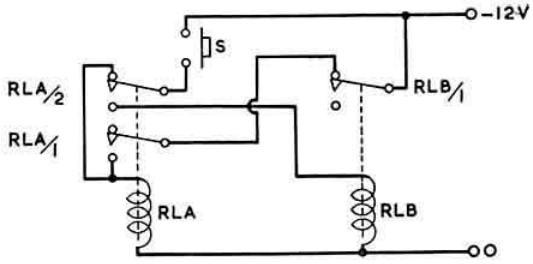


Fig. 1. Basic circuit of the relay switching described.

alone while driving, it is important to be able to put down the handset quickly (in difficult traffic, at corners, etc.), and devote full attention to the driving. During these periods of enforced silence it is particularly useful to leave the carrier running as a guide to the receiving station. Two or three different patterns of pressure operated switches which contain a mechanical latch, permitting " press on—press off " operation are obtainable and it occurred to the author that it should be possible to construct an electrical analogue of such a switch. The principal requirements were:

(i) Operation from a 12 volt car battery; (ii) Operation without reverting to the " non-operated " condition, for energizing pulses of between 0·1 and 1 second duration; (iii) Minimum current consumption during " non-operated " periods.

On the count of items (i) and (iii) it was decided to rule out any circuit incorporating valves, and the design was restricted to the use of standard P.O. relays, which are readily available on the surplus market, and will operate comfortably on 12 volts d.c. with a very small current drain.

The basic circuit is shown in Fig. 1.

The switch S is pressed once to energize relay RLA, which then locks on through contacts RLA/1, and transfers the impulsed supply to the coil of relay RLB. A further impulse

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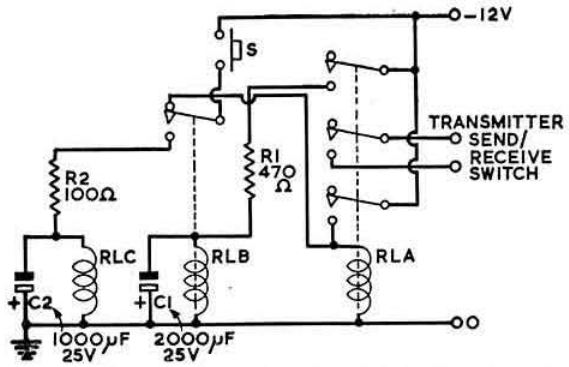


Fig. 2. Circuit of a practical electrical latching circuit using P.O. type relays. RLA and RLC each have coils of 500 ohms resistance mounted on a single pole. The resistance of RLB is 100 ohms.

from S will operate RLB and this will drop out RLA by opening the contacts RLB/1 which are in series with the lock-on circuit of RLA. An auxiliary pair of contacts RLA/3 (not shown) may be used to complete the " send/receive " control circuit. This arrangement is not an operational possibility as it stands, since the duration of the pulse applied by the switch S must be sufficient to ensure the operation of RLA, but must not overlap this operation, or RLB will operate as well and the system will revert. If the duration of the pulse is made very long compared with the operating time of RLA, then the circuit will behave like a low frequency multivibrator or " flip-flop." A practical circuit is shown in Fig. 2.

The operation is as follows. Closing of the pressure switch S operates RLA, which locks on, and applies 12 volts to the series circuit containing RLB. After a delay t_1 determined by the time constant of R1C1, RLB operates and transfers the impulsed supply to the series circuit containing RLC. Thus the first or " operating " pulse from S may finish at any time during the delay t_1, which is approximately one second; this encompasses the usual variations in the period taken for the operator's fingers firmly to depress the switch and then release again. The next pulse from S to cause the system to " revert " energizes RLC after a very short interval caused by the time constant of R2C2. Since RLC is connected in opposition to RLA, RLA will release. Then RLB opens quickly, since C1 has discharged rapidly through the low resistance of RLB, and the impulsed supply is restored to RLA. However, RLC is held energized for a delay t_2 due to the time constant RLC resistance/C2 (approximately 0·5 second). During this delay any operation of S cannot cause RLA to function since RLC is opposing it. This second delay t_2 allows once again for the normal variations in the operating time of S by manual pressure.

This circuit fulfills all the original requirements, and has the merit that there is very little to go wrong: all the components used may be obtained on the surplus market. It suffers from the minor limitation that " break-in " overs must exceed two seconds duration, but this is not considered to be a great disadvantage.

Use of Transistors

AT the Students' Meeting of the British Institution of Radio Engineers to be held at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1, on October 14, 1959, at 6.30 p.m., Messrs. E. Wolfendale, B.Sc., and H. Kemhadjian, B.Sc., will lecture on " The Use of Transistors in Communication and Control."

A Fast Break-in Control Unit

By J. W. SWINNERTON (G2YS)*

PRESENT-DAY conditions on the amateur bands demand "slick" operating: the practice of "pulling three switches and twisting two wires together" (though not unknown in many pre-war stations) is out of date on the present crowded bands. For some years the writer has been trying to approach the ideal of the "automatic station," and the equipment to be described represents the nearest approach to perfection so far achieved. Its use has several positive advantages—it reduces operating fatigue and QRM, yet can help one to be "first in the queue" when rare DX is being called. While primarily for the c.w. operator, it can be equally effective for controlled-carrier telephony by the addition of a voice-operated switching device.

Operating Requirements

Fast automatic break-in demands that the sending key shall provide the impulse for the following automatic actions:

(i) Keying the transmitter.
(ii) Transferring the aerial between receiver and transmitter.
(iii) Muting the receiver and preventing its overload on "send": this also enables the receiver to be used for monitoring.
(iv) Instantaneous "break-in" facility on the operating frequency without disturbing "clicks" and "crashes" and with minimum mechanical noise.

Early attempts [1] used a mechanical aerial changeover relay, but this was found to be limited in speed and inclined to be noisy, so it was decided to substitute for it an electronic T-R switch. A grounded grid triode was the obvious choice for the purpose, and a circuit was made up, only to founder on the unexpected factor of heater-cathode breakdown. The unit worked well on all bands but one: attempts to operate on that band led within a few seconds to a pungent smell and a valve replacement!

Circuit Finally Evolved

The circuit finally adopted was based on an article [2] by W5JXM published in *QST*—a complicated all-electronic device which it was proposed to simplify by the use of high speed relays. The unit was built in accordance with the circuit given in Fig. 1, and has behaved admirably on all bands below 30 Mc/s since it was brought into use. It employs a CV66 grounded grid triode, but any similar triode will do; even an ordinary type will give fairly good results. Two other conditions must apply; there must be sufficient stability in the v.f.o. to permit it to be keyed; the feed to the aerial or aerial tuning unit must be by 80 ohm coaxial line.

There is no reason why v.f.o. keying should not be as chirp-free as any other method, provided that certain precautions are observed. Circuit values and voltages must be carefully adjusted and stabilized; the "Q" of coils should be as high as possible. The isolation afforded by using a multi-electrode valve as oscillator might well be improved by the subsequent inclusion of a voltage amplifier with minimum inter-stage coupling.

Operation

On RECEIVE the valve operates as a normal grounded grid input stage of about unity gain, the actual amount of gain depending on the ratio of impedances of the receiver input and the transmission line. When the transmitter is keyed to SEND the relay RL1 opens on the RECEIVE side and the valve ceases to conduct, since the cathode (heater) potential rises to that of the anode, while the grounded grid reduces to a minimum the transfer of r.f. voltage to the receiver input. No matter how fast the transmitter is keyed, the receiver becomes "live" between characters, and there must be a mechanical lag when neither receiver nor transmitter is "on" so that the operation is virtually clickless.

To provide additional receiver muting as desired, a second high speed relay RL2 is incorporated in the h.t. positive lead. This makes and breaks in step with the current drawn by the valve, and can be used to introduce an additional gain control in series with the r.f. or i.f. gain control of the receiver. The current drawn by the valve should be regulated by increasing the bias resistor until it is just sufficient to ensure that RL1 and RL2 operate in step. For an applied voltage of 250 volts the CV66 requires a resistor of 65-100 ohms, depending on relay resistance and adjustment. The Siemens high speed relay available on the surplus market normally has a resistance of 2,000 ohms, but a single 1,000 ohm coil will work adequately if one is damaged and has to be disconnected.

Construction

Two points of construction must be carefully watched; the design of the rest is not critical, except that screened leads should be used whenever possible. Insulating the heater transformer from earth and r.f. filtering on the mains side obviates the use of heavy duty filament chokes.

Input to the receiver must be extracted from the aerial

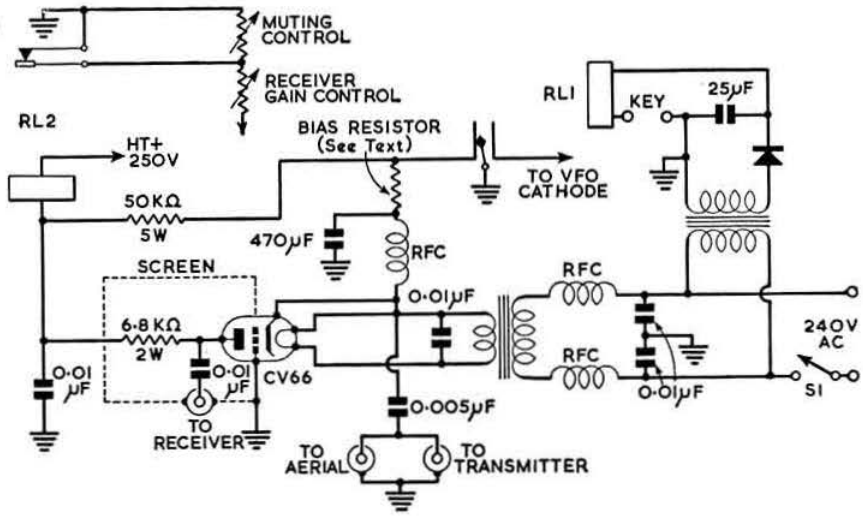


Fig. 1. Circuit of the control unit. The relay contacts are shown in the "receive" position.

* 29 Station Avenue, Filey, Yorks.

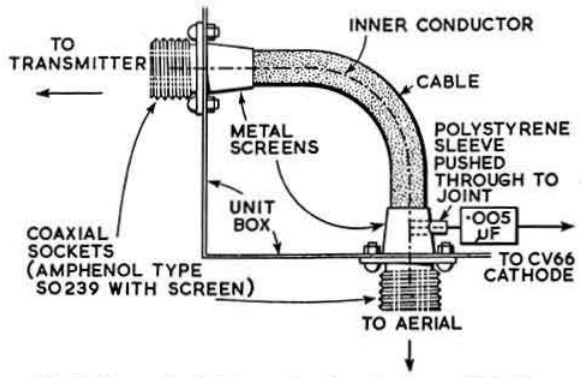


Fig. 2. Connection of the receiver input to the aerial feeder.

feeder with the minimum of disturbance to the " look " of the line, otherwise unbalance is likely to be set up. In the writer's unit this was accomplished by using an Amphenol SO239 co-axial socket and shield, which has a small hole through which a lead can be taken direct to the inner conductor of the cable. A short length of co-axial cable then passes through the unit itself and is likewise terminated at its exit point (see Fig. 2).

It is very important to screen the output to the receiver, and no gaps should be left through which stray r.f. fields can penetrate. The screen should fit flush to the valve and be soldered directly to the grid pins and earth in as many places as possible.

Adaptation of Co-axial Plugs

If Belling-Lee co-axial " socket " plugs (Cat. No. L734J) are available they may be preferred to the Amphenol type, and can be fixed to the side of the unit by means of a home-made fixing ring. This is made from the screw cap of another Belling-Lee plug by cutting off the tapered end. The ring remaining is then screwed on to the " socket " plug, where

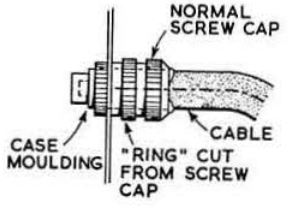


Fig. 3. Fixing Belling-Lee " socket " plugs to the side of the unit.

it grips the cover of the unit between itself and the case moulding of the connector, and is held firm by the connector's own screw cap (see Fig. 3).

Since there is no exit for the T-R switch connection, one must be made in the coaxial cable itself. This is done by cutting a " window " in the side of the cable with an Abrafile or similar tool until about ¼ in. of the centre conductor is exposed (Fig. 4). The wire end of the coupling condenser is then looped under the conductor and soldered into position, the whole being made firm with polystyrene cement. Care must be taken to ensure that no fragments of outer braiding protrude from the sides of the " window " to cause a short circuit.

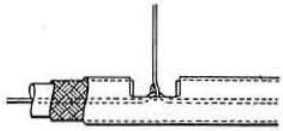
Prevention of Thermal Noise

Some difficulty might be experienced from thermal noise and rectifier hash from the transmitter if the aerial feeder is not correctly terminated at both ends, but such mismatch should not be tolerated anyway, and improvement of this fault should reduce the inherent noise below an audible level, while rectifier hash can be obviated by connecting r.f. by-pass condensers of adequate working voltage between the rectifier anodes and the h.t. centre tap of the power transformer. Correct termination is actually an advantage, since tuning the transmitter to resonance brings about an increase in input to the receiver, and it is possible to tune up the transmitter p.a. without putting it on the air.

The Device in Use

The device permits instantaneous electronically silent break-in operation, with the added probability that " if you hear 'em you can work 'em " because the same aerial characteristics are used for both transmission and reception. Slight mechanical noise from the relays may be observed, but this can be largely overcome. In any case it is almost inaudible when the operator is wearing headphones. The system's advantages as a QRM-reducer are immense, since the operator can immediately hear whether a called station

Fig. 4. Connecting the coupling condenser for the receiver to the centre conductor of the co-axial cable when Belling-Lee plugs are used.



answers someone else: if a QSO is in progress even a dot from the other station can be heard—more than one station has " tried this on " to test that the system really does what is claimed for it—while contact time is reduced by the lack of need for lengthy repeats. Alternatively more information can be exchanged in a given time. The " long CQ " can be supplanted by " CQ BK " which generally produces a quicker reply, while to work with another station using the same system must surely represent the ultimate in c.w. operation.

Phone operation is no more difficult, since the operator merely " presses to talk " once the system is set up. Modulator switching might be effected by a well adjusted relay of the G.P.O. 2000 type carrying further sets of contacts in the RL2 position.

Whether for c.w. or phone operation the system is simple to construct and a delight to use; its adoption can do much to help band occupancy problems while permitting the fullest enjoyment of contacts made.

References

[1] " A Combined Bias and Control Unit for Break-In Operation," J. W. Swinnerton (G2YS), R.S.G.B. BULLETIN, February 1951.

[2] " A C.W. Man's Control Unit," T. H. Puckett (W5JXM), *QST*, February 1955.

British Standard for Fixed Electrolytic Capacitors (Aluminium Electrodes)

B.S. 2134 (Part 1, 1959) specifies requirements for fixed electrolytic capacitors (aluminium electrodes) for use in telecommunication and allied electronic equipment. It is one of a series of specifications dealing with components intended primarily for use in telecommunication and allied electronic equipment, and deals with general requirements and tests. Copies of the Standard may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London, W.1. Price: 7s. 6d. (Postage extra). Part 2—to be published later—will specify sizes, ratings, etc., of a standard range of electrolytic capacitors.

Use of this standard (as with others in the series) requires reference to B.S. 2011, " British Standard climatic and durability tests for components," which fully describes a range of tests to which components may be subjected in accordance with the requirements of the relevant standards for the individual components.

Technical Topics ..... By Pat Hawker (G3VA)

Cascode Amplifiers – New Product Detector – Heat-dissipating Valve Shields

THE competitive element in Amateur Radio—represented by contests and awards—has long been the driving force behind the application of many new technical developments. The need to lay down the best possible DX signal, to hear the weakest signals and to be able to change bands at the turn of a switch has produced the modern amateur station of the glossy American advertisements. But from time to time, most of us must regret that—to some extent—an increasingly frequent casualty of the struggle appears to be the one- or two-band set-up of medium power which feeds a simple aerial and which, although it may not " dominate its channel," can bring a lot of interesting contacts to the operator who is content to work stations as they come.

It therefore seems desirable that among the reports of new streamline rigs and beam arrays, there should appear articles which make it clear to newcomers that with a low or medium power rig feeding dipoles, or even " throw out " type aerials, it is still possible to have almost as many 100 per cent contacts as ever. One sometimes has the impression today that many stations are inactive while waiting the time or cash to complete a new super station. Unfortunately, it seems to have become almost a matter of prestige to seek an S9 plus report where S7 would be perfectly adequate.

These ruminations have been provoked partly by the stranger who was heard to say recently " Amateur Radio must be an awfully expensive hobby—I understand the aerial alone costs about £100." And partly by W1TS's " Ivory Tower Confessions " (*QST* July, 1959) in which he admits that after staying off the air for some years because he had no space to erect a beam aerial, he found that a hash-up dipole with an average height of about 12 ft. brought him, in the space of a few months, some 2,000 DX contacts with 160 countries, mainly on 14 Mc/s. Of course, the going is easier for those who have not forgotten that a " pump handle " once meant something other than a control for a parametric amplifier. But even on an A3 rig, a surprising number of contacts can be made with simple aerials provided that they are correctly matched to the transmitter.

A useful design for those interested in the simpler type of station is W4JA's " 75 watt v.f.o. for 20/40 c.w." (*QST* August, 1959), an essentially single-knob tuned transmitter with particular attention paid to stability, ease of operation and good keying characteristics. Used with an external power supply unit, the 6C4-6AU6-6AU6-5763-6146 rig sits comfortably in an 11 in. × 5½ in. × 8½ in. case. There is simultaneous cathode keying of the last two stages and the simple output circuit covers the two bands without switching. For those who require higher powers, the same issue of *QST* has a band-switched power amplifier by K2HRG featuring two bridge-neutralized, parallel-connected 6146s providing some 180 watts A1 output with 750 volts; reducing to 130 watts at 500 volts, and 130 watts A3 with a 600 volt supply.

H.F. Cascode Amplifiers

One of the most popular circuit innovations of recent years is the cascode r.f. amplifier—for instance, every British television manufacturer fits one in the front end of his Band III receivers—but there is a tendency among amateurs to think of this circuit configuration as being primarily for v.h.f. It is worth recalling that in the original *Proc. I.R.E.* article (June, 1948), Wallman described his new circuit (which consists basically of a grounded-cathode triode followed by a grounded-grid triode to provide the low noise of a triode combined with the amplification and stability of a pentode) in terms of an h.f. amplifier, quoting noise factors of 0·25db at 6 Mc/s and 1·35db at 30 Mc/s. Possibly because most of us have sites where such extreme sensitivity is virtually wasted, very few h.f. communications receiver designs, apart from a couple in *The Radio Handbook*, have featured this circuit. For the home constructor, however, some very useful points are that the h.f. cascode stage has such a reserve of sensitivity that, unlike on v.h.f., neutralizing of the first stage is unnecessary; that cross modulation effects are very low; and that even a lash-up amplifier will give a performance that would need careful layout and construction with a conventional r.f. pentode.

Fig. 1 (a) shows a typical series-connected cascode circuit suitable for use with the 12AT7, or with television valves developed for this application (PCC84, etc.) where there is internal screening between the two triode sections. Fig. 1 (b) gives the shunt-fed design which will give better results with conventional valves where the h.t. line is fairly low. Almost any high-mu triodes can be used: one of the best combinations is a triode-connected 6AK5 followed by one half of a

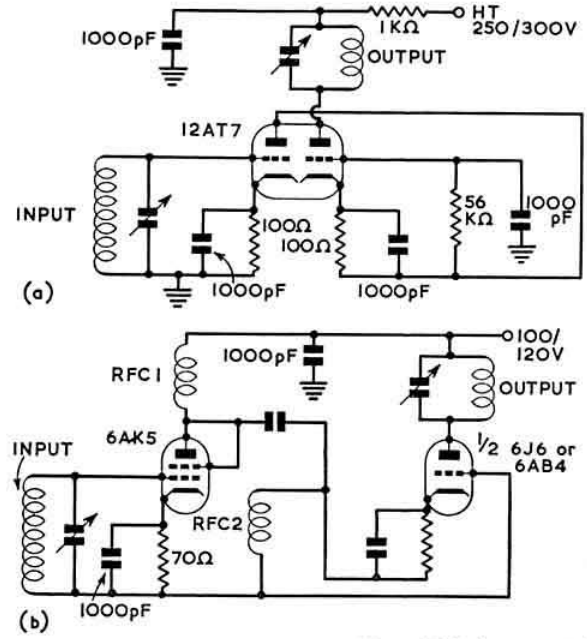


Fig. 1. Basic unneutralized cascode amplifiers. (a) Series connected arrangement for 12AT7, 6BQ7, ECC82, etc. (b) Shunt fed valves. For neutralization, RFC2 may be replaced by a suitable neutralizing coil connected to the signal grid of the first valve.

6J6, though at G3VA a 6SJ7 and a 6C8 have been used in a series-connected circuit with reasonable results! Where it is desired to use only one valve, the 12AT7 or ECC82 is a good choice. As with all amplifiers the input and output circuits must be kept electrically separated.

An ingenious device which allows one of the older 6SK7 or similar type of pentode r.f. amplifiers to be readily converted to a cascode stage has been described by K5JKK (*CQ*, May, 1959). It comprises simply a plug-in adapter with an octal plug wired as shown in Fig. 2 to a nine pin miniature base for a 6BZ7 (ECC82 or 12AT7 should be quite suitable). Results may not be quite up to the best cascode performance figures but should easily outperform the original pentode circuits of most war-time receivers. G6RC is one of those who have tried this adapter and been well satisfied with results.

While on the subject of receivers, it is worth mentioning

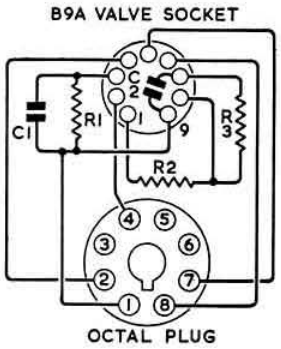


Fig. 2. K5JKK's ingenious adapter for converting a 6SK7 type r.f. amplifier into a cascode stage. For a 6BZ7 valve, R1 is 100 ohms, R2 33 ohms, R3 470K ohms. C1 and C2 are 1000 pF disc capacitors.

that the "special receiver issue" of *CQ* (May, 1959) contained articles on improving a number of popular receivers including the HQ129X (6K8 to 6X8, 6SS7 to 6SG7, etc.), NC300 (crystal control of second oscillator), BC348 and SX28. A high-performance transistorized receiver by W8DCC was also described.

New Product Detector Circuit

Product detectors offer a number of advantages for c.w. and s.s.b. reception, particularly their rejection of a.m. signals and the reduction of intermodulation distortion. Indeed, the inclusion of a product detector (usually of the type shown in Fig. 3 but sometimes an alternative type using a 6BE6 mixer valve) has become almost standard practice in American and Continental communications receivers. A recent design by ZL1AAX and W6TNS (*CQ* August, 1959) utilizes a new low-price American valve, the 6BU8, said to be widely used in American television receivers, but for which there does not at present appear to be a British equivalent. One advantage of this circuit is that only 2 or 3 volts of b.f.o. injection are required; for standard circuits as much as 10 volts injection may be needed for first rate s.s.b. reception. For those who have the necessary American contacts, or can otherwise acquire a 6BU8, the circuit is shown in Fig. 4.

Transistor Transmitters

Recently while in contact with F7FE (one of *CQ*'s regular contributors) on 14 Mc/s, he asked for a stand-by to test a transistor rig. Turning the gain full up, the writer began to do some of the ear straining usually associated with these rigs. A minute or so later F7FE came back with a really good signal so it was taken for granted that the " wickless wonder " rig had failed to make it above the noise level and that he had reverted to his 50-watt transmitter. In fact the thumping signal came from a 5-watt transistor rig using a 2N156 transistor in conjunction with a magnetic amplifier operating

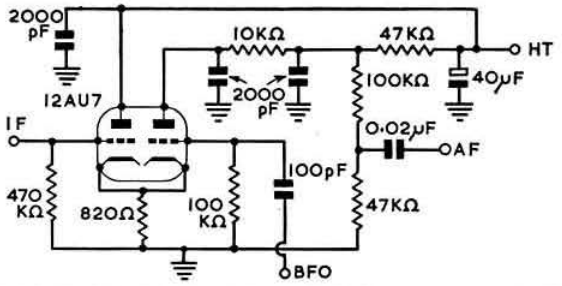


Fig. 3. Conventional product detector. With minor variations, this arrangement is used in such receivers as the Collins 75A4 and Hammarlund HC10.

from 12 volts d.c. This arrangement certainly seems to provide real communication signals and could represent a major development in the portable transmitter field. F7FE says he hopes that details of this new system will be appearing in *CQ* before long.

Incidentally for those who want to experiment with small transistor d.c. converters at low cost, W6ACT shows in *QST* (August, 1959) how old a.f. transformer cores can be utilized. A reasonably comprehensive and practical article on transistor d.c. converters (" Transistor Invertors and Rectifier-Filter Units ") appears in *Electronic Engineering*, July, 1959.

Heat-dissipating Valve Shields

The average amateur does not have to worry as much about valve failures as do the owners of some modern electronic devices in which hundreds of valves are run continuously and heat removal is a major problem. However, G3BAK has recently brought to our attention an interesting publication by the International Electronic Research Corporation, *Heat-dissipating Electron Tube Shields and their Relation to Tube Life and Equipment Reliability*. This American firm set outs to show: (1) that three out of four equipment faults are due to valve failures; (2) that the main cause of valve failure is high operating temperatures; and (3) that the use of a new type of heat-dissipating valve shield can drastically reduce

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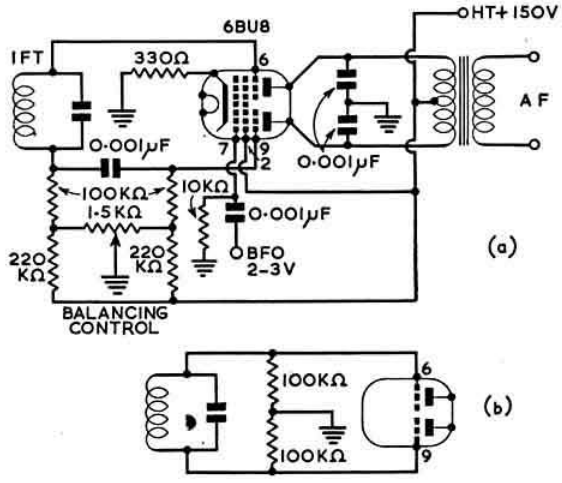


Fig. 4. The ZL1AAX/W6TNS circuit for a product detector using a 6BU8 valve. The balancing control is adjusted for minimum a.f. output with the b.f.o. turned off. If the balancing control is not required the input circuit can be simplified as shown in (b).

A Product Detector for the HRO

By L. J. J. MORGAN (G2HNO)*

BEFORE long no amateur receiver will be worth its place without adequate provision for single sideband reception. In this scheme of things the HRO starts with the great advantages of a slow tuning rate in its bandspread coil coverage, and a slow motion dial absolutely free of backlash.

The new " front end " devised by G2HKU [1] provides the essential stability in the oscillator and mixer circuits, while the present writer has described other improvements [2] including a simple voltage regulated b.f.o. stage.

It is well known that a separate mixer detector is a tremendous advantage in s.s.b. reception. The reasons for the superiority of this product detector and the theoretical considerations involved will not be repeated here. The interested reader is referred to such works as *Single Sideband for the Amateur* (A.R.R.L.) and *Sideband Handbook* (Cowan Publishing Corporation).

The original diode detector is retained for a.m. telephony reception, and for c.w. and s.s.b. some arrangement must therefore be made to switch in the product detector and at the same time to select by another pole of the same switch the output of that detector in place of the a.m. detector. This switching can be achieved simply by replacing the original b.f.o. switch on the pitch control frame with a double pole double throw slotted dolly switch (Bulgin type S270/SD).

If a noise limiter has been incorporated in the receiver the switching will be a little more complicated and Fig. 2 shows the relation of the product detector and noise limiter switching.

Modifications

The modification is not difficult to make and no hole-drilling is involved. The b.f.o. valveholder and all associated components including the coil can, pitch control and switch are removed. A B7G valveholder for the 6BE6 is mounted on an adapter plate and most of the components are wired to the valveholder before it is placed in the receiver. The b.f.o. coil is rewired following Fig. 1 in which the dotted line encloses the components which, with a little ingenuity and

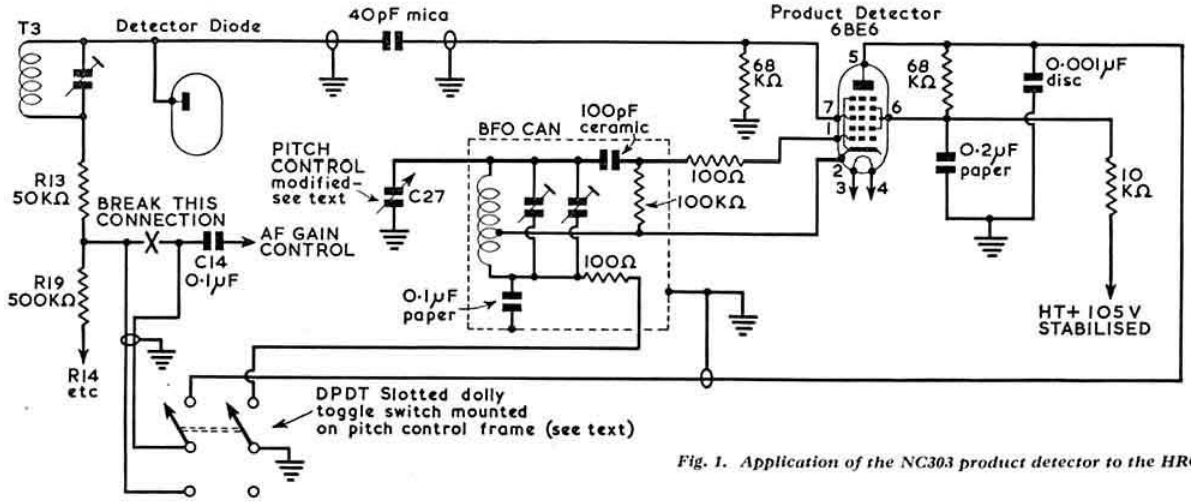


Fig. 1. Application of the NC303 product detector to the HRO.

Product Detector Circuit

The purpose of this article is to describe the replacement of the b.f.o. stage in the HRO with a product detector using a 6BE6 pentagrid valve. The circuit (Fig. 1) is based on that used in the new National NC303 receiver, and the writer wishes to express his thanks to W1FSN of the National Company for assistance willingly given in this connection. The circuit diagram shows the relation to the original HRO circuit and includes the switching arrangement referred to below.

The original b.f.o. coil and the two trimmers across it are used in the new circuit. The variable capacitor pitch control is also retained but is cut down to a single rotor and stator, the other plates being removed. The rebuilt capacitor has a range of approximately 1 to 10 pF.

The 105 volt regulated source incorporated in the previous improvement of the HRO supplies anode and screen voltage to the 6BE6, and the valve is controlled by making and breaking the line from cathode to earth. As a protective measure a 250K ohms resistor might well be wired across the cathode switch but the circuit shown here is exactly that of the NC303.

* *52 Seafield Road, Southbourne, Bournemouth.*

one tag strip, may be enclosed in the coil can. The original grid resistor and condenser in the b.f.o. can are discarded. It will be seen that there are four leads from the rebuilt coil can and it is sensible to colour code them to avoid errors in completing the circuit. All four leads are brought through the bottom of the can and none of them need be screened. Screened wire must, however, be used for the input and output leads, as the diagram indicates.

It has already been mentioned that all but two plates of the original pitch control capacitor must be removed. The single stator remaining may easily be adjusted in relation to the rotor and by a little trial and error the capacity reduced to provide maximum bandspread of the oscillator. This arrangement makes s.s.b. reception very easy. The new toggle switch mounts in place of the old, and a little bending of the mounting plate will be called for to allow for the slightly larger size of the new switch.

When all the work is done it will be necessary to re-align the last i.f. transformer (T3).

Finally the h.t. supply to the VR105/30 voltage regulator should be rewired so that it is independent of the send-receive switch. This will allow the regulated voltage to remain on the h.f. oscillator, the mixer screen and the product detector

during transmitting periods and will contribute to the overall stability of the receiver.

Conclusion

The incorporation of the product detector is the key to successful sideband reception and for c.w. reception it will show a surprising improvement in signal-to-noise ratio over the old b.f.o. arrangement. A little practice with the oscillator tuning control will readily reveal the way in which to insert the carrier on the upper or lower side of the receiver passband as the occasion demands.

The circuit may be readily adapted for use in many other receivers, and the 12BE6 is available for 12 volt heater applications such as the Command set.

The writer does not pretend that this is the ultimate refinement of the HRO. At a later date it is hoped to describe a simple half lattice crystal filter to provide the "square" selectivity characteristic so desirable in sideband reception.

References

[1] "Improving the War-surplus HRO Receiver," E. H. Trowell (G2HKU), R.S.G.B. BULLETIN, March 1957.

[2] "Further Improvement of the War-surplus HRO Receiver," L. J. J. Morgan (G2HNO), R.S.G.B. BULLETIN, September 1958.

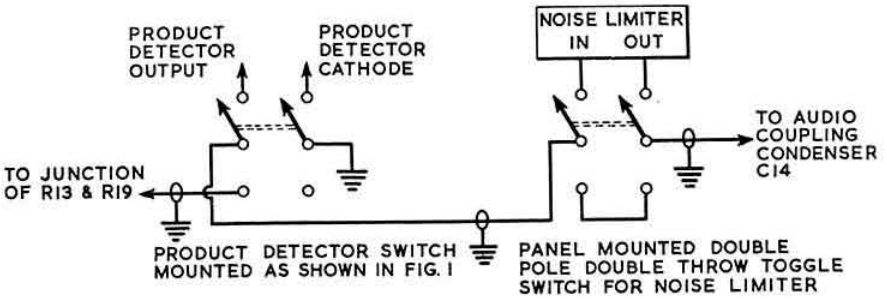


Fig. 2. Product detector and noise limiter switching in the modified HRO.

Technical Topics

(continued from page 100)

the number of such failures. Figures are quoted showing that one of the main causes of high valve temperatures is the conventional type of valve shield which, it is claimed, may increase bulb temperatures by up to 100°C above those obtaining with bare bulbs. It is even suggested that no more lethal shield could be designed should one attempt to do so deliberately. The new type of shield has a blackened surface and an inner lining of beryllium copper which firmly grasps the valve envelope. A test on type 6AK5W valves produced, after 2,500 hours, a survival percentage with standard shields of only just over 10 per cent, compared with about 45 per cent with bare bulbs and some 60 to 70 per cent with the new shields. These shields reduce operating temperatures by about 40-50°C compared with bare bulbs and some 125-150°C below conventionally shielded valves. G3BAK mentions that certain types of these new shields are being manufactured in this country by Garrard Mfg. Co. Ltd. with small quantities costing about 5/- each. Even if one does not rush out to buy these shields, this booklet certainly makes one look into the station equipment to pull out existing valve shields wherever possible. More seriously, these shields might offer a means of over-running valves considerably without suffering the usual consequences.

Parametric Amplifiers

The KH6/W6 contacts on 144 and 220 Mc/s should certainly stimulate interest in the new low noise techniques for v.h.f./u.h.f., and a number of practical articles by W6AJF have been appearing in *QST* and *CQ* recently. With noise figures of under 1db possible, these devices certainly open up exciting new prospects in u.h.f. work. But there are snags. Even W6AJF—who is no newcomer to development work—admits to building ten parametric amplifiers of which four were usable and two were good. Since almost all controls interact on one another, there is a growing belief that the devices were designed either for or by octopuses. But, if you are not to be deterred, consult *CQ* and *QST* for August, 1959.

Brief Mentions

Space considerations preclude other than the briefest mention of some interesting articles noted recently:

"Feed Matching System for the G4ZU Beam" (the inclusion of a length of open wire line to dispense with the usual matching network needed with co-ax feeders) by ON4BX (*QST* June, 1959). "Miniature Antennas" (effective beam aerials with elements shorter than quarter-wavelength) by W2AWH (*QST* June, 1959). "A modern high-selectivity receiver" (emphasis is on the front end of a receiver using 2·2 Mc/s crystal filters) by W9MUR (*QST* July, 1959). "An ARC-5 Triple Superhet" (using the popular BC454, 455 units in front of a BC453 to provide, at very modest cost, a stable and selective station receiver which can be used on other bands by means of crystal-controlled converters) by VE3DPC (*QST* August, 1959). "Selectivity and Demodulation in Single-sideband receivers" (in German) by DJ1VA (*DL-QTC* May, 1958).

Finally a tip from KN0RTW (*QST*) who points out that soldering to valve bases, coil bases, etc. too often results in oversize pins, due to solder adhering to the outside of the pins. A match will "smoke-up" the outside of the pins before soldering, and the pins can be wiped clean when the job is finished.

Use for Empty Ball Pens

EMPTY non-refill ball pens can be made to serve a number of useful purposes. When the ink tip and cell have been removed the casing is suitable for enclosing a test prod, for example. The slim type with removable cap can be made into a tuning wand by inserting a brass bolt at one end and a ferrite chip at the other. The empty polythene barrel can be used as insulating sleeving—the thicker sort can be cut to size to serve as distance pieces or washers.

—G3IYQ.

A Two Metre Converter

Utilizing the RF26 Unit and Modern Circuitry

By A. H. KOSTER, Dr.Ing. (G3ECA)*

THE piece of equipment to be described utilizes the basic circuit of the R.S.G.B. Converter [1] and is built round an RF26 unit. There is little of the original RF26 circuit left and the only merit in using the unit is to have a convenient chassis with cover, valveholders and tuning facilities. Furthermore, in the writer's case, a number of such units are used as converters for various bands in conjunction with the R1355 receiver to which they originally belong. At present the receiver contains a stabilized power supply with a cathode follower to match the converters to any receiver. It is proposed to modify the R1355 into a complete double-superhet.

Circuit and Construction

The RF26 should be stripped of most of its components, leaving only the Jones plug, valveholders, heater wiring, tuning condensers, dial with dial lamp, i.f. coil, co-ax input socket and the two rear partition screens. The circuit is then re-wired in accordance with the diagrams of Figs. 1 and 2.

The r.f. stage which originally employed an EF54 pentode now utilizes a CV66 grounded grid triode†. Tags 2, 3, 6 and 7 of the valveholder are carefully bent down to the chassis and soldered to it with a substantial soldering iron of at least 75 watts. The stem of C1 is soldered to the tag of the co-axial socket. L1 is mounted between the tag of C1 and pin 8 of the valveholder. RFC1 is tightly wound and then stretched to be suspended between the tag of C1 and a single pole terminal which was extracted from the RF26 unit when stripping it. RFC2 and RFC3 are wound into the grooves of iron dust cores and kept in position by making a knot into the first and last turn, which can be done neatly after a little practice. The stem of C4 is soldered to the chassis. L3 is mounted between pin 5 of the valveholder and the tag of C4. The end of L2, adjacent to L3, is soldered to the chassis so that a gap of $\frac{1}{8}$ in. is left between the two coils. The other end goes via C6 to the grid of the next valve.

The introduction of C3 was an afterthought. The circuit will work quite well without it, but the tuning of L2 is rather critical and with C4 adjusted for 145 Mc/s, trimming by means of C3 adds a little more punch to weak signals at both ends of the band. C3 is a Jackson condenser with two fixed and one movable vane, double-spaced. It is mounted on top of the chassis, but close to it, in the corner between the two valve securing rings. An insulated shaft is brought out through the front and a groove has to be filed into the handle of the RF26 unit to let the shaft pass it. A small pointer knob for general orientation is satisfactory and a dial is quite unnecessary.

The EF54 is too noisy as a pentode to use as a mixer for the 2m band. A triode would be more satisfactory, but the pin connections of the EC52 are not suitable for the proposed layout and it is more convenient to use the EF54 as a triode (V2). Tests have shown that the usual strapping of screen

* *195 Woodford Avenue, Ilford, Essex.*

† Available on the surplus market. Also known as the EC54 and RL37.

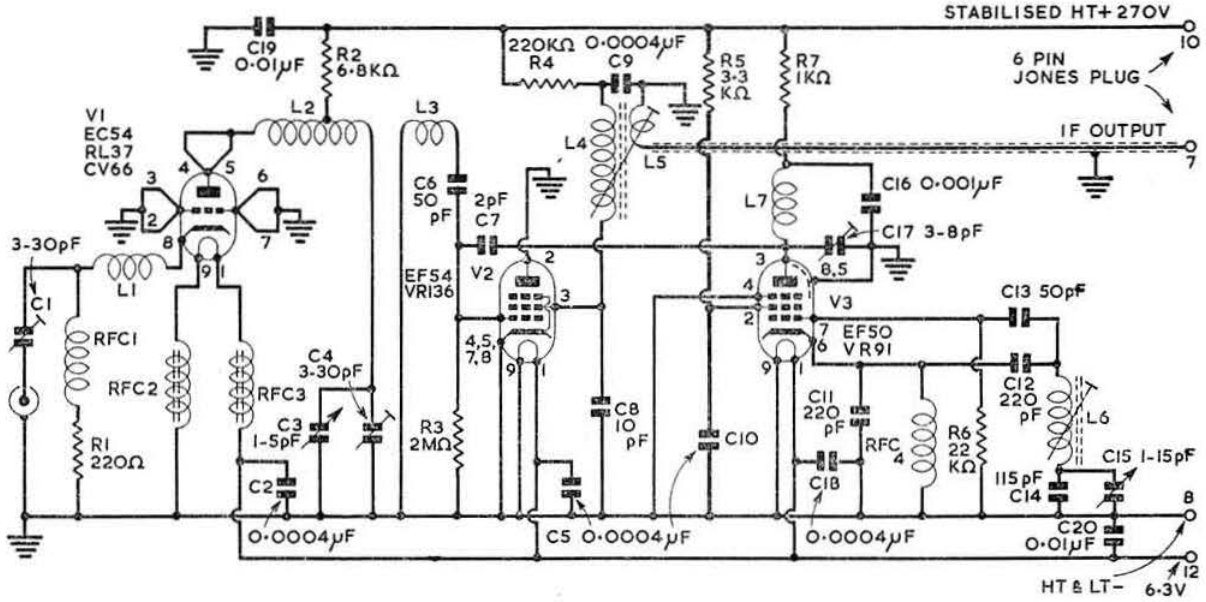


Fig. 1. Circuit diagram of the 2m converter described by G3ECA and based on the highly successful R.S.G.B. converter described in the February 1954 issue of the R.S.G.B. Bulletin.

C1, 4, 3-30 pF Philips trimmer; C2, 5, 9, 10, 18, 400 pF; C3, 1-5 pF variable; C6, 13, 50 pF silvered mica; C7, 2 pF; C8, 10 pF; C11, 12, 220 pF silvered mica; C14, 115 pF silvered mica; C15, 1-15 pF variable; C16, 0·001 μF feedthrough; C17, 3-8 pF Philips trimmer; C19, 20, 0·01 μF; L1, 7 turns 22 s.w.g. tinned copper, ¼ in. diameter, spaced one wire diameter; L2, 8 turns 18 s.w.g. tinned copper, ¼ in., diameter, 1½ in. long, tapped at 6 turns; L3, 4 turns 18 s.w.g. tinned copper, ¼ in. diameter, ⅛ in. long (the spacing between L2 and L3 is ¼ in.); L4, original RF26 unit i.f. coil; L5, 5 turns 30 s.w.g. enamelled copper, tightly wound over "cold" end of L4; L6, 6½ turns 22 s.w.g. enamelled copper on ⅜ in. diameter Aladdin former; L7, 4 turns 18 s.w.g. tinned copper, ¼ in. diameter, ⅜ in. long; R1, 220 ohms ½ watt; R2, 6·8 K ohms 1 watt; R3, 2 Megohms ½ watt; R4, 220 K ohms ½ watt; R5, 3·3 K ohms 1 watt; R6, 22 K ohms ½ watt; R7, 1 K ohms ½ watt; RFC1, 19 in. 30 s.w.g. enamelled copper, ¼ in. diameter self-supporting; RFC2, 3, 9 turns 26 s.w.g. enamelled copper wound on ⅜ in. o.d. dust iron core; RFC4, 100 turns 36 s.w.g. enamelled copper, ¼ in. diameter, close-wound; V1, EC54, RL37, CV66; V2, EF54, VR136; V3, EF50, VR91. If desired, an EC91 or a 6AM4 could be used for V1 but some modifications would be required to accommodate the necessary B7G or B9A valveholder.

and anode is not as good as an alternative arrangement whereby the screen grid alone is used as an anode with the real anode earthed. The valveholder pins 2, 4, 5, 7, 8 and 9 of V2 are all soldered to the chassis as previously described for V1. The i.f. coil L4 is provided with a secondary winding and a parallel condenser C8. This condenser should be soldered across pins 3 and 4 of V2. This produces less noise than an arrangement whereby C8 is placed across L4. Tuning is achieved with an iron dust core which should be shortened by cutting it in half. This is easily done with a pair of pliers.

The oscillator valve (V3) is an EF50 which operates in a Clapp circuit utilizing the control grid, cathode and screen grid. The frequency range is adjusted to cover 27·3 to 27·7 Mc/s by means of the core, which is the other half of the one used for L4. The anode circuit of the EF50 operates as an electron coupled quintupler and L7 is tuned to 137·5 Mc/s. The valveholder pins 4, 5, 8, 9 and the stem of C17 are soldered to the chassis. C16 is a feed-through condenser and R7 is situated on top of the chassis. C15 is the original oscillator tuning condenser with all but two vanes removed from the rotor. The remaining tuning condensers are not used. They could be removed and replaced by a shaft, but it will be found easier to leave them idling.

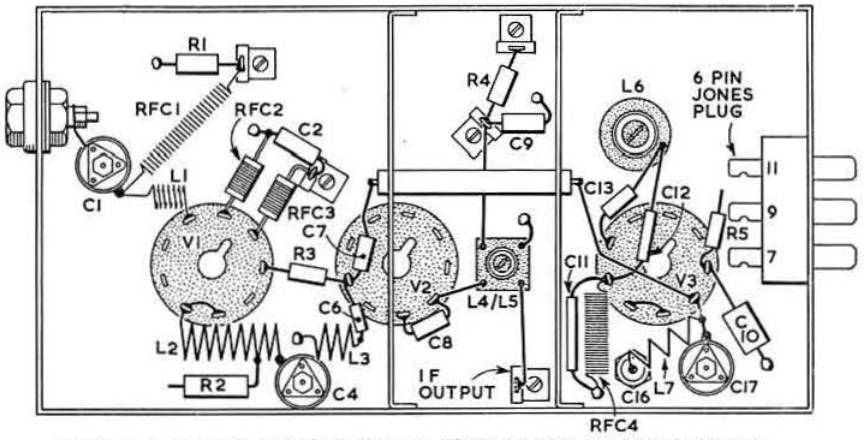


Fig. 2. Layout of the principal components. The spacing between L2 and L3 is ¼ in.

Adjustment

The oscillator is calibrated by means of an absorption wavemeter or by using a receiver which covers the 10m band. C15 will spread the band over about 100° out of 180°. L7 is best adjusted with the aid of a sensitive absorption wavemeter or grid dip oscillator. Without it some care is required, because the circuit values, as given, will cover the fourth and fifth harmonic. The desired fifth harmonic is weak, but quite sufficient to obtain perfect frequency changing with little noise. A 50 μA meter, inserted between R3 and chassis, registers a small grid current and can be used to find the fifth harmonic. A hole should be provided in the cover so that a final trimming-up can be done after the rest of the adjustments are completed and the converter installed in its case.

L4 is adjusted by feeding the i.f. output through a co-axial cable to the main receiver tuned to 7·5 Mc/s. The iron dust core in L4 is then moved until a spot is found where the noise level rises. This is reasonably sharp but the increase in noise is not very noticeable. Therefore, the r.f. gain of the main receiver has to be well advanced. This may introduce i.f. break-through, even without an aerial attached to the converter. Screening of the leads to the power supply results in a considerable improvement. Furthermore, C19 and C20 should be connected directly to the pins of the Jones plug. When the converter is used in conjunction with the R1355, in which the whole power supply is inside a screened case, there is no sign of break-through.

When tuning L2 for the first time some care is required to ensure that it is really tuned to 145 Mc/s and not to the image frequency of 130 Mc/s. It is not enough to judge by the aerial noise or random ignition noises. Both frequencies will produce equal effects. The correct setting is, however, easily recognizable if a strong amateur signal is available. As L2 is tuned to the image, the noise increases and swamps the signal. However, when tuned to the correct frequency the signal will come up clear and strong. By setting C3 to a mid-capacity and making the preliminary adjustment by means of C4, the entire band can be peaked up with C3. Finally C1 is adjusted for maximum signal, which is easily done because the tuning is very flat.

Results

Tests have shown that the converter can compete with more expensive types. Its noise factor is not quite as good as that of the R.S.G.B. 2m converter which should be built with p.t.f.e. valveholders. Considering the fact that the valveholders found in the RF26 unit are made of ceramic this must be expected, but the difference is not noticeable unless accurate comparisons by instrument or by distant signals can be made. There is slight oscillator drift during the first 15 minutes after switching on and it is essential that the condensers C11, C12, C13 and C14 are of the best quality silvered mica.

Reference

[1] "The R.S.G.B. Two Metre Converter," by W. H. Allen (G2UJ), R.S.G.B. BULLETIN, 1954, February, pp. 357. (Reprints are available from R.S.G.B. Headquarters, price 1/3, post paid.)

New G.E.C. Transmitting Valve

THE M.-O. Valve Co. Ltd. of Brook Green, Hammersmith, London, W.6, has recently announced production of the TT21 beam tetrode valve intended for use as an r.f. power amplifier at frequencies up to 30 Mc/s. The new valve is based on the KT88 electrode system. Provisional data suggest that it should be of interest to many radio amateurs.

With 800 volts on the anode the valve will take an input of 140 watts and deliver an output of 102 watts (92 watts in the load). Under I.C.A.S. ratings, the TT21 will take an input of 168 watts with the same voltage on the anode and deliver an output of 120 watts (108 watts in the load) for an anode current of 210 mA.

The anode dissipation is 37·5 watts under normal conditions (45 watts in I.C.A.S.). The maximum permissible anode voltage is 1,250. No ratings for s.s.b. use are yet available.

The valve is fitted with an octal base and the anode is brought out to a top cap. Heater requirements are 6·3 volts at 1·6 amps for the TT21. A 12·6 volt version, the TT22, is also available, which requires 0·8 amp.

The list price is 33s. 9d.

Intruders in the Amateur Bands

A Report on the Work of a Group of British Amateurs

By D. W. J. HAYLOCK (G3ADZ) *

THERE is growing concern by amateurs the world over about " intruders " in the amateur bands. Whilst it is obvious that there are many unauthorized stations in those parts of our bands shared with other users, this report confines itself principally to the bands of frequencies that have been clearly designated for exclusive amateur use. [1].

Interference to the licensed amateur station is by no means a new problem. During recent years with high m.u.f.s, the effect has been felt in the 14, 21, and 28 Mc/s amateur bands. In the immediate future, with falling m.u.f.s, it is expected that the 3·5 and 1·8 Mc/s shared bands will come in for more of the unwanted attention. This leaves the 7 Mc/s band under constant pressure, especially by broadcast stations and their attendant jammers. One cannot help but wonder where one may find wisdom in these wasted kilowatts. The average amateur is incensed, not with the use of his meagre frequency allocations, but by their misuse. Ranking high in such misuse are teletype on call-tape for hours, even days, on end with no traffic, unintelligible jammed broadcasts, and the class of operator to be found, alas, in all nations, who insists upon leaving a carrier running for half an hour whilst he has a cup of tea, or searches in dusty records for a long since changed telephone number.

The increase in the number of active amateur stations and the ever present demand for more " commercial " radio links are other factors to be considered.

In the U.K., we are most fortunate in having close support from the G.P.O. who are willing and anxious to help the British amateur, through the R.S.G.B., by all means within their power. Unfortunately, much of the unauthorized activity originates from stations over which the G.P.O. has no control and little influence.

The policy of the R.S.G.B. is to keep a careful watch on the amateur frequencies and by making regular and accurate reports over a long period, to prove that the amateur is alive to the problem and will not rest until justice, through pressure of opinion, backed by international support, has cleared our bands.

Method of " Intruder Watch " in the U.K.

In March 1957, it was decided to form a small team of volunteer member stations who would devote a few hours each week to the monitoring of the bands 7000 to 7100 kc/s and the 14, 21, and 28 Mc/s amateur bands for the purpose of recording all non-amateur transmissions. Since that date, about six amateur stations in various parts of the U.K., assisted from time to time by a few selected listener (non-transmitting) members, have compiled the necessary log sheets. A few of these stations are able to monitor for 10 to 12 hours each week, but most have an average of 4 to 5 hours each week at irregular times and intervals. This gives the best possible cover.

At the end of each period of three months, the log sheets are sent to the Honorary Organizer of the Watch, who sends them in summary form to the R.S.G.B. for onward transmission to the G.P.O. An attempt is made by the Honorary Organizer to filter out cases of obvious receiver image and break-through and also stations that have been heard only once [2]. The latter are listed for reference and included in future reports if heard again. It is at this stage that efforts are made to confirm the identity of intruders [3].

Log sheets are submitted in standard form showing the location of the monitoring station, type of receiver in use, its i.f. and aerial details. The intruder station is entered with date, time (G.M.T.), frequency, call-sign (or other identity), traffic sample and system of transmission. A " Remarks " column is left for comment on probable location or country, any peculiarity of transmission type or other information noted. In order to lessen the watch's clerical work persistent intruders are now given a serial number and thereafter listed by number only!

The minimum standard of frequency measurement is $\pm$ 2 kc/s in the 7 Mc/s band and $\pm$ 5 kc/s in higher bands, although many reports are, in fact, accurate to $\pm$ 1 kc/s or less. Stations with any substantial part of a sideband within the amateur band being monitored are also measured and reported.

Other U.K. amateurs troubled by an " intruder " are invited to send details to the Honorary Organizer for investigation by the Watch.

Limitations

Known limitations of the scheme from the amateur viewpoint are: (i) Availability of time; (ii) Difficulty of proof of identity and/or location of intruder stations; (ii) Jammers, which are themselves intruders; (iv) Lack of equipment to monitor teletype, high-speed Morse and facsimile; (v) The language problem [4]; (vi) Shortage of exchange of information on the subject with amateurs in other countries; (vii) Lack of access to official station lists.

It has also been suggested that lack of official status is a disadvantage. It is considered, however, that this is not the case. It may well be that more notice is taken of a group of amateurs who are devoting their own free time to the defence of a hobby which makes from time to time invaluable contributions to the science of radio and allied subjects.

The 7 Mc/s Band

As an example of the work carried out by members of the Intruder Watch, the following is a general report based on a special study of 7 Mc/s recently made for the Council.

During the hours of daylight a large number of G stations are able to contact each other at strong signal strengths. Unfortunately there are two broadcast stations that operate all day, and are consistently very strong. They are Radio Monte Carlo (7130 kc/s), home service, and Radio Free Europe (7145 kc/s), Western propaganda, which is of course jammed, although the jamming stations are not very strong here during daylight. Between 7100 kc/s and 7130 kc/s there are usually four or five amateur QSOs proceeding at week-ends between G stations or between Gs and near Europeans such as F, ON4 and PA. Sometimes a QSO is possible between 7130 kc/s and 7145 kc/s when the spread of the broadcast stations is not too great. Similarly, a QSO is sometimes possible between 7145 kc/s and 7150 kc/s.

The great majority of the amateur signals are good T9, well-modulated, stable transmissions. There are inevitably a few exceptions in such a large amateur population as that of the U.K. The procedure is usually good, though trouble often arises in this very crowded band because not all amateur stations will take the trouble to net accurately on the station with which they are in contact. Much unnecessary mutual interference is caused by this failure to net accurately.

* *Honorary Organizer, R.S.G.B. Intruder Watch, 3, Norris Gardens, Grange Estate, Havant, Hants.*

[1] Allocations below 144 Mc/s.
[2] The case of the daily or weekly changing call-sign is not overlooked.
[3] The I.F.R.B. Monitoring Summary has proved useful, but it is a matter of regret that copies are seen infrequently and then usually very out of date.
[4] This results in the inability to identify a considerable number of broadcast stations.

The two broadcast stations in this band during the day are almost always S9 and must surely be so in their proper service areas, which must, in fact, be much nearer to the transmitters than is the U.K. Thus there is negligible likelihood of either suffering interference from relatively low-powered amateur stations.

Between dusk and about midnight the section 7100-7150 kc/s fills up completely with European broadcast stations causing each other a great deal of mutual interference, due to heterodynes, overmodulation and jamming. No amateur stations can possibly use the band during these hours as there are no gaps whatever.

The segment 7000-7100 kc/s is supposed to be a world wide exclusive amateur allocation. In fact, a number of broadcast stations use it consistently and are quite strong in the U.K. during darkness. La Voz de Valladolid, Spain (EFE1), is on 7005 kc/s, Karachi, Pakistan, on 7010 kc/s, Cairo, Egypt, on 7050 kc/s and at certain times of the year Peking, China, is on 7080 kc/s.

In addition there are a number of commercial RTTY stations using this supposedly exclusive amateur allocation, not to mention the high noise level due to spurious emissions from jammers, commercials and broadcasters. Consequently the exclusive amateur allocation is almost unusable for phone contacts during darkness. There is a fair amount of amateur c.w. activity around Europe but only amid the difficulties presented by all these non-amateur stations.

After about midnight many of the European broadcasters close down and a few small gaps appear. Understandably, there is very rarely any European amateur activity after midnight in these gaps. What the gaps do show is that they are taken advantage of for traffic purposes by some commercial c.w. and RTTY stations; these stations clearly should not use these frequencies at all. The general noise level is high in the gaps but sometimes weak Spanish or Portuguese speaking stations can be heard, probably from Central and South America.

In the early morning between dawn and about 07.30 G.M.T., the band appears to fill up almost completely with European broadcasters. After that the amateurs take over again and make good use of the gaps until dusk.

A loud jamming station on 7104 kc/s often completely spoils a large portion of the band, even during daylight.

As a general observation on the 7 Mc/s amateur band as a whole, there is a very high level of British and European c.w. activity in the 7000-7050 kc/s sector. 7050 kc/s upwards appears, under present conditions, to be mainly used as an inter-G and G/Europe phone band. By far the highest activity is on a Sunday morning followed by other " peaks," 07.00—08.30 on weekdays, Saturday mornings, Saturday afternoons, and late evenings, in that order. Many newly licensed British amateurs use 7 Mc/s as their main band.

During the winter months there are some outstandingly strong U.S.A. amateur phone stations to be heard in the gaps working G stations (around 7100 kc/s) such as G2PU, G3NBP and G8TH. These inter-continental QSOs could be heard almost every Sunday morning last winter, illustrating the great DX possibilities of this band.

The 7 Mc/s band is very valuable to the amateur in Europe, especially during daylight, when it is consistently excellent for contacts over the 100 to 300 miles range, which is too long for reliable propagation on v.h.f., 3·5 Mc/s or 1·8 Mc/s, and too short for 14 Mc/s. As it is now, 7 Mc/s is always extremely crowded and at weekends it is very difficult for amateurs to have satisfactory contacts.

Conclusion

It seems well worth while to continue these efforts—if need be for many years to come—though the direct answer to the problem rests in international co-operation and tolerance.

Amateurs in all countries are invited to seek agreement to similar schemes through their National Societies or Authorities and enter into exchange of information with the R.S.G.B.

The amateurs of the world have a unique opportunity for promoting mutual understanding and goodwill among the peoples of the world, besides encouraging the self-training of radio operators and technicians. On the other hand, a vast number of " channel-hours " in the commercial segments are wasted through stations " keeping the channel open " by sending " VVV QRA . . . " over and over again, for hour after hour. Short wave broadcasting is excellent in theory but very different in practice. With some exceptions, such as transmissions by countries for their own nationals abroad, much of it is propaganda and counter propaganda. All the mutual interference and jamming makes it very difficult to get much pleasure or information out of short-wave broadcasting. Short wave broadcasting, in general, seems to be a much over-rated practice, having only a tiny minority of regular listeners.

The number of amateurs in the world is steadily increasing and it would seem very unfair if their needs were further sacrificed to the demands of propaganda broadcasting.

Etched Circuit Kit for the Amateur

PRINTED circuits have been used for some time past in commercially built radio and television receivers while several kits for the home constructor have featured this method of wiring. It was not until recently, however, that the first " etch-your-own " printed circuit kit became available from Proops Bros. Ltd. of 52 Tottenham Court Road, London, W.1 at a cost of 21/- post free. This kit contains all the materials necessary for the production in the home of an efficient and reliable printed circuit together with a 12 page instruction booklet which lucidly explains the process and supplies examples of practical circuits and layouts. The initial supply of circuit board comprises 60 square inches, but additional board is obtainable from the suppliers, and the chemicals provided are sufficient for many etchings.

Where it is desired to produce a complex circuit a certain amount of preliminary work on paper will be necessary in order to achieve the best layout before the outline is drawn on the board with the resist ink, but errors may be corrected up to the time of actual etching. Holes to accommodate resistor and capacitor leads should be made with a sharp drill, and it is thought that this work should be done before the board is etched. Soldering should be done by the short application of a hot iron using the minimum amount of 22 s.w.g. cored solder necessary.

The applications of printed circuits are numerous and the amateur will find the system particularly facilitates the compact construction of many types of transistorized circuits. Valved units such as crystal controlled converters could be made small enough with printed circuits to place inside the main receiver.—R. F. S.

" A Single Sideband Receiver for the Amateur "

IN Fig. 5 on page 51 of the August issue, the lower end of primary winding of L1 should be connected to the h.t. positive line via a 10 K ohm resistor decoupled by a 0·01μF capacitor.

The value of the cathode resistor of V1a in Fig. 6 on page 52 should have been marked 220 ohms.

R.S.G.B. Bulletin

THE October issue of the R.S.G.B. BULLETIN is due to be published on November 3, the closing date for copy being October 12. The closing date for the November issue, to be published on or about November 26, will be November 2.

The MONTH ON THE AIR

A CHRONICLE OF EVENTS ON THE HF AMATEUR BANDS

By J. DOUGLAS KAY (G3AAE) *

ALTHOUGH it is only a short time since the last *M.O.T.A.* was prepared there is an abundance of interesting information to impart so without further ado let us get down to it.

News from Overseas

Jack Lambert **(G3TA)** reports from Tobago that he has not yet received his licence from the Trinidad authorities who administer the island, and his QTH is far from good. With an earth embankment 20 ft. high just outside his window and many power lines just outside the door Jack has certainly got a problem on his hands. However the hotel proprietor has promised fullest co-operation, while the film structural riggers have promised to help in getting an aerial erected, so Jack will probably find a way round all the site difficulties once the licence arrives. He has already dusted the B2 off in preparation!

Flash.—Jack is now licensed as **VP4WD** and has been working numerous Ws on 7 Mc/s. His first European QSO was with HA5KFR, and was overheard by G3KZR, while his first " G " QSO was at 02.40 G.M.T. on September 12 (7,010 kc/s) with G5JL. The present aerial is 7 yards of twin P.V.C. flex which Jack unwound to make into a single wire 42 ft. long: the average height above ground is 6 ft. A proper aerial for 14 Mc/s is planned and should be up and working by the time this is read. Operating times are given as from midnight G.M.T. on weekdays, and after 21.00 G.M.T. on Sundays.

Alf Kissick **(VK3KB)** is anxiously trying to ascertain the present whereabouts of **VQ8AS,** recently of Rodriguez Island. Alf worked him in 1957 and has not yet received a confirmation of the contact. Perhaps G3AAM can help as he used to sked VQ8AS every Sunday on 14 Mc/s. Phil Brisbar (G3LWU) writes from Tripolitania where he has recently arrived after four months in Cyprus. Phil is with the Royal Signals and has been busy resuscitating the club station **5A1TP.** The present rig is a W.R.L. Globe Scout transmitter running 40 watts to a 6146, an AR88 receiver and indoor aerials, which Phil hopes will soon be replaced by something more adventurous.

Sheila Goodhue (ex-**KL7BHE**) writes to say that she and OM Ed (ex-**KL7PIV**) have arrived in Hawaii and are busy getting settled in at a new QTH. Sheila promises to keep *M.O.T.A.* primed with the latest information on Ed's Pacific wanderings.

From D. Nye comes news that **ZC4GT**, the club station of the R.A.F. at Ayios Nikolaos, Cyprus, has been QRT since last May, but that it will soon be on the air again with 100 watts. QSLs are on order and all contacts will be confirmed.

John Knight **(W6YY)** sends copies of two letters which are of extreme interest. The first is from **AC4AX** who, on August 8, wrote from Lhasa, Tibet, saying that he was not at present active, but that he was intending to instal his BC610 transmitter and erect a rhombic aerial in the near future. It will be most interesting to see whether he does, in fact, appear on the amateur bands with this equipment. The second letter is from **AC5PN** in reply to one from W6YY passing along W2KUW's offer to send his KWM1 to Bhutan to put that country on single sideband. AC5PN says that due to official and transport difficulties it would not be practicable to send the equipment on loan as it would be at least 1½ years before it could be returned. He says that **AC3SQ** is now in Bhutan where he is a technician, and that he is preparing his station and will soon be on the air as **AC5SQ.**

Greg Lovelock **(G3III)** has just returned from the Far East and passes on the following information about several stations active in that part of the world. **ZC5AF** is active on 21 Mc/s phone and c.w. and runs a Vanguard transmitter. **VS1GZ** is in the process of rebuilding and is planning a more extensive aerial array. **4S7FJ** was due to cease operations at the end of September prior to returning to the U.K. Last, but not least, the good news that Christmas Island **(VR3)** licences are again available, and that G3JHI is already on the island with a 25 watt transmitter and an AR88 receiver, while G3III himself expects to be active from there some time in 1960.

By courtesy of the West Gulf DX Club come the following snippets: the King of Nepal hopes soon to be licensed as **9N1AA; FR7ZD** has been sent a converter so that he can become active on 21 Mc/s. W0DVN was all lined up to handle **VQ9AIW's** QSLs when the latter returned to the U.S.A. about September 11. **MP4MAA** and **MP4MAB** will shortly be issued in Muscat. **VE3EGD/SU** will soon be returning to Canada.

K4DKE of North Carolina writes to say that he will be pleased to QSL all listener reports provided these reports are sent to him direct and not through the A.R.R.L. Bureau—when he has to pay the postage between the Bureau and himself.

Many must have wondered what has become of Alex and Eva of **CN8MM** fame. From Edgar Wagner (G3BID) comes news that they are both now permanently settled in Sao Paulo and operating under the call-sign **PY2AQZ.** They are using the CN8MM rig, but have run into TVI trouble on 21 Mc/s, so that their operating hours on this band are

DXotic Showcase

Call-sign	kc/s		G.M.T.	
VQ9AIW	21,025	c.w.	19.35	Seychelles
KB6BH	21,170	a.m.	05.40	Canton Island
FB8CD	21,170	a.m.	18.00	Comoro Islands
VP8EG	21,062	c.w.	19.30	South Orkney Is.
LA3SG/P	14,090	c.w.	16.30	Jan Mayen Island
LA1VC/G	14,060	c.w.	19.30	Antarctica
VS5AD	21,060	c.w.	16.08	Brunei
I5GN	14,320	s.s.b.	17.42	It. Somaliland
VQ9ERR	14,300	s.s.b.	18.03	Seychelles
K6GNL/KW6	14,045	c.w.	09.15	Wake Island
VS9AZA	21,165	a.m.	18.30	Quati State
FG7XG	14,050	c.w.	22.00	Guadeloupe
LA1NG/P	14,080	c.w.	15.30	Jan Mayen Island
KM6BT	21,045	c.w.	07.30	Midway Island
XW8AC	28,150	a.m.	15.00	Laos
ZC5AF	21,020	c.w.	15.30	North Borneo
CP3CN	14,006	c.w.	23.15	Bolivia
PX1CH	14,050	c.w.	10.15	Andorra
YA1AO	14,090	c.w.	17.45	Afghanistan
FR7ZD	14,095	c.w.	17.00	Reunion Island
FO8AB	14,330	c.w.	06.45	French Oceania
JZ0HA	14,025	c.w.	18.30	Neth. New Guinea
BV1USB	14,050	c.w.	19.30	Formosa
ZL3VB	14,100	c.w.	07.50	Chatham Island

* *40 Fryston Avenue, Coulsdon, Surrey.*

Welcome visitors recently to the London Members' Luncheon Club were Jim Olsson, K2GVQ, and his wife Tommie, K2HWX. In this picture Jim is getting his hand in on the keyboard before flying to England to begin a tour of duty at R.A.F., Croughton.

confined to 18.00-19.15 G.M.T. and 04.00 G.M.T. onwards. Their address is in *QTH Corner*. Edgar also says that the rare **HK0AI** on San Andreas is active on 21,245 kc/s around 02.00 G.M.T., and QSLs for him should be sent via W9WHM.

G6XL heard **MP4TAE** close down from Trucial Oman at 14.57 on August 30, saying that he was catching the plane back to MP4QAO, but would be back at MP4TAE from time to time.

In a QSO with G3YF **UA0OM** confirmed that he *was* in Tannu Tuva for one day only (June 25) and will be going there again next year.

From G3KSH it is learnt that **4S7FJ** has been adjudged the most outstanding DX station for the month of July by the Niagara Frontier DX Association, and besides getting a certificate becomes eligible for consideration for their plaque awarded annually to the station considered best of the 12 monthly winners. 4S7FJ has also achieved WAZ during his short stay in Ceylon and is keeping his fingers crossed that all the QSL cards will arrive to prove it.

Home News

Peter Pennell **(G2PL)** writes to say that he is so convinced of the futility of the DXCC system that he has written to the A.R.R.L. asking them to delete his call from the Honor Roll. Peter has always been right near the top of the DXCC tree, and his private battles of nip and tuck, firstly with G6ZO and more recently with G3AAM, have been followed with interest by many amateurs. He remarks on the granting of country status to KS4BB on Serrana Bank, an uninhabited sandbank, which even experienced navigators had trouble in locating, while Sicily and Lampedusa in the Pelagic Islands are refused recognition. Now we have Jerusalem in Israel counting as Palestine, while last year one QSO with a single station counted as two different countries—when Gold Coast became Ghana. Oh well, we must all be a little mad to compete!

Jack Cooper **(G5VT)** read the comments about Togoland in the July *M.O.T.A.* and immediately tackled 9G1CH about it over the air. Briff said he would like to make the trip himself if only he had more time. Jack with over 250 confirmed still needs Togoland and like most of us missed the 27 hour stand of 9G1CX and 9G1CF last January, which unfortunately was not well advertised in advance. **9G1CF** is now G3NMU and writes to say that while in Togoland in January he and 9G1CX made 820 QSOs. He confirms that licences are difficult to obtain there as they are only issued to French citizens normally; however he and 9G1CX worked the oracle so it is not impossible.

Jack Mann **(G3AAM)** says that he is " stuck " with 293 countries worked and 291 confirmed. Considering that there are fewer than 300 countries in the list this is not surprising. Both the XE4 and CR10 DXpeditions would have taken him nearer to that fabulous 300 country goal, had the former worked some Gs and the latter not been refused a licence.

Arthur Milne (G2MI) has received all the 1,600 QSLs for contacts made by **VP8CR** (G3HTF) during the period that he was active from Halley Bay. Leslie Hill (G8KS) is again in regular weekly contact with **VP8EG** (South Orkneys) and reminds all stations working VP8EG that QSL cards should be sent to him (G8KS), enclosing either s.a.e. or unstamped addressed envelope and coupons.

28 Mc/s

The band is really opening up for the winter season, but so far reports do not reflect a great deal of activity.

G6ZO (Edgware) found VQ3HD (09.00, '080) on c.w. and ZD6FC (15.30, '400) who was on a.m. while **G2PL** (Wallington) reports VQ8AV (14.30, '120) and XW8AC (15.00, '150) both on a.m. **G3FPQ** (Elstead) worked JA3EK (10.15, '230) and VS9OM (11.10, '310) and **A.1583** heard CR9AH and CR7LU.

G3KZR reports ZS9G (14.30, '495), VK6KW (13.00, '300) and ZD2AMS (13.12, '240) on a.m.

21 Mc/s

There is no doubt that this band contains the " bumper bundle " this month as the following testifies.

G3JAF (Lymington) used a.m. for QSOs with VS9OM (16.30), MP4TAE (14.20), MP4DAA (15.07), GC2RS (07.42), YA1AO (13.42), 9M2FL (14.40), 9M2FX (15.50), FQ8AF (18.00), VP8EP (18.30), VP8DI (21.05), VP8CX (22.15), ZD1PB (07.45), UL7FA (07.18), W7UMH/KL7 (07.24) and KC6JA (16.35), while on c.w. he found VS9OM (13.30), LA1VC/G Antarctica (18.50) and VP8EP (18.30).

G3BHJ (Norwich) reports a.m. from DU1AP (15.00, '300), MP4QAO (19.20, '180), OX3DL (18.10, '320), PZ1AA (20.10, '180), VE3EGD/SU (21.00, '280), VS9AH (16.00, '180), VS9AZA (17.25, '180), VS9OM (13.10, '180), ZD1PB (19.10, '120) and 9M2FR (17.45, '180) with VQ9ERR

QTH Corner

FG7XG. via K0DQI.
FP8BG. via VE2ABE.
FQ8HE. Raymont, C.M.T. Brazzaville, Republique du Congo.
FR7ZD. Guy Hoarau, Tampon, Reunion Island.
HH2JV. P.O. Box 71, Port au Prince, Haiti.
KG4AD. Box 32, M.B., N.B., Navy 115, c/o Fleet P.O., N.Y.C.
KR6GY. O.A.R.C., A.P.O. 331, San Francisco, Calif., U.S.A.
LA1NG/P. via Norwegian Embassy, Reykjavik, Iceland.
LA3SG/P. via Norwegian Embassy, Reykjavik, Iceland.
OA3D. Box 168, Chimbote, Peru.
OY8RJ. Box 184, Torshavn. Faeroe Islands.
PX1CH. via ON4CH.
PX1PA. Artur Peleija, Bartolomo, Andorra.
UA0LO. P.O. Box 29, Vladivostok, U.S.S.R.
PY2AQZ. Box 52, Sao Paulo, Brazil.
VP3IG. P.O. Box 331, Georgetown, British Guiana.
VP4WD. J. D. Lambert, Hotel Robinson Crusoe, Tobago, B.W.I.
VP5AB. c/o PAA Comm., South Caicos Island.
VS9AZA. P.O. Box 130, Mukulla, Quaiti State, c/o Aden Post Office.
YA1AO. via DL6YI, P.O. Box 4044, Frankfurt, West Germany.
ZA1KAC. P.O. Box 89, Tirana.
ZC4GT. R.A.F. Ayios Nikolaos, Cyprus, B.F.P.O. 53.
ZC5AF. N. M. Fender, R.A.F. Labuan, British North Borneo.
ZC7AS. Box 21, Amman, Jordan.
ZD2RJO. Robert Osborne, Birnin Kebbi, Sokoto Province, Northern Nigeria.
ZL3VB. via ZL2GX.
ZS3T. Box 267, Walvis Bay, South West Africa.
9M2GA. R. W. Gray, 7 Roseberry Street, Christchurch, S.W.1, New Zealand.

R.S.G.B. QSL Bureau: G2MI, Bromley, Kent.

(17.40, '430) on s.s.b. and UA0SL (12.50, '090) and VQ9AIW (18.00, '060) on c.w. **G3BID** (North London) worked PY2AQZ (19.42, '150)—see news from overseas—VS9OM (18.00, '255), VS9AZA (19.57, '260) and ZD2RJO (17.02, '245). The ZD2 has only just come on the air and is running 75 watts to a modified 36 set to a dipole. **G2AHL** (Guildford) was another to have a fine QSO with ZD2RJO.

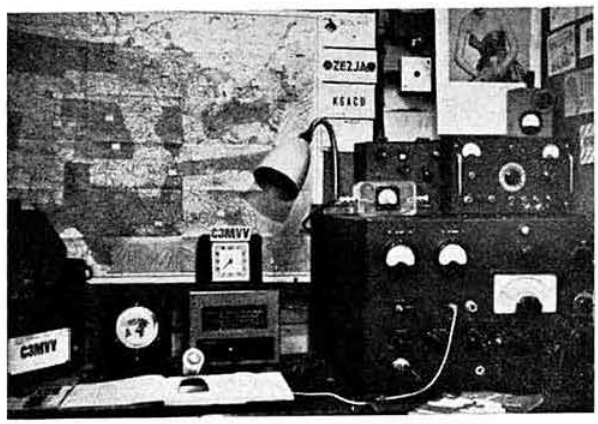
G6ZO reports c.w. activity from VQ9AIW (21.15, '020), FY7YF (20.30, '045), HH2CB (20.45, '055), ZS3OW (21.00, '100), VS9OM (20.30, '025), CR5AR (21.00, '010), VP8EP (19.15, '085), ZP9AY (19.15, '085), HK1FF (19.30, '090), VS5GS (15.45 and 17.00, '005 and '030), 9K2AJ (15.45, '085), KG4AU (19.45, '150), 9M2FR (17.00, '060), VP8DL (18.00, '085), VP8CW (18.00, '060), CE9AF Antarctica (18.30, '090), LA3SG/P (17.45, '075), DU1FM (15.45, '045) and XE1AX (22.45, '040).

G3BHW used the key for QSOs with CE9AF (19.50, '090), FB8ZZ (15.42, '085), PX1PF (18.55, '060), VQ9AIW (18.20, '020), VS5AD (15.50, '095), VS5GS (15.20, '090), YA1AO (16.25, '045), YA1IW (17.00, '040) and 7G1A (17.25, '030). He hears that although YA1PB has had to return to the U.S.A. due to an accident, YA1IW will probably persevere with his plan to activate VU4 in November, VU5 in December and AC5 in January of 1960.

G3FPQ spoke with I5GN (17.40, '170), KB6BH (09.30, '260), KH6CQT (11.35, '260), PZ1AA (21.55, '180), VR2AZ (07.30, '140), VS9AZA (18.35, '170), YA1IW (15.50, '120), and exchanged c.w. reports with DU1FM (15.35, '040), VQ9AIW (17.33, '030) and VS5AD (16.10, '060). **G3DO** (Sutton Coldfield) got a rare one on 'phone when he talked to UA0LO (09.10, '260) who is in Zone 19.

GW3AHN (Cardiff) worked CE9AF (18.00, '080), FY7YF (19.45, '050), KH6DJL (19.20, '050), KM6BT (07.20, '050), LA3SG/P (17.00, '025), MP4TAE (14.00, '150), UA0KIA (09.00, '050), VP8DL (21.10, '090), VP8DM (21.15, '090), VP8EP (18.50, '085), VQ9AIW (18.15, '030), VS5GS (19.00, '050), VS9OM (19.00, '040), XZ2TH (15.50, '050), 4S7FJ (16.20, '030) and 7G1A (18.25, '050) on c.w. and DU1AP (15.10, '200), FU8AC (10.35, '220), KB6BH (09.40, '270), KR6GF (17.20, '405 s.s.b.), MP4TAE (14.10, '150),

James Fitzgerald Jr., K4OJE, operates this neat installation from his home in Richmond, Virginia. His equipment includes a Hammarlund receiver, Johnson transmitter and Gonset "Communicator."



Norman Miller, G3MVV, of Romford, Essex, obtained his Worked All States certificate for 10m phone operation within one year of obtaining his licence. His equipment includes a Minimitter transmitter and converter and a G4ZU Minibeam.

VK9AD (08.50, '230), VR2BC (08.00, '215 and VS9OM (17.50, '230) on 'phone. Not at all bad for 25 watts!

G3JAF used c.w. for FQ8HI (21.13), 9G1BM (18.10), VP8EP (18.30), XE1PJ (15.15), PX1PF (19.08), VQ3HD (19.00), FP8BF (20.00), 7G1A (18.57) and a.m. for VP8DW (21.00), VP8EP (18.30), FM7WU (19.50), DU1PAR (21.05), MP4QAO (07.35), VR2DF (09.25), IS1PK (13.30), VS9AZA (17.45), 9M2GA (15.40) and VQ6AB (14.30).

G2PL (Wallington) worked FB8CD Comoro Is. (15.55, '150), VS9OM (15.30, '100) on c.w. and VQ9AIW (20.00, '050) and ZC5AF (15.30, '020) on a.m. **G3YF** reports a.m. signals from KB6BH (10.00, '270), VP8DS (00.15, '180), KG6AIM (14.30, '275), VS9OM (20.00, '100), and XW8AL (14.30, '220). **G6XL** (Pudsey) worked VQ9AIW (18.03, '015) and ZD7SA (22.20, '085) on c.w. and VP2SL (22.00, '180) and MP4TAE (14.30, '150) on a.m.

G8KS reports c.w. from CR5AR (19.40, '120), ZE8JG (16.25, '050), VQ9AIW (19.35, '025), KM6BK (09.45, '070), OX3NK (19.05, '092) and VP8EG South Orkneys (19.30, '062), and on a.m. ZD1PB (19.45, '205), KB6BH (05.40, '170), VS9OM (10.20, '140), VS9AF (13.00, '250), 9M2EK (15.23, '260), FB8CD (18.00, '160), VP8DG (19.07, '163), and VP8DM (19.00, '150).

A.1583 (Penryn) reports hearing 'phone signals from FQ8AF (16.42), ZD2ADS (14.05), HV1CN (08.10), HH2CV (21.10), VR2AZ (08.14), ZD7SA (21.00), HS1E (18.25), FB8XX (18.00) and VS9OM (19.00).

B.R.S. 20317 reports c.w. signals from VQ9AIW (19.00, '020), 9K2AD (13.26, '038), VP8DL (19.40, '020), YA1AO (19.00, '030), VP8CW (20.55, '115), KZ5TD (23.00, '025), KL7ALZ (23.00, '020), LA1VC/G (19.10, '090), VS5GS (18.30, '044), FY7YF (19.48, '045), and EA6AM (18.55, '020) while on phone he logged OQ0DM (19.20, '235), ZS9G (19.15, '200), HI8GA (23.10, '225) with VQ9ERR (18.45, '303) on s.s.b.

14 Mc/s

Although still a great nuisance, short skip sporadic *E* propagation is now on the decline on this band, and the DX much easier to winkle out than it was a couple of months ago.

G3YF (Chingford) reports c.w. signals from LA3SG/P Jan Mayen (10.00, '025), LA1NG/P Jan Mayen (15.00, '045), LA2TD/P Spitzbergen (14.45, '070), UH8KAA (08.30, '095), VK9AD Norfolk Is. (08.00, '100), CP3CN (23.15, '006), 7G1A (22.30, '054), XZ2TH (21.00, '069), PX1CH (10.15, '050), FO8AC (08.45, '090), UJ8AC (15.30, '030), UPOL8 North Pole (16.10, '060), and a.m. signals from VK9AD

The European Band Plan

The Plan, which is voluntary and supported by all I.A.R.U. Societies in Europe, is as follows:

Frequency Band	Type of Emission
3500— 3600 kc/s	Telegraphy only
3600— 3800 kc/s	Telephony only
7000— 7050 kc/s	Telegraphy only
7050— 7150 kc/s†	Telegraphy and Telephony
14000—14100 kc/s	Telegraphy only
14100—14350 kc/s	Telegraphy and Telephony
21000—21150 kc/s	Telegraphy only
21150—21450 kc/s	Telegraphy and Telephony
28000—28200 kc/s	Telegraphy only
28200—30000 kc/s	Telegraphy and Telephony

†7100–7150 kc/s shared with broadcasting which has priority

(08.20, '120), VK7TR (08.20), and YS1MS (23.50, '305).

G8KS (Kent) heard FB8XX Kerguelen (16.40, '028), OY2H (09.15, '010), 3A2AE (13.45, '020), DU7SV (14.15, '020), LA3SG/P (16.30, '090), XZ2TH (16.38, '070), YA1AO (17.20, '050), KX6CO (18.25, '020), VQ5EK (18.30, '010), UM8KAD (18.35, '080), KV4AG (22.55, '045), KR6LF (18.50, '060) and LA1NG/P (15.30, '080) on c.w. with ZE7JR (17.36, '330), VQ9ERR (18.15, '300), PY7SC Fernando de Noronha (23.07, '297), and KC4USB (23.46, '270) on s.s.b.

G6ZO reports c.w. signals from LA1NG/P (18.45, '084), FB8ZZ New Amsterdam (17.00, '005), FK8AW (07.00-10.00, '030 and '335), MP4BCU (21.45, '015), FB8XX Kerguelen Is. (17.30, '030), FB8CE (17.30, '025), KC4USB (06.00, '325), 3A2AE (17.15, '060), ZC7AS (17.45, '055), KG6AIF (19.30, '030), FP8BG (20.30, '055), YA1AO (17.45, '090), FR7ZD (17.00, '095), FO8AB (06.45, '330), ZK1AK (07.00, '010), PX1CH (07.00, '010), LA8FG/P Spitzbergen (20.30, '080), LA3SG/P (17.45, '020), DU9JO (20.00, '090), BV1USB (19.30, '050), VP2LO (22.15, '015), VP8BJ (23.15, '010) and 7G1A (06.00, '045). Jim says that ZC7AS is probably a pirate as his signals do not peak in the right direction, but he gives a QTH, which is listed in the usual place just in case he is all right.

G3BHW (Margate) reports c.w. from CP3CN (23.22, '095), FP8AP (20.08, '020), FP8BG (18.00, '080), HH2GR (23.15, '080), LA3SG/P (08.45, '090), VP2GAK (22.50, '095), VS9OM (19.22, '085), and 3A2AE (22.07, '060). **G3FPQ** reports the following stations using s.s.b.: I5GN (17.42, '320), BV1USE (18.55, '310) and VQ9ERR (18.03, '300) and on c.w. UM8AD (18.08, '030), K6GNL/KW6 (09.13, '045), XZ2TH (18.20, '040) and YA1IW (17.43, '320). **G3JAF** reports working VP8EP (19.30), PX1PF (19.10), VP5AB (07.25) and 3A2AE (17.48). **G3DO** used c.w. to QSO ZL3VB of Chatham Island (07.50, '100) and LA3SG/P (09.55, '090). **GW3AHN** is the only other station reporting having worked ZL3VB (08.15, '100).

Ian Turner **VE2BAT** (ex VS7IT, G3DGN) of Quebec, heard VP3IG (00.05), VP9H (03.00), VP2DA (11.30, '180), VP7PG (02.05), YN1BS (04.00), VP3IG (03.00) and VP4LA (23.10), all on a.m.

With the aid of the old Zepp aerial slung out of the window and about 15 ft. above ground **G3AAE** worked VP8EP (20.17, '050), XZ2TH (17.30, '015), LA3SG/P (17.52, '070), FP8BG (17.08, '020), 9M2GE his first " G " (15.42, '002), LA1VC/G (19.18, '012), FY7YF (21.14, '002) and YA1AO (20.40, '090), soon after moving to the new QTH.

B.R.S.20317 (Bromley) offers the first clue of the present whereabouts of the OK7 world-wide expedition when he reports hearing OK7HZ/OD5 from the Lebanon. He also reports hearing FB8ZZ (16.15, '040), VK9WP, Territory of New Guinea (11.50, '065), PY9EJ (21.13, '025), KV4BQ (21.20, '030), FP8BG (19.00, '026), KG6AIF (19.40, '050), VP8EP (19.42, '053), 7G1A (19.50, '052), LA8FG/P (20.15, '054), FB8CE (18.10, '070), UM8KAB (18.15, '070), JZ0HA (18.25, '032), VQ8AD (16.00, '089) and HH2AR (22.43, '004) on c.w. and KG4AL (23.15, '210) on a.m.

7 Mc/s and Below

G3KZR (North London) used 7 Mc/s c.w. to work VK3YD (20.00), UN1KAA (00.45) and VE3CFU (05.45) while he heard 3A2BZ, UL7JA (20.53), F2CB/FC (22.35), TF5TP (20.00), KP4PZ (03.00, RST599), CM2NI (02.30) and various UA9s. In addition he overheard VP4WD's first QSO with Europe: with an HA5.

B.R.S.20317 reports 7 Mc/s c.w. signals from VQ3HD (19.55, '015), LU6FBF (23.30, '015), and UA0AG (23.50, '001).

G2PL worked OK1WR at 21.12 on 1,820 kc/s.

Late News

In a letter dated August 31, **ZS6IF** says that he will be operating from Basutoland (ZS8) between December 12 and 20. He will operate round the clock, mainly on 14 Mc/s, but possibly on 21 Mc/s as well. Crystals available are 7,005, 7,007, 7,028 and 7,033 kc/s but operation will be concentrated at the low end of the band. A second station may operate on s.s.b. simultaneously provided the necessary gear and a second operator can be found. The call-sign will probably be ZS6IF/8.

Mary Garlow, **K6QPG/KW6**, who is currently very active from Wake Island, writes to point out that KW6 operations, in common with most other U.S. possessions, are confined to the American 'phone band frequencies. Mary says that on one day between 12.00 and 14.00 G.M.T. recently she called G3HJD, G5UF, G8CD, G3YF and G3HFD without success, and presumes that they did not tune the American 'phone band.

From **G3DO** we learn that **VK9AD** is leaving Norfolk Island in October, but **VK9RH** will continue to be active from there. G3DO also says that during a QSO with **VS9AZ** he found he was talking to Stan Crow of ZD8SC, VP5SC and VQ4SC fame.

Via the West Gulf DX Club comes the following: **VR3AC** is active from Christmas Island for about one hour per day; **VQ9AIW** made 1,946 contacts, all of which will be confirmed —G3AAE, who had contact number 3, has already received VQ9AIW's QSL; Danny Weil is expected to be active from the Bahamas as **VP7VB** for about 10 days in the near future. **VE6AEE/SU** will replace VE3EGD/SU who was expected to leave the Gaza strip at the end of September. **VS5JA** is now in Persia, and laments the ban on amateur transmitting in that country. **I5GN**, who made 300 s.s.b. contacts with 65 countries, is passing W6UOU's 10 watt rig on to **VQ6AB.**

* * *

And so we come to the end of another " Three Weeks on the Air." Please keep the information coming. Deadlines are October 9, October 31 and November 21. 73 and the best of DX.

U.S. Phone Bands

U.S. amateurs are only permitted to use phone in the following segments of the h.f. bands: 3·8-4 Mc/s, 7·2-7·3 Mc/s, 14·2-14·30 Mc/s, 21·25-21·45 Mc/s and 28·5-29·7 Mc/s.

Further Modification of the W.S.19

By D. P. J. MEAD (G3IDM)*

THE No. 19 Set in its original form uses control grid modulation, and while this, in the writer's case, is quite satisfactory as it stands, especially if the 19 set is used as a semi-portable, self-contained unit, it was felt that it would be an advantage if the c.w. power could be used with an external modulator for operation from a fixed position, so that full power could be used in the home station, for instance, without sacrificing the lower power, self-contained operation for working from an alternative address. After studying the circuit it was realized that the necessary modification would be electrically simple, but would require care physically because of the close proximity of other components and the chassis.

The control switch has three positions—PHONE, C.W. and M.C.W.—and it was decided to use the M.C.W. position to effect the necessary changes. The extra components needed are a relay to operate from the h.t. line (through a dropping resistor) having two sets of contacts, both normally closed, and a small audio choke, plus, of course, a suitable modulator and its power supplies.

A six pole change-over relay was substituted for the two existing ones and the new relay was mounted on the original bracket. The small audio choke (from a defunct T.1154) was mounted on the back apron of the chassis.

Switching Alterations

To get at the switch wafers, first undo the screws holding the 807 valveholder so that it can be moved to one side, then loosen the nut holding the switch to the panel so that the

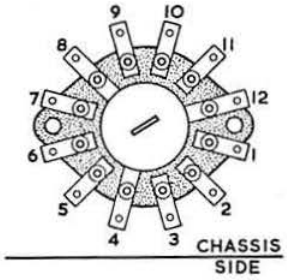


Fig. 1. Diagram of the switch wafers. The modifications to the tag wires are described in the text.

switch assembly is free to be turned. If patience, care and attention are then exercised, the alterations can be carried out. The control switch has three wafers, each three pole three way (S7A/1 to 9 for the benefit of those who have the circuit diagram. The diagram, however is not necessary for the purpose of this article). The wafers are shown in Fig. 1 and coded A, B and C. C is the wafer nearest the front panel and A the one furthest away; the contacts are numbered 1 to 12 on each wafer as shown in Fig. 1. The modifications to the switch are as follows:

(i) A1, A2, no change. A3 disconnect wire. A4, A5 no change. A6, A7, connect together. A8. A9, no change. A10, A11, disconnect wire from A11 and connect A10 and A11 together. A12, no change.

(ii) B1, B2, no change. B3, connect to relay solenoid through suitable voltage dropping resistor and connect the other end of the solenoid to chassis. B4, B5, B6, B7, B8, B9, B10, B11, B12, no change.

* "Hamsdene," 28 Hillcrest Avenue, Chertsey, Surrey.

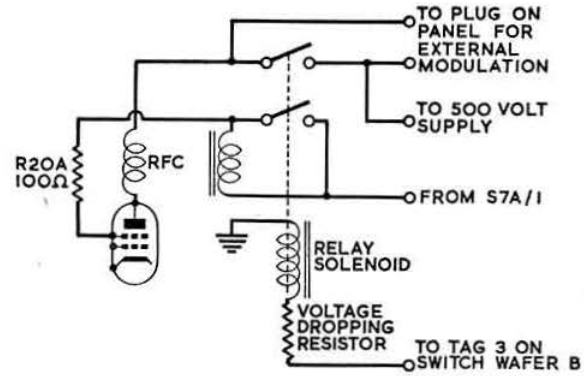


Fig. 2. Circuit arrangement of the relay and p.a. wiring modifications

(iii) C1, C2, C3, C4, C5, C6, no change. C7, disconnect wire. C8, C9, C10, C11, C12, no change.

Modification to Screen Feed

The h.t. feed to the screen grid of the 807 should be broken on the h.t. side of the 100 ohm parasitic stopper (R20A), and the audio choke wired in. One set of relay contacts should be wired across the choke so that when the contacts open the choke is in circuit, so enabling the screen to follow any modulation applied to the anode.

The revised p.a. circuit is shown in Fig. 2.

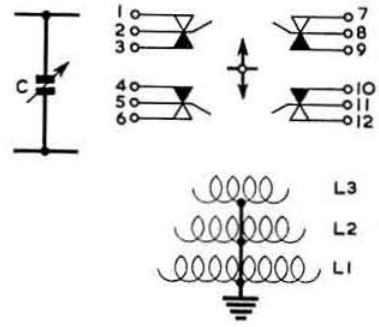
Applying Modulation

The 500 volt h.t. line to the p.a. valve should be broken and the other set of relay contacts inserted. A pair of wires, one from each side of the relay contacts, are taken to a suitable panel plug to enable the modulation to be applied in series with the h.t. to the p.a. In the writer's case a Belling-Lee 5-pin plug has been fitted in the hole in the top left-hand corner of the panel.

Tech-Teaser

READERS who solved previous "Tech-Teasers" may be interested to attempt the following:

A three-position key switch is to be employed as a wave-change switch for a long, medium and short wave test oscillator which uses a Hartley circuit. Twelve contacts are available as shown below. When the lever is in the



middle position, the contacts making are 2–3, 4–5, 8–9 and 10–11.

The tuning condenser has to be connected across the coils L1, L2 and L3 in turn. The centre-taps are all earthed. How is it done?

G5KT.

NATIONAL FIELD DAY 1959—COMPLETE RESULTS

Posn.	Group, Club, Society, etc.	Call-sign(s) A Stn.*	B Stn.	1·8 Mc/s	3·5 Mc/s	7 Mc/s	14 Mc/s	21 Mc/s	28 Mc/s	Total Points
				Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	
1	Gravesend Amateur Radio Society	G6VC	G3IEW	162 *	320 *	566	240	215 *	27	1530
2	Stourbridge & District Group ...	G3BMY	G8GF	278 *	313	413 *	374	125 *	24	1527
3	Wirral Radio Society	G2AMV	G8BM	243 *	273	294 *	528	152	—*	1490
4	Stamford & District Group ...	G3ARS	G3FUR	191 *	389	274 *	233 *	348	35	1470
5	Weston-super-Mare Group ...	G5TN	G5DV	216 *	355	391 *	265	204 *	30	1461
6	Port Talbot & District Radio Club	GW2FRB	GW3BQY	235 *	254	375 *	500	54	5 *	1423
7	Croydon Group	G3BFP	G4QK	165 *	323	379 *	313	92 *	47	1319
8	Cambridge Group	G8PB	G5DQ	—*	380	473 *	270	152 *	32	1307
9	Norwood & South London Group	G3IIR	G2LW	203 *	309 *	298	353	92 *	33	1288
10	City & County of Bristol Group	G6RB	G6GN	194 *	283	358 *	277	75	30 *	1217
11	Medway Group	G2ZP	G2BP	145 *	287	361 *	266	101 *	20	1180
12	Oxford & District Amateur Radio Society	G8PX	G2DU	248 *	354 *	307	149	94	26 *	1178
13	Cannock Chase Amateur Radio Society	G3ABG	G4CP	233 *	332 *	398	136	54	24 *	1177
14	Norwich & District Group ...	G3JPT	G3IVH	201 *	322	394	124 *	103 *	—	1144
15	Edgware & Hendon Group ...	G5FG	G2IM	123 *	289	270 *	375	55 *	30	1142
16	Mitcham Group	G3NFA	G3HQX	226 *	319 *	366	105	106	—*	1122
17	Reigate & Redhill Group ...	G3JDN	G2AJS	211 *	75 *	384	349	56 *	33	1108
18	Slough Group	G6NA	G3XH	186 *	240 *	345	172	145 *	12	1100
19	Chelmsford Group	G2HPF	G4VF	220 *	401	310 *	58	33 *	31	1053
20	Cheltenham Group	G3CGD	G3YZ	101 *	227 *	123 *	342	181	45	1019
21	Brighton & Hove Group ...	G3YY	G2FAD	220 *	229	291	130 *	145 *	—	1015
21	Bury & Rossendale Group ...	G2GA	G3KMM	175 *	211	392 *	137	88	12 *	1015
23	Barnsley & District Amateur Radio Club	G3ABS	G5IV	207 *	287	294 *	167	46 *	—	1001
24	Grimsby Amateur Radio Society	G4XC	G2JB	188 *	301	244 *	152	102 *	—	987
25	Liverpool & District Amateur Radio Society	G8DI	G6YQ	169 *	320 *	322	133	41	—	985
26	Blackpool Group	G8GG	G5ND	185 *	321	278 *	156	42 *	—	982
27	Coulsdon & District Group ...	G2DN	G3DVQ	174 *	271	327 *	74 *	134	—	980
28	Acton, Brentford & Chiswick Radio Club	G5LQ	G3IIU	160 *	257 *	386	129	12	—*	944
29	South Birmingham Group ...	G3JAO	G3ITH	219 *	297	292 *	132	—*	—	940
30	Scunthorpe Group	G3JWR	G3KNU	63 *	241	267 *	207	112 *	24	914
31	Aberdeen Town Group	GM6IZ	GM3EOJ	191 *	118	183 *	284	96 *	24	896
32	Scarborough Group	G3KS	G2CP	1 *	288 *	365	190 *	41	—	885
33	Sheffield Group	G8NN	G5TO	195 *	210 *	259	148	65 *	—	877
34	Cardiff & Penarth Groups ...	GW8AM	GW4FW	222 *	167 *	277	192	18 *	—	876
35	Derby†	G3ERD	G3EEO	181 *	302	348 *	28	14	—	873
—	Lincoln Group‡	G4BU	G3EBH	221 *	322 *	302	26	—	—*	871
36	Torbay Amateur Radio Society ...	G3GDW	G3NJA	205 *	154	321 *	105	59	27 *	871
37	Portsmouth & District Group ...	G6NZ	G6WS	242 *	251 *	303	4 *	35	27	862
38	Sutton & Cheam Radio Society ...	G4DH	G8DF	204 *	262	253 *	102	6 *	2	829
39	Leicester Group	G3LRS	G2DSF	138 *	326	282	53 *	—*	—	799
40	South Shields Amateur Radio Club	G3ELP	G3LKZ	74 *	216	257 *	181	69	—*	797
41	Great Yarmouth and Lowestoft & Beccles Groups	G2UK	G6ZG	190 *	265	183	138 *	12 *	—	788
—	Exeter Group§	G3JW	G3ID	134 *	255	225 *	114	54 *	—	782
42	Hartlepool's Amateur Radio Club	G3AWL	G3CHJ	76 *	222	232 *	225	14 *	—	769
43	Danbury Group	G3IIS	G3VI	176 *	282	252 *	41	6 *	—	757
44	Belfast Group	GI5UR	GI6YM	62 *	191	245 *	243	—*	—	741
45	Brentwood Group	G3FKH	—	158 *	249 *	312 *	—	—	—	719
46	Pontefract Area Transmitting Group	G3US	—	204 *	213 *	292 *	—	—	—	709
47	Coventry Group	G3NBQ	—	220 *	255 *	219 *	—	—	—	694
48	Bath and Wells & District Groups	G2ZR	G3EIW	183 *	191	140	110 *	35	24 *	683
48	Ilford Group	G3LRE	G3HIW	177 *	256 *	206 *	44	—	—	683
50	Retford Group	G3KPU	G3BTU	58 *	240	285 *	71	—*	26	680
51	Barnet & District Radio Club ...	G3FFA	—	185 *	247 *	234 *	—	—	—	666
52	Ballymena Group	GI3FJA	GI3DZE	40 *	25	280	300 *	18	—*	663
53	Stockport Radio Society	—	G3NBN	—	352	293	—	3	—	648
54	Gloucester Group	G3MA	—	216 *	213 *	218 *	—	—	—	647
55	Lothians Radio Society	GM3UM	GM3BQO	72 *	210 *	259	11	91 *	—	643
56	Southgate, Finchley & District Group	G5FA	—	135 *	173 *	320 *	—	—	—	628
57	Thanet Area Group	G2JF	G2IC	138 *	350 *	106	33	—	—*	627
58	Bailleul Radio Society	G3IHH	—	116 *	223 *	273 *	—	—	—	612
59	Prestatyn & District Group ...	GW2HIY	GW3FJI	11 *	242 *	195	131	32 *	—	611
60	Harlow & District Group ...	G3ERN	G6UT	146 *	333 *	90	32	3	—	604
61	Macclesfield & District Radio Society	G3CZO	G3ATK	143 *	228	73	150 *	3 *	—	597
62	A.E.R.E. Amateur Radio Club ...	G3HS	—	94 *	238 *	262 *	—	—	—	594
63	Herne Bay Independent Group ...	G3HEH	—	155 *	198 *	238 *	—	—	—	591
64	Southampton Group	G3JLS	G3LZG	211 *	100	263 *	2	—	—	576
65	East Molesey Group	G5LC	—	217 *	294 *	—	—	58 *	—	569
66	Dundee Group	GM3EUV	GM4HR	104 *	226	92 *	95 *	48	—	565
67	East Ham Group	—	G2ZZ	—	186	334	6	—	—	526
—	Luton Radio Club‡	G3KAA	—	227 *	291 *	5 *	—	—	—	523
68	High Wycombe Group	G6JK	—	108 *	162 *	248 *	—	—	—	518
69	Shefford and District Amateur Radio Society	G2DPQ	—	192 *	166 *	155 *	—	—	—	513
—	Cambridge University Wireless Society‡	—	G6UW	—	211	277	—	18	—	506
70	Reading Amateur Radio Club ...	G5HZ	—	138 *	172 *	193 *	—	—	—	503
71	Boston Group	G6GH	—	137 *	219 *	135 *	—	—	—	491
72	West Kent Amateur Radio Society	—	G2UJ	—	155	254	77	—	—	486
73	Kingston & District Amateur Radio Society	G3KIN	—	193 *	143 *	147 *	—	—	—	483
74	Guildford & Woking Group ...	G3IAF	—	152 *	232 *	—	93 *	—	—	477
75	Ainsdale Radio Club	G2CUZ	G2DQX	125 *	125 *	48 *	148	12	—	458
76	Dorking & District Radio Society	G3LBA	—	206 *	186 *	—	63 *	—	—	455
77	Wolverton Amateur Radio Society	G3LCS	—	178 *	234 *	—	23 *	—	—	435
78	Hull & District Radio Society ...	G3EFR	—	135 *	9 *	285 *	—	—	—	429
79	Chingford Group	—	G8JM	—	89	261	—	60	—	410
80	York Amateur Radio Society ...	G3HWW	—	135 *	162 *	107 *	—	—	—	404
81	Rotherham Group	—	G4BD	—	217	115	—	66	—	398
82	Enfield Group	G3FD	—	144 *	153 *	90 *	—	—	—	387
83	Newark Group	—	G3ELJ	—	217	158	9	—	—	384
84	Welwyn Garden City Group ...	G5UM	—	106 *	148 *	113 *	—	—	—	367
85	Clifton Amateur Radio Society ...	G3GHN	—	153 *	—	187 *	17 *	—	—	357
86	South Manchester Radio Club ...	G3FVA	—	146 *	127 *	77 *	—	—	—	350
86	Newbury & District Amateur Radio Society	G3LLK	—	96 *	178 *	76 *	—	—	—	350
88	Stevenage & District Group ...	—	G3FAU	—	143	157	49	—	—	349
89	Moray, Nairn & Banff Joint Counties Group	GM3KHH	—	156 *	35 *	150 *	—	—	—	341
90	Ravensbourne Amateur Radio Club	G3HEV	—	76 *	196 *	67 *	—	—	—	339
91	Plymouth Radio Club	G3GRA	G3JYB	27 *	92	18 *	158	42	—*	337
—	Chester Group‖	G3HEU	G3ATZ	56 *	104	166 *	9	—*	—	335
92	North Kent Radio Society ...	G3ENT	—	47 *	180 *	103 *	—	—	—	330
93	Ayrshire Group	GM2UU	GM3NIN	78 *	54 *	119 *	73	—	—	324
94	Bradford Group	G3KEP	—	91 *	175 *	51 *	—	—	—	317
95	Pontypool Group	GW3LDC	GW3AJ	126 *	100 *	50	—	6	—	282
—	Southport Radio Society§ ...	G2ART	—	11 *	171 *	64 *	—	—	—	246
96	Finsbury Park Group	G3JZX	—	123 *	113 *	4 *	—	—	—	240
97	Aberdeen Amateur Radio Society	GM3BSQ	—	102 *	—	126 *	10 *	—	—	238
98	Dunfermline Group	—	GM3EGU	—	96	114	10	—	—	220
99	Stroud Group	G5ZK	—	101 *	24 *	—	—	—	—	125
100	Bedford Group	G4OL	—	16 *	103 *	—	—	—*	—	119
101	Stoke-on-Trent Radio Society ...	—	G3UD	—	107	—	—	—	—	107

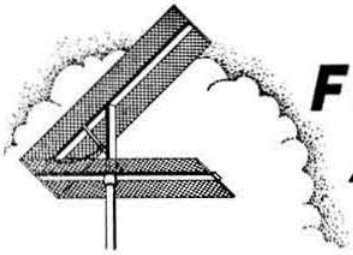
Notes:

† Derby & District Amateur Radio Society (G3ERD) and Derby Short Wave Experimental Society (G3EEO).

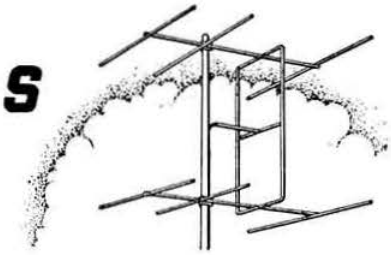
‡ Excess power declaration.

§ Late entry.

‖ Non-entrant—for information only.



FOUR METRES AND DOWN



European V.H.F. Contest—Transatlantic Tests —Two Metres Wide Open

By F. G. LAMBETH (G2AIW) *

CONDITIONS during the European V.H.F. Contest were excellent for the greater part of the time, although the area of optimum propagation appeared to end at the German/Dutch border. However, many Dutch stations said that activity in Germany appeared to be low. Suffice it to say that many Dutch and Belgian stations were worked by Gs as also were some GMs, GC2FZC, GI3GXP, EI2W and F8MX, showing that the DX area was quite widespread. A few stations were heard calling a DL but otherwise German stations were not in the British picture at all.

The portable stations appeared to be doing very well; G2DTO/P in the south, who seemed to be on all the time, had more than 150 contacts, most of them apparently DX. It is only surprising that much more QRM was not heard on the band, although the Saturday night session was very lively. There is no news of any Scandinavians during the Contest period, although ironically enough LAs were worked in the South of England four hours after the Contest ended! A conclusion reached by G2AIW is that there is still room for much more co-operation in this event; there is great fun to be had from it, quite apart from the activity angle.

Transatlantic Tests

G4CP has forwarded a letter received from **W2TTM** (Morgan, N.J.) who draws attention to the " 1,000 Mile Club " and its certificate which is available to v.h.f. men who reach this far out in a QSO.

In the course of an interesting letter, W2TTM says that it is a continual source of wonder to him that the Atlantic has not yet been spanned on 2m. He thinks that one of the reasons is lack of interest on the part of Europeans.

EI2W is to carry out tests in 1960 from Clews Bay but it is not generally easy for the rest of us in Europe to set up the somewhat elaborate gear necessary, *and* to find the time for sustained efforts. (Is this really so?—EDITOR). Admittedly, only a few stations are in the excellent positions generally assumed necessary for such tests, but in any case a clear take-off to North America does mean locating the station in Cornwall, Ireland or Scotland.

The success of W6NLZ and KH6UK in setting up the world records for 144 and 220 Mc/s was in no small part due to their system of carrying out regular tests coupled with a liaison circuit on 14 Mc/s. The co-ordination possible with such an arrangement eliminates much fruitless searching and listening—knowing the other participating station is in fact transmitting or receiving at the correct time is a great help in carrying out the tests.

W2TTM wants a partner for similar tests across the Atlantic. His station is situated on the coast of New Jersey, 200 ft. above Raritan Bay. The transmitter uses a pair of 4X250B tetrodes, running " near the limit " with 78 per cent efficiency, feeding a pair of 24 ft. Yagis, 13 element each, spaced 16 ft. apart. A pair of WE-417A planar triodes are used in the crystal controlled converter with a Collins 75A3 as the tunable i.f.

G3HBW is already co-operating with **W2CXY** but so far there has been no contact, but he lives in hope.

CO2VY is another who wants to carry out 2m tests with G stations. He is building a beam aerial comprising six 10 element Yagis stacked two-over-two-over-two. His frequency is 144·986 Mc/s and he is on the band daily from 01.00 G.M.T.

Two Metre News

B.R.S.20133 (Melton Mowbray) says " not a good contest " and found little, " as usual," coming from the south though one or two continentals appeared, which compensated for

* *V.H.F. Manager, 21 Bridge Way, Whitton, Twickenham, Middlesex.*

V.H.F./U.H.F./S.H.F. Two-Way Records

50 Mc/s*	
LU3EX—JA6FR	12,000 miles—March 24, 1956
70/72 Mc/s	
G5KW—FA9VN	1,156 miles—June 22, 1958
144 Mc/s	
W6NLZ—KH6UK	2,540 miles—July 8, 1957
(European Record G5NF—I1KDB 1,084 miles, June 14, 1959)	
220 Mc/s*	
W6NLZ—KH6UK	2,540 miles—June 22, 1959
420 Mc/s	
G3KEQ—SM6ANR	651 miles—June 12, 1959
1250 Mc/s	
W6DQJ/6—K6AXN/6	400 miles—June 14, 1959
2300 Mc/s	
W6IFE/6—W6VIX/6	190 miles—June 9, 1956
3300 Mc/s*	
W6IFE/6—W6VIX/6	190 miles—June 9, 1959
5650 Mc/s	
W6VIX/6—K6MBL	34 miles—October 12, 1957
10,000 Mc/s	
HB1FU—HB1JP	139 miles—July 18, 1959
21,000 Mc/s*	
W1NVL/2—W9SAD/2	800 feet—May 18, 1946

* Not assigned to radio amateurs in the U.K.

much, but activity was low—'20133 estimates no more than 65 active stations in this country. The over-50 mile stations most consistently heard were F3LF, G3GTW, G3HBW, G5YV, GW3KMT/P and PE1PL.

When working **G6OX** recently, SP6CT gave his location reference as " HK29A " which refers to a continental method of location of which more may be heard later. With the correct map it was no trouble at all to locate the position of Snezka.

EI2W (Dublin) found conditions extremely good during the v.h.f. contest: 35 contacts were made including F3LP, who was a RS59 signal for three hours on the Sunday afternoon. Stations worked included G3FAN, GM3EGW, G2ADZ, GM2FXN (Angus), GM3GUO/P (Kirkcudbrightshire), G3HBW, G8VZ, G6XA, G3ENY, G5DW, G3EGK, G3IKV/A and G5YV. F8MX was another good signal. This will give some idea of the range which was roughly 350/400 miles.

G3FZL (Forest Hill) was surprised and pleased to encounter LA9T, LA3AA and LA8RB on September 6 in the evening *after* the Contest ended. Some of these stations were also worked by G2XV, G3KEQ and G8GP. Such contacts are no longer records, but still among the most difficult to achieve.

It is pretty certain that conditions recently during the long spell of anti-cyclonic weather have been consistently good, sometimes excellent, but it is also a sad fact that there have not always been many people on to take advantage of them. The skeds seem to have been fruitful enough, and the stations one classes as " regulars " are nearly always audible at good strength. One would have thought that the band would be full, but this still does not happen very frequently.

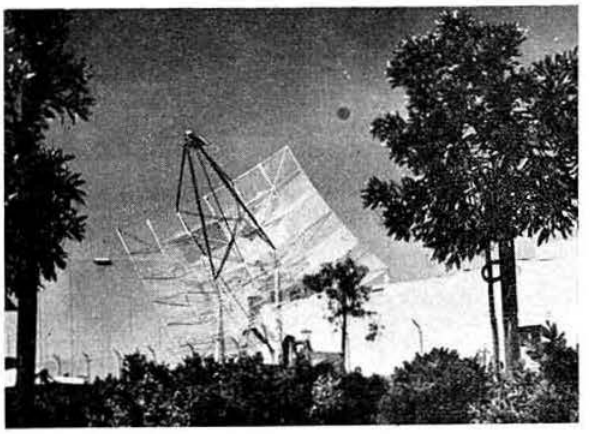
G3HWR (Hampstead, N.W.3) was still under the delusion, during the Contest on September 5-6, that Europe could not really be raised from his location, and only F8MX and F3LP were worked. Conditions were good to the west and the Contest all in all was very enjoyable. During the week ending September 13, PA, ON, and DL were worked easily and the conclusion has been reached that an overhanging hill is a psychological rather than an electromagnetic barrier. The beam was pointed squarely into its side and there was the DX!

G3HWR found the following stations consistent during the month. G3EHY (Banwell), S5–S9+ on 144·85 Mc/s; G3KHA (Bristol) S4–S9+ on 145·49 Mc/s; G6GN (Bristol), S7–S9 on 144·34 Mc/s; G3ABH (nr. Poole, Dorset), S3–S9 on 145·33 Mc/s; GW3ATM (nr. Chepstow), S5–S9+ on 144·20 Mc/s; GC2FZC (Guernsey), S5–S8 on 145·45 Mc/s.

B.R.S.22400 (Histon, Cambs.) has sent a remarkable list of PAs, ONs and DJ/DLs heard from 20.00–00.30 G.M.T. on the night of September 12/13.

G3JGJ of Pepperdon, Moretonhampstead, Devon (hope he never has to put that lot on the key all at once—G2AIW), is now settled and working on a 24 volt d.c. supply, and is running the same input as when he had the mains. So far, using the same 4 element Yagi at 25 ft. the results have been quite satisfactory. G3HBW was worked on September 1 and GC2FZC on September 3—both contacts RS59+. On September 6 a contact was made with G6OX at 559. The sked with GC2FZC has been resumed and five QSOs had been made up to September 11.

B.R.S.3856 (Petts Wood) reports that PA0LQ was heard at S6 on September 7 as well as the first ONs ever logged. This was between 21.25/21.45 G.M.T. but G3IWL informed '3856 that conditions had been much better earlier that evening. G3EMU (Canterbury) was heard for the first time the same night. The day of days, however, was September 12. On that day ten PAs were heard: at 19.30 G.M.T. they averaged S7/8. Several were at S9 around 20.00 G.M.T. after which they began to fall away, although PA0EZ was a good signal (S8) until 21.15. Around 21.00, F and ON stations were heard at S6/7. The receiving equipment is an old RF26 converted into a BC455 with an odd length of wire as aerial 12 ft. above ground in the roof of the garage! September 14 produced the first G-DX over 60 miles—G2CIW S6/7 (Birmingham) and G3MED (S5) Northwich.



The 30 ft. aluminium parabola aerial used at the Eitel-McCullough Inc. factory in San Carlos, California, for the reception of signals from a site near Fairbanks, Alaska, on April 16, 1959.

Two Metre News from Wales

GW3MFY (Bridgend) was pleased with the first " post-strike " BULLETIN, and thought the smaller print was a brain wave, with its obvious advantage of " more in the same space." Conditions during the period July 20/August 28 inclusive were mostly good, but the percentage of replies to CQs and calls was "abysmally" low. With an average of 18 calls per evening GW3MFY was lucky sometimes to get one QSO! This may seem fantastic to anyone in the Midlands or Manchester areas, but it is no exaggeration in South Wales —or North Devon for that matter (" ask G2ADZ in Mortehoe," says GW3MFY). However, four phone QSOs were made with F8MX and GW2HIY (Anglesey) was heard R2-5 S2-3 on July 24 but closed down before a QSO could be attempted. G3IOO (Oswestry) and G6XX (Yorks.) were heard working G3EHY on August 2 and 5 respectively. G3KEQ has been worked and G3HBW heard several nights calling I1ACT and YU1HK presumably on meteor scatter skeds. On August 16, conditions were excellent to the north. GI3GXP was 59 at about 22.15 G.M.T. and was later worked on c.w. F8MX, worked later, said that GW3MFY and GI3GXP were the only stations he could hear! GW3MFY now logs more stations than he can work as a result of placing a new A2521 pre-amp. in front of the cascode ECC84. He is interested in arranging skeds with anyone who can read an S3 signal; time preferably after 22.00 G.M.T.

GW2FVZ/P was located 800 ft. above Prestatyn for the whole 24 hours of the v.h.f. contest on September 5–6. Most of the operating was done by GW2FVZ, GW3FJI and GW3JGA. Activity was found to be very good, and competition was high for the continentals (the first ever logged or worked by the group) but very little c.w. was heard coming from the Continent. In all, **B.R.S.20284** says 82 stations were worked, a very good list.

G3HLW (Bournemouth) operates portable on 2m either at Southbourne or at St. Catherine's Hill, Christchurch, with equipment measuring 7 in. × 4½ in. × 4½ in. and comprising a Z77 p.a. modulated by a 6BW6. The aerial is a 5 element Yagi usually 9 ft. high. The Z77 produces ½ watt output, and the idea is to prove that this power and a good aerial are all that is needed for success on 2m. Stations over a hundred miles away are frequently worked. On September 6, GC2FZC

reported signals 59, F3LP 58 and G6OX 59. GC2FZC was also worked on the 7th and 8th. On the 8th only the driven element of the beam was used on the car near Poole, Dorset. G3HLW's frequency is 144·8 Mc/s and operation times normally Mondays, Wednesdays and Fridays from 20.00-22.00 clock time.

Two Metre News from the Continent

LA9T (Moss, Oslo) had a fair time during August, in company with LA8MC, LA3AA, LA4YG, LA4VC, and LA8RB, who have worked many SMs, OZs and PA0HRX. Some weak DLs were heard. Remember, such QSOs are not normally easy, by reason of geographical limitations. The latest session was on September 1 when LA9T, LA4VC and LA8RB worked several OZ and SM stations.

LA9T in a later letter, reported that conditions started excellently in September, with SMs and OZs worked, a highlight being LA4VC's QSO on September 5 with DL6QS, but the marvellous opening of September 6 was quite unexpected. Having heard British f.m. stations on 96 Mc/s, and unidentified (English language) signals between 146 and 147 Mc/s, LA9T started calling G stations, LA8RB and LA3AA joining in later. G2XV, G2FJR, G3CO, G3CCH, G3FZL, G3IIT, G3JAM, G3KEQ, G3LTF, G5LL, G6NB and G8GP were worked.

SP6CT (Snezka) heard an OZ station recently and worked OE3AS and several DLs and OKs. SP5FW had a contact with OK2BJH (430 km.) and heard OK2VCG (500 km.).

Polish Two Metre Band Plan

Polish amateurs have adopted a new plan for the 2m band which includes segments for special purposes (meteor scatter tests, s.s.b., beacon stations). The details are as follows: 144-144·025 Mc/s—special purposes; 144·025-144·2 Mc/s—SP3; 144·2-144·45 Mc/s—SP6; 144·45-144·7 Mc/s—SP2; 144·7-144·95 Mc/s—SP4, SP5; 144·95-145·05 Mc/s—special purposes; 145·05-145·2 Mc/s—SP1; 145·2-145·7 Mc/s—SP9; 145·7—145·85 Mc/s—SP7; 145·85-145·975 Mc/s—SP8; 145·975-146 Mc/s—special purposes.

Grand Opening on 2m

The evening and night of September 12 produced one of the best openings to the Continent since October 1958. A notable feature was the tremendous strength of near continental stations up to about 250 miles. Some were heard and worked which had seldom or never been heard before by stations which normally do not even hear continentals! **G3FZL** reports that DL3FM was an outstanding signal from Germany while PAs and ONs almost swamped the band. SM6ANR and SM6PU were the best from Scandinavia and OZ stations were there, too.

G3BGL (Woolhampton, Reading) found so many continentals at high signal strengths that G stations were pushed into the background.

G6OX (Egham) worked SM6ANR, SM6PU and OZ3NH, his total score during the evening being two SMs, one OZ, five ONs, seven PAs and six DJ/DLs. A second QSO, making seven in all, was made with one of the German stations. Another interesting QSO by G6OX occurred on September 9 when F3YX/M, in the Alps near the Swiss Border, was raised on phone at S9.

G3HBW (Bushey) worked SM6ANR and SM6PU and a couple of OZ stations, among others. The meteor scatter QSO between OK2VCG and HB9RG recently reported has now been confirmed by OK2VCG in a letter to G3HBW.

Seventy Centimetres

B.R.S.19317 (Southfields, S.W.18) is back in England again after three years in Germany and hopes soon to be active on the 70 cm. band. The receiver is basically similar to that described by G2FKZ, G3FZL and B.R.S.19317 in the June 1953 issue of the BULLETIN. A number of modifications will probably be made in the light of experience since then. The aerial is to be a 16 element four square slot array.

EI2W will be operating from Foxrock during the winter months on 435·7 Mc/s.

G2XV (Cambridge) is reported by LA9T as having tried in vain to work Norway on 432 Mc/s. LA9T says that they had all closed down for the night; had it been otherwise the world record would almost certainly have been broken on the night of September 6. As compensation, G2XV is reported to have had another QSO with SM6ANR around midnight on September 8.

Columbus Award for G5NF

The Columbus Society of Genoa (Civico Istituto Colombiano) has notified Leon Ward (G5NF) of Farnham, Surrey, that he is to be awarded its Gold Medal and Diploma for his part in setting up the new European Two Metre record of 1084 miles with I1KDB on June 14, 1959.

* * *

Please send your reports as soon as possible so that they may appear in the earliest possible issue. Many thanks.

V.H.F. QSY

Members who wish to acquire or dispose of crystals in connection with the revision of the British Isles Two Metre Zone Plan announced in March 1959 are invited to send details to "V.H.F. QSY," R.S.G.B. *Bulletin*.

Crystals Offered

By G8CV, The Larches, Wetherall, Carlisle, Cumberland. 8040 kc/s, ¾ in. spacing (two available).

Crystals Required

By G8CV, as above. Any type suitable for Zone 9 (8100 to 8111 kc/s.).

Worked and Heard on V.H.F.

B.R.S.20284 (Prestatyn) (GW2FVZ/P) May 3.
Heard: G3AYT/P, 3BAK, 3CCH, 3DVK/P, 3EKX/P, 3ERD/P, 3FD/P, 3HBW, 3ILX, 3JZW/P, 3KMS/P, 3MAR/P, 5CP/M, 5YV/P, 6XM, 8GP/P, 8QY/P, GI5AJ, GW2HIY.
B.R.S.21476 (Penarth) May 1-16.
Heard: G2ADZ, 2HDR, 3EHY, 4GR, 5DW, GW3ATM/P, 3DDY, 3HAW, 3MFY, 5BI, 8UH/P.
B.R.S.22400 (Histon, Cambs.) September 12/13.
Heard: DJ1AY, 1EH, 1EY, DJ2OA, DL3FM, 3NJ, ON4BZ, 4DY, 4HC, 4IW, 4LN, 4OC, 4OZ, 4RN, 4SK, 4TQ, 4TS, 4UD, 4ZH, 4ZK. PA0ANJ, BU, CML, DIJ, DSJ, DWZ, EQ, EH, EZ, FA, FB, GG, GW, JAR, JM, JMT, LZ, MD, MI, MSH, NAL, ROB, ROX, TBE, TP, TWZ, UM, WAR, WI, YVS.
B.R.S.3856 (Petts Wood).
Heard: F3LF, 8MX, 9LD, G2CIW, 3EMU, 3MED, ON4DY, 4FZ, 4GL, 4HC, 4XY, PA0CVH, 0EZ, 0GG, 0GW, 0JAR, 0LQ, 0MSH, 0MD, 0KH, 0QC.
G3JGJ (Pepperdon, Moretonhampstead, Devon). August 18-September 16.
Worked: G3HBW, 60X, GC2FZC. *Heard:* F3LP, 8MX, G2ADX, 2AHP, 2BHN, 2DTO/P, 2RY (Bridport, Dorset), 3AOS/M (Dorset), 3BBR/P, 3BGL, 3FZL, 5MA, 5DW, 6GN, 6TA.
G3DIV/P (Brightling Beacon, Sussex) July 20-27.
Worked: DL1NE, 1RX, 3ZJ, F3LP, 8KF, 8MX, 9LD, 9NW, ON4FG, 4XY, 4IW, 4PL, OZ4OL, 5AB, 9JK, PA0BM, 0DT, 0EZ, 0GVK, 0HRX, 0JAR, 0JMT, 0KT, 0LQ, 0MI, 0OKH, 0OTC, 0PWZ, 0UD, 0VEL, 0WAR, 0YVS.
B.R.S.20133 (Melton Mowbray) May 1-15.
Heard: G3AYT/P, 3CCH, 3CO, 3DVK/P, 3DVV, 3FFV/P, 3GTW, 3HBW, 3JMA, 3JZW/P, 3LTF, 3MAR/P, 3NIH, 4JJ/A, 5MA, 5YV, 6AG, 6NB, 6TA, 8VZ.
G3MED (Northwich) May 15-17.
Worked: ON4OZ, OZ3NH, OZ4KO, PA0BU, 0EZ, 0FB, 0LQ, 0OKH, 0WAR.
G3LHA (Coventry) May 8.
Worked: G2FM, 3EHY, GW3GWA, OZ3NH, 4KO, 9EA, PA0QC, 0VEL.
Heard: F3LP, GI3GXP, ON4XT, PA0BU, 0EZ, 0LQ, SM6ANR, 6BDQ.
GM2FHH (Aberdeen) March.
Worked: G2AIW, 3CCH, 3JZG, 3KEQ, PA0EZ.
Heard: GM3EGW, 3HLH/A, 3LAV, 4HR.
GW2FVZ/P September 5/6.
Worked: EI2W, F3LP, 8MX, 9LD, G2BDQ/P, 2CIW, 2DTO/P, 2DTQ, 3CCH, 3CXP, 3DVK, 3EJO, 3FAN, 3FDG, 3FZL, 3HBW, 3ION/P, 3JDM, 3JMA, 3JWQ, 3KEQ, 3NNG, 5DW, 5JU, 5MA, 5YV, 6LI, 6TA, 6XA, 8GP, GD3UB, GI3GXP, 5AJ, GM2FHH, 2FXN, 3EGW, 3HLH/A, 3KYI/P, ON4AC/P, 4FG, 4TQ/P, PA0EZA, 0GG/A, 0LQ, 0OKH, 0TP/A, 0YZ/A, PE1PL

Society News

Geneva Conference

FURTHER to the report published last month, the all-important Frequency Allocation Committee (No. 4) had completed, by September 4, its preliminary examination of the frequency spectrum table below 4 Mc/s and was at that date beginning an initial exploration of proposals concerning the spectrum from 4 Mc/s to 27·5 Mc/s.

During the course of discussion, the Chairman of the Committee (Mr. Gunnar Pedersen of Denmark) noted that the various proposals appeared to divide the delegations into two opposing camps—those who wished to leave untouched the present allocations table in the h.f. part of the spectrum and those who wished to make additional space available for broadcasting. The Committee postponed further discussion of the high frequency spectrum until the secretariat had been able to complete a document summarizing the position of the various countries.

The I.A.R.U. was represented at the Conference by Mr. John Clarricoats, O.B.E. (G6CL), and Major Per-Anders Kinnman (SM5ZD) from August 17 until September 6, and by Mr. Otfried Luhrs (DL1KV) from September 6 until September 27. Mr. Clarricoats returned to Geneva on October 1, where he was joined on October 3 by Mr. Arthur Milne (G2MI), who was invited to join the team in the place of Mr. Wyn Dalmijn (PA0DD), who is ill.

It is expected that Mr. L. E. Newnham, B.Sc. (G6NZ), will rejoin the U.K. delegation in Geneva towards the end of October.

Mr. W. J. Green

THE Council have received with regret the resignation from that body, with effect from October 2, 1959, of Mr. W. J. Green (G3FBA) of Bath. Mr. Green, who was elected to serve on the Council two years ago as the Zone D Representative, is now living at 8 Lee Road, Blackheath, London, S.W.3, and is thus no longer qualified to continue in that office.

Nominations for Mr. Green's successor were called for in the August issue of the R.S.G.B. BULLETIN.

Mr. P. H. Wade (G2BPJ)

IT is regretted that the name of Mr. P. H. Wade (G2BPJ), Zone A Representative, was omitted from the list of Council Members printed on the fourth page of the Index to Volume 34 enclosed with the August issue of the R.S.G.B. BULLETIN.

Slow Morse Volunteers Required in London Area

VOLUNTEERS for the Society's Slow Morse Practice Transmissions on Top Band are urgently required in the London area for every night of the week. Members in a position to take part on at least one evening each week are invited to write to the Honorary Organizer, C. H. L. Edwards (G8TL), 28 Morgan Crescent, Theydon Bois, Essex, stating the day of the week, time and frequency on which they are able to participate.

More than 100 members attended the presentation of the Mullard Award for 1959 to Peter Odell (G3MUM) by His Worship the Mayor of Redcar, Councillor H. A. Darling, on August 29, 1959. The meeting, held at the Coatham Hotel, Redcar, was opened by Mr. W. R. Metcalfe (G3DQ), Executive Vice-President of the Society, who welcomed the guests and explained the terms of the Award. Mr. Metcalfe was supported by the Zone A Representative, Mr. P. H. Wade (G2BPJ). Mullard Ltd. was represented by Mr. E. J. Brazier and Mr. J. W. O'Donnell. A portable typewriter was presented to G3MUM's mother by G3LWY on behalf of members attending the ceremony.

Amateur Radio at the Geneva Radio Conference

THE Amateur Service is defined in the Radio Regulations as a Service of self-training, intercommunication and technical investigation by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interests. It stands alone, therefore, amidst a great number of powerful commercial and public radio services. But its right of existence and its importance are not impaired by this fact. It is no coincidence surely that many of those who are at the present moment directing the deliberations of the Geneva Radio Conference are licensed radio amateurs, while many others first became interested in radio as the result of experience gained as amateurs.

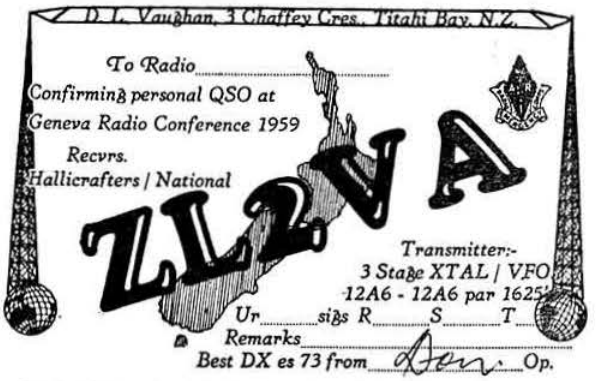
In addition to the I.A.R.U. team of observers, there are present at the Conference well over 50 other licensed radio amateurs. These include the Chairman of the whole Conference (Charles Acton, VE3AC), and one of the two Vice-Chairmen (Juan Autelli, LU9DL). Dr. Mireslow Joachim (OK1WI) is Chairman of one of the main Committees, while the Secretary of the Conference is Gerald C. Gross, HB9IA (one time W3GG). The U.K. delegation includes the names of two well-known amateurs in the persons of Lt.-Col. H. A. Pargeter (G6MA) and Leonard E. Newnham, G6NZ (Immediate Past President, R.S.G.B.).

The A.R.R.L. team consists of A. L. Budlong (W1BUD), John Huntoon (W1LVQ) and Alex Reid (VE2BE) while W.I.A. is represented by John Moyle (VK2JU). Don Vaughan (ZL2VA), Clarence Langdale (ZL2CC) and David Duthie (ZL2ASK) are members of the New Zealand delegation. Jim Malone (EI4N) is with the Eire delegation and Leonard Pearson (VK3PI) and Eric Anderson (VK3KH) are members of the Australian delegation.

In addition to Alex Reid (VE2BE), Canadian Amateur Radio is represented by John Cartwright (VE3CDL), Harold Jackson (VE3JK) and Steve Chisholm (VE3ATU, ex-G3GSK), while William Brown (ZS6FE) is a member of the South African delegation. Other amateurs present include DL1XY, DL3SO, DL3DU, HB9PJ, HB9DB, HB9AS, HB9EL, HB9SJ, OE1AD, OH2TK, W4CXA/W2BMX, W2OGK, W3ASK, W4VVA, W4GO, K3BGX, K4HXI, LU3AF, LU6AY, LU7BB and YV5DQ.

INTERNATIONAL GATHERING

Alex Reid, VE2BE (Canadian Director, A.R.R.L.), John Huntoon, W1LVQ (Assistant General Manager, A.R.R.L.), Leon Newnham, G6NZ (Immediate Past President, R.S.G.B.) Osmo Wiio, OH2TK (Finland) and Per-Anders Kinnman, SM5ZD (Vice-Chairman, I.A.R.U. Region 1 Committee), outside Hotel De La Paix, Geneva.



Special QSL card used by Don Vaughan (ZL2VA) to confirm personal QSOs at the Geneva Conference.

The I.A.R.U. team of observers consists of John Clarricoats (G6CL), Arthur Milne (G2MI), Per-Anders Kinnman (SM5ZD), Otfried Lührs (DL1KV), and Harry Laett (HB9GA). The latter is also a member of the Swiss Government delegation.

The Geneva Group of U.S.K.A., led by Eddy Maeder (HB9GM) and Henri Besson (HB9FF) have extended a permanent invitation to all radio amateurs present at the Conference to attend the weekly meetings of the Group at the Bagatelle Café, Place des 22 Cantons (100 yards from Cornavin Station) on Monday evenings.

An informal meeting of radio amateurs participating in the conference took place in the Bâtiment Electoral on September 16. The meeting was addressed by Mr. Charles Acton (VE3AC), Mr. Harry Laett (HB9GA) and Mr. A. L. Budlong (W1BUD). About 40 amateurs attended.

It is planned to hold a further meeting of radio amateurs early in October. It is expected that that meeting like the first will be convened under the chairmanship of Mr. Erwin Beusch (HB9EL) who is President of U.S.K.A. and a member of the Swiss Government delegation.

R.S.G.B. INTERNATIONAL RADIO HOBBIES EXHIBITION

ROYAL HORTICULTURAL SOCIETY'S OLD HALL, VINCENT SQUARE, LONDON, S.W.1

November 25-28, 1959

The Exhibition Committee invites members all over the country to offer for display equipment of every type from gadgets to complete transmitters and receivers. A Silver Plaque will again be presented in connection with the Constructors' Competition. Prizes to the value of £10 and £5 will be awarded for the best pieces of equipment exhibited by members resident outside Region 7.

Offers *only* in the first instance accompanied by a brief description of the item concerned should be addressed to the Committee at R.S.G.B. Headquarters. Offers to do stand duty at the Exhibition should be sent direct to G. W. Norris (G3ICI), 134 Meads Lane, Ilford, Essex.

CONTEST NEWS

RESULTS — REPORTS — RULES

420 Mc/s Open Contest, June 20-21, 1959

THIS year's 420 Mc/s Open Contest was supported by only 14 entries, mainly from stations whose call-signs are already well known upon that band. Conditions were not sufficiently good to produce frequent DX contacts but the leading stations did succeed in working several stations at distances around 100 miles. This was made possible by the use of c.w. which seemed to be reasonably popular with most entrants and undoubtedly resulted in several QSOs which would not have taken place using telephony.

The contest was won by G. A. Jeapes (G2XV), of Trumpington, nr. Cambridge, who used a QQV06/40 p.a. at 65 watts input and a crystal controlled converter feeding an SX28 together with a 40 element stack array. He was 54 points ahead of the runner-up, G5YV of Leeds, who was closely followed by G6NB of Brill, Bucks. These three stations comfortably outdistanced the rest of the field.

Posn.	Call-sign	Score	Posn.	Call-sign	Points
1	G2XV	1784	8	G2RD	816
2	G5YV	1730	9	G3MED	772
3	G6NB	1710	10	G3IRA	603
4	G3HBW	1482	11	G3HAZ	577
5	G3JWQ	1322	*	G2FNW	573
6	G3LHA	1161	13	G2FCA	261
7	G2HDJ	1070	14	GM3EGW	86

* No declaration.

Second 1·8 Mc/s Contest, 1959

THE rules for this event are the same as for last year.

When: 22.00 G.M.T. on Saturday, November 7, to 08.00 G.M.T. on Sunday, November 8, 1959.

Eligible Entrants: All fully paid-up Corporate members of the R.S.G.B. resident in G, GC, GD, GI, GM and GW.

Contacts: C.w. (A1) only in the 1·8 Mc/s band.

Scoring: Contacts with stations in the British Isles (G, GC, GD, GI, GM and GW) will score *one* point only: contacts with stations outside the British Isles will score *three* points.

Contest Exchanges: RST reports followed by the contact number starting with 001. All reports must be acknowledged with " R."

Logs: (*a*) Must be tabulated in columns headed (in this order): " Date/Time G.M.T.," " Call-sign of station worked," " My report on his signals and serial number sent." " His report on my signals and serial number received." " Points Claimed."

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

(*c*) Entries must be postmarked not later than November 23, 1959.

Power Input: The power input to the final stage or any preceding stage of the transmitter must not exceed 10 watts.

Awards: At the discretion of the Council, the **Victor Desmond Trophy** will be awarded to the winning station and certificates of merit to the stations placed second and third. In addition, the **Maitland Trophy** will be awarded to the Scottish member with the highest aggregate number of points in this contest combined with the First 1·8 Mc/s Contest 1960. A certificate of merit will also be awarded to the non-transmitting member submitting the best check log.

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

National Field Day, 1959

AN illustrated report on National Field Day, 1959 will appear in the October issue of the R.S.G.B. BULLETIN.

R.S.G.B. Contest Forms

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

D/F National Final

FINE weather with the temperature in the 70's on September 6, 1959, set the keynote for the D/F National Final organized on behalf of the Contests Committee by Derby and District Amateur Radio Society. Doug. Findlay (G3BZG), accompanied by Stan Fryer (G3ERO), represented the Committee.

Of the 13 entrants who had qualified to take part during the season, 10 participated—Messrs. E. L. Mollart, B.R.S. 10977, T. C. Reynolds (B.T.H. Rugby), J. K. Finch (B.R.S. 15588), G. Nicholson (G3HKC), G. Grant (B.T.H. Rugby), G. T. Peck (B.R.S.15402), N. B. Simmonds (B.R.S.21873), D. H. Simmonds (Slade Radio), J. E. Smith (G3JZF) and J. Walley (B.R.S.18656).

Transmitter A was sited in a ditch seven miles south-west from the start and transmitter B in the branches of a willow tree north-north-west. The A station was operated by G3IFA/P and G3NAJ with G3NGV/M as standby and the B station by G3EKX/P and G3KQF. Both stations were well heard at 13.30 B.S.T. and all competitors were away by five minutes later.

The only participant who succeeded in finding both stations was Mr. E. L. Mollart (B.R.S.10977) who reached the finishing point at 15.49 after travelling 53 miles from the start. Mr. Mollard was followed 30 minutes later at transmitter B by Mr. G. T. Peck (B.R.S.15402).

Mr. T. Darn (G3FGY), County Representative for Derbyshire, welcomed the visitors during tea at the Grange Hotel, Normanton. Mr. Peck replied, congratulating Mr. Mollart on his success and thanking Derby and District Amateur Radio Society for organizing the event.

National Field Day 1959

BAND LEADERS

1·8 Mc/s

1. Stourbridge & District Group ...G3BMY 278
2. Oxford & District Amateur Radio Society G8PX 248
3. Wirral Radio Society .....G2AMV.....243

3·5 Mc/s

1. Chelmsford Group G4VF 401
2. Stamford & District Group G3FUR 389
3. Cambridge Group G5DQ 380

7 Mc/s

1. Gravesend Amateur Radio Society G3IEW 566
2. Cambridge Group .....G8PB.....473
3. Stourbridge & District Group ...G3BMY 413

14 Mc/s

1. Wirral Radio Society G8BM 528
2. Port Talbot & District Radio Club .....GW3BQY.....500
3. Edgware & Hendon Group.....G2IM 375

21 Mc/s

1. Stamford & District Group G3FUR 348
2. Gravesend Amateur Radio Society G6VC 215
3. Weston-super-Mare Group G5TN 204

28 Mc/s

1. Croydon Group.....G4QK 47
2. Cheltenham Group.....G3YZ 45
3. Stamford & District Group G3FUR 35

Rules for the R.S.G.B. 21/28 Mc/s Telephony Contest, November 21-22, 1959

RADIO amateurs throughout the world are again invited to take part in the popular R.S.G.B. 21/28 Mc/s Telephony Contest to be held this year on November 21 and 22.

The rules are the same as in previous years but the attention of overseas contestants is drawn to the additional bonus for working each additional ten G3 stations irrespective of band —the G3 series comprises the largest single group of U.K. stations. The scoring system is described in detail in Rule 8.

Rules

1. **Duration.** The contest will start at 07.00 G.M.T. on Saturday, November 21, and end at 19.00 G.M.T. on Sunday, November 22, 1959.
2. **Eligible Entrants.** The contest is open to licensed amateurs in all parts of the world.
3. **Licence Conditions.** Entrants must operate in accordance with the terms of their licences.
4. **Contacts.** Contacts may be made using any telephony system for which the entrant is licensed. Contacts with unlicensed stations will not count for points. Proof of contact may be required. Only one contact on each band may be made with a specific station, whether fixed, portable, mobile or alternative address. Duplicate contacts must be logged and clearly marked as duplicates without claim for points. Cross-band contacts may not be claimed.
5. **Contest Exchanges.** An exchange of RS reports followed by a three figure serial number starting with 001 for the first contact and increasing by one for each successive contact (for example, 58001, 56002, etc.) must be made before points can be claimed.
6. **Operator.** Only the entrant will be permitted to operate his station for the duration of the contest.
7. **Entries.** Entries must (a) be clearly typed or written on one side only of foolscap paper; (b) be set out in the form shown in the example below; (c) be addressed to the **Contests Committee, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, England,** the name of the contest being clearly shown at the top left hand corner of the envelope which must be **postmarked not later than December 7, 1959.**
8. **Scoring.** British Isles stations may not work each other for points. Overseas stations may only claim points for contacts with British Isles stations (G, GB, GC, GD, GI, GM and GW). Scoring will be as follows:

British Isles stations. Each completed contact will score 5 points. In addition, a bonus of 20 points may be claimed for the first contact with each new country on each of the bands. For the purposes of scoring, the official countries list will apply, with the exception that VE, VK, W/K, ZL and ZS call areas will each count as a separate country for scoring purposes.

Overseas stations. Each completed contact with a British Isles station will score 5 points. In addition, a bonus of 50 points may be claimed for the first contact with each British Isles country-numeral prefix, i.e., G2, G3, G4, G5, G6, G8, GB, GC2, GC3, GC4, GC5, GC6, GC8, GD2, GD3, GD4, GD5, GD6, GD8, GI2, GI3, GI4, GI5, GI6, GI8, GM2, GM3, GM4, GM5, GM6, GM8, GW2, GW3, GW4, GW5, GW6, GW8. *A further 50 bonus points will be scored for each additional ten G3 stations worked irrespective of band.*

9. **Awards.** The **Whitworth Trophy** will be awarded to the leading British Isles entrant. In addition, certificates will be awarded to the leading station in each of the other five British Isles country-prefix zones and to the runner-up in the Trophy winner's zone. Certificates will be awarded to the leading station in each overseas country, VE, VK, W/K, ZL and ZS call areas counting separately as in Rule 8.

SAMPLE ENTRY

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

November 21-22, 1959. **Call-sign** .....

Name .....

Address .....

Transmitter.....Power input.....watts

Modulation system(s) used .....

Receiver..... Aerial(s) .....

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

Date..... Signed.....

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

Date and Time (G.M.T.)	Call-sign of station worked	My report on his signals and Serial No. sent	His report on my signals and Serial No. received	Band Mc/s	Leave Blank	Bonus Points	Points claimed
21/07.06	G3XXX	57001	57003	21		50	5
07.14	G3ZZZ	56002	55006	21		—	5
22/07.50	GM3YYY	55003	57213	21		50	5
07.58	G3ZZZ	54004	55123	28		50	5
TOTAL (Points Claimed + Bonus Points) 20 + 150 = 170							

The closing date for posting entries is December 7, 1959.

Rules for the R.S.G.B. 21/28 Mc/s Telephony Receiving Contest 1959

1. **Eligible Entrants.** The contest is open to short-wave listeners throughout the world. All entrants agree to be bound by these rules. Only the entrant may operate his receiving station for the duration of the event Holders of amateur transmitting licences are not eligible to take part.
2. **Duration.** The contest will start at 07.00 G.M.T. on Saturday, November 21, and end at 19.00 G.M.T. on Sunday, November 22, 1959. The R.S.G.B. 21/28 Mc/s Telephony Contest for transmitting amateurs will take place during the same period.
3. **Entries.** (a) To count for points, logs must show, in columns, (i) Date/Time G.M.T.; (ii) Call-sign of Station Heard; (iii) Report sent by Station Heard; (iv) Call-sign of the Station being worked; (v) Band in Mc/s.; (vi) Bonus Points Claimed; (vii) Points Claimed. CQ or Test calls will not count for points.

(b) Entries must be set out on ONE SIDE ONLY of foolscap or quarto paper. Entries must be postmarked not later than **December 7, 1959,** and must be addressed to the **Contests Committee, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, England.**

(c) All entries must contain the following declaration:

I declare that this receiving station was operated strictly in accordance with the rules and spirit of the contest and I agree that the decision of the Council of the R.S.G.B. shall be final in all cases of dispute. I do not hold an amateur transmitting licence.

Date..... Signed.....

4. **Scoring.** British Isles entrants may not log stations in G (GB), GC, GD, GI, GM or GW for points. Overseas entrants may only log British Isles stations for points. A station may be logged only once on each band for the purposes of scoring.

British Isles entrants. Each complete log entry will score 5 points. In addition, a bonus of 20 points may be claimed for the first station logged in each new country on each of the two bands (21 and 28 Mc/s). For the purposes of scoring, the official countries lists will be used with the exception that VE, VK, W/K, ZL and ZS call areas will each count as separate countries.

Overseas entrants. Each complete log entry relating to a British Isles station heard will score 5 points. In addition, a bonus of 20 points may be claimed for the first station heard in each British Isles country-numeral prefix, i.e., G2, G3, GM2, GM3, etc. A further bonus of 50 points will be scored for each additional ten G3 stations logged irrespective of band (21 or 28 Mc/s).

5. **Awards.** At the discretion of the Council, the **Metcalfe Trophy** will be awarded to the leading British Isles entrant. In addition, certificates of merit will be awarded to the British Isles runner-up and to the leading entrant in each country

Rally Roundup

Reports on Events during 1959

ATTENDANCE at mobile rallies during 1959 has generally been higher than ever before, despite doubts expressed earlier in the year.

The season opened with the North Midlands Rally at Trentham Gardens, near Stoke-on-Trent, on April 26, which attracted about 300 car-loads of amateurs and their friends and families. An analysis of the bands in use by visiting mobiles showed that 45 per cent were equipped for Top Band, 25 per cent for 2m and 15 per cent for 80m. (At the 1958 rally, the figures were 50 per cent for Top Band, 21 per cent for 2m and 15 per cent for 80m). In addition to all the usual facilities of a mobile rally for meeting other amateurs from a wide area, an excellent programme of events was laid on by the organizers, the Stoke-on-Trent Amateur Radio Society and the Midland Amateur Radio Society. The date for the 1960 event has already been fixed: Sunday, April 24.

The Cheltenham Rally in May, a detailed report on which appeared on page 581 of the June BULLETIN, broke away from the usual type of programme with a literally mobile contest.

About 150 mobiles gathered at Harewood House, near Harrogate, for the second Northern Mobile Rally organized by the Spen Valley Radio Club, and held on May 24. The total attendance was about 800. Talk-in stations were provided on 160m (G3IJC/A), 80m (G3NAO/A) and 2m (G3GJV/A). Among those who attracted much attention were G3LB/M with a fine display of American gear, G3KEP/M with a neat rig in a three-wheeled minicar and G3MGA/P who was once more a centre of interest with an enormous whip mounted on a G.P.O. type motorcycle. Prizes for the best installations went to G2HAP/M of Urmston, G3KEP/M of Bingley and G3MNT/M of Stockport. The prize for travelling the longest distance to the rally went to G2QL/M of Chingford, London.

G3HGE/M discussing some of the finer points of operation with a friend at the Longleat Mobile Rally on June 14, 1959.

Longleat House, near Warminster, was the venue for the City and County of Bristol Group's Annual Mobile Rally on June 14. The rally is blessed with an unusually attractive setting and again brought forth an excellent attendance from a very wide area. This year's event will long be remembered by 2m mobile operators because the control station at Longleat, G3FKO/A, suffered considerable QRM for a time from Italian stations!

About 100 mobiles attended the first rally organized by the Amateur Radio Mobile Society which was held at Maldon,

Stoney Cross Aerodrome, once the scene of much Bomber Command activity, was the venue for the New Forest Mobile Rally on July 19, 1959. This picture shows some of those who attended the event which was organized by the Bournemouth and Ringwood Amateur Radio Societies. (Photo by Fred Hayward, Ringwood)

G3IVP/M won the prize for the most interesting rig at the Woburn Abbey National Mobile Rally on September 13, 1959, with his Top Band s.s.b. mobile transceiver, shown here mounted on the back of his motorcycle XOW252.

(Photo by G2AHL).

Essex, on July 5. Safety of equipment was the principal consideration in judging the main competitions at this event. G2QL/M was the winner of the homebuilt section while G2HJV was the winner of the commercially equipped section. Incidentally, the registration number of G2HJV/s car is HJV2. The Top Band control station was operated under the Mobile Society's own call-sign, G3NMS/P, for the first time.

G3NMR/M of Ilford was the first to arrive at the Derby Mobile Rally, organized by the Derby and District Amateur Radio Society and Derby Experimental Short Wave Society, and held on August 16, in the grounds of Rykneld School. Altogether, 117 mobiles visited the rally while 248 licensed amateurs signed the register including K6AXS and FP8BD, the total attendance being in the region of 1,200. The prize for the best kept mobile log—a tape recorder—was won by G3LAY/M, the runner-up being G3HAN/M. The programme, far more extensive than at most similar events, included sideshows, a treasure hunt, a kite flying contest, demonstrations of radio controlled model aircraft, a junk sale and a film show. From all accounts, a most satisfactory and enjoyable mixture.

On the same day, August 16, South Shields and District Radio Club held its first mobile rally at Bents Recreation Ground, South Shields. The winner of the " best judged equipment " contest—safety was an important factor in the final selection—was won by G3DMK/M while the prize for the longest distance mobile-to-control station contact went to G3HRE/M. The rally was filmed by B.B.C.-TV and shown in *The News of the North* programme on August 17.

The Tunbridge Wells Rally, organized by the West Kent Amateur Radio Society, was held at Dunorlan Park on August 23. Despite the difficulties of advertising the event due to the printing dispute, there was an excellent attendance —most of those attending obtained details of the rally from GB2RS.

As a change from competitions for the best mobile equipment, the judges were asked to find what was, in their opinion, the most original aerial system. After a diligent search G6NF received the prize for his 2m " square halo." In the draw which followed, the second, third and fourth prizes were unclaimed. The holders of tickets numbered 76, 150 and 81 may claim their prizes by sending the tickets to G4IB, " Glenisla," Maidstone Road, Pembury, Kent.

The South Manchester and Stockport Radio Rally on August 30 was truly mobile: a total of 60 competitors, of which 26 were radio equipped, faced the Treasure Hunt Controllers at the Davenport Theatre Car Park in Stockport and were off to a good start at 2 p.m. From then on, they had 12 clues to solve on the way to the Bull-i'-th'-Thorn Hotel, 30 miles distant.

The radio section of this ingenious contest was won by G3KCB using his motorcycle equipped with 2m gear, the " halo " aerial radiating about a quarter of a watt. Second in the same section was G2ALN. The non-radio section was won by Mrs. Eric Taylor (Mrs. G2ALN!), followed by G3FOE. Nearly 300 people attended the presentation of the prizes by the Region 2 Representative, Mr. J. R. Petty (G4JW). Also present was Mr. F. C. Ward (G2CVV), T.R. for Derby. A display of Amateur Television (405 lines 25 p.p.s.) was arranged by Mr. Gordon L. Shapley and G6NM did sterling work as one of the control stations from his home location during the contest.

The event was organized jointly by the South Manchester Radio Club and the Stockport Radio Society whose members deserve praise for introducing a novel and interesting variation in mobile rallies.

The London Short Wave Rally at the Festival Gardens, Battersea, on September 6, produced a good attendance including a great many visitors from the general public. The event was organized by the London Short Wave Club. A special rally station was operated under the call-sign GB2CLR and QSL cards for contacts may be obtained from G3LOO.

The prize for the safest mobile installation was won by G2DQ/M who scored 51 points out of a possible 60. In coming to their decision, the judges considered the mounting of the aerial and microphone, absence or otherwise of loose wiring, safe fixing of the equipment, send-receive control and the method of tuning. A special award was made to G3IVP/M for his motorcycle equipment.

G2ADR receiving the prize for the longest distance travelled on the day of the National Mobile Rally at Woburn Abbey from G8KW, Chairman of the Amateur Radio Mobile Society.

(Photo by G2AHL).

This year's National Mobile Rally at Woburn Abbey, Bedfordshire, on September 13, was organized for the R.S.G.B. by the Amateur Radio Mobile Society and again attracted a very large attendance of radio amateurs and their families from long distances. A much larger rally area was available and this tended to give the impression that attendance was somewhat lower than in the past but a check on the number signing the register showed an increase of about 15 per cent, a most satisfactory result in view of the many other first class rallies held all over the country.

The prize for the safest mobile installation was won by G3WW of March, Cambridgeshire. Contributing factors to the safety of his gear included a miniature microphone fitted to a spectacle frame and voice control of the send-receive switching. G3IVP/M of Salisbury won the prize for the most interesting mobile equipment with his motorcycle-mounted Top Band s.s.b. transceiver, while the prize for travelling the longest distance on the day of the rally went to G2ADR of York.

As in previous years, the organizers had the wholehearted assistance of the members of the Crystal Palace and District Radio Club, while G2CAJ/P provided and manned the 80m control station. G2DUS supplied excellent p.a. facilities at extremely short notice on the day of the rally.

The last act at all Woburn Abbey rallies, long after the visitors have left and the stations have been dismantled, is a " paper picking " parade to clear the site of all debris. This action evoked an unexpected comment this year from one of the Abbey staff who said she had never seen it done by any other organization which borrows the grounds for rallies. In fairness to those who support the Woburn Rally, the " parade " never produces much more than a handful of odds and ends, a great tribute to the responsibility of the Amateur Radio enthusiast in respecting the rights of others.

"You called it mobile, but did they?"

Slow Morse Practice Transmissions

G.M.T.	Call-sign	kc/s	Town
Sundays			
09.00	G3BHS	1810	Southampton
11.00	G3GZE	1840	Blackburn
11.00	G2FXA	1900	Stockton-on-Tees
12.00	G3LP	1850	Cheltenham
12.00	GI5UR	1860	Belfast
20.00	G3MRA	1915	Southampton
20.30	G3HTA	1850	Exeter
21.00	G2FIX	1812	near Salisbury
Mondays			
18.00	G3GZE	1840	Blackburn
18.30	G3NC	1825	Swindon
19.00	G3EJF	1820	Bury, Lancs.
19.00	G3KTP	1850	Heanor, Derby
19.00	G3LMT	1850	Exeter
20.00 †	G3EWE, G3IAF, G3NEU	1975	Woking
20.00	G3MDH	1915	Southampton
20.30	G3AGN	1875	Felixstowe
20.30	G3MXI	1910	Derby
20.00 †	G3LCK	1935	Barnet
21.00	G3LXP		
21.30 †	G3LGK, G3MXI	1980	Ilkeston, Derbys.
Tuesdays			
17.30	G2AAM	1875	Swanwick, Derbys.
18.00	G3GZE	1840	Blackburn
18.30	G2FXA	1900	Stockton-on-Tees
20.00	G2FCI	1850	Exeter
20.00	G3IBI	1915	Southampton
20.00	G3NHR	1900	Hounslow
20.15	G2AYQ	1875	St. Agnes, Cornwall
21.00	G3EFA	1855	Southport
21.15	G2CPL	1875	Felixstowe
21.45	G2UK	1875	Lowestoft
Wednesdays			
18.00	G3GZE	1840	Blackburn
19.00	G3EJF	1820	Bury, Lancs.
19.00 †	G3MCJ, G3FLK, G2FCI, G3HTA	1845	Exeter
19.00	G3LZC	1830	Heanor, Derby
19.00	G8RQ	1850	Chesterfield
20.00	G3BHS	1915	Southampton

G.M.T.	Call-sign	kc/s	Town
Wednesdays			
20.00	G3LEQ	1900	Tunbridge Wells
20.15	G2AYQ	1875	St. Agnes, Cornwall
20.30	G3MXI	1910	Derby
21.00	G3BHS	1810	Southampton
21.00	G3AGX	1920	Hull
22.00			
22.00 †	G3LGK, G3MXI	1980	Ilkeston, Derbys.
		1980	West Hallam, Derbys.
Thursdays			
17.30	G2AAM	1981	Swanwick, Derbys.
18.30	G3NC	1825	Swindon
20.00	G3NBV	1915	Southampton
20.00	G3NHR	1900	Hounslow
20.15	G2AYQ	1875	St. Agnes, Cornwall
20.30	G3GDZ	1910	Kingsbury, N.W.9
20.00 †	G3EWE, G3IAF, G3NEU	1975	Woking
21.00	G3BHS	1810	Southampton
21.30	G3HMY	1850	Exeter
22.00	G3JKY	1990	Beckenham
Fridays			
18.30	G3DMN, G3FVP	1880	Ipswich
19.30	G3FUA	1850	Kilburn, Derby
19.30	G3MHR	1850	Swanwick, Derbys.
20.00	G3JLS	1915	Southampton
20.15	G2AYQ	1875	St. Agnes, Cornwall
20.30	G3ICX	1915	Sutton Coldfield
20.30	G3KGU	1915	Theydon Bois, Essex
21.00	G3BHS	1810	Southampton
21.30 †	G3KLZ, G3KSS	1900	Bradford
22.00	G3KYU	1859	Bournemouth
22.00 †	G3LGK, G3MXI	1980	Ilkeston, Derbys.
		1980	West Hallam, Derbys.
Saturdays			
13.00	G2FXA	1900	Stockton-on-Tees
20.00	G3MCL	1915	Southampton

† *Alternately.*

R.A.E.N. Notes and News

By E. ARNOLD MATTHEWS (G3FZW) *

DESPITE the extended summer there does not appear to have been any noticeable lessening of activity and reports have been coming in regularly from many groups.

There has been a steady flow of new members and individual inquiries for information about the Network have come from several areas where there is as yet no organized activity. Such areas are getting fewer and R.A.E.N. officers have now taken responsibility in 50 counties. There is also a tendency for groups to branch out from their own immediate localities. This is a healthy sign, as the strongest and most active groups have always been more than willing to liaise with other groups and to break fresh ground.

With the coming of autumn, County and Area controllers should be turning their thoughts to new activity programmes, and indeed many are planning to hold general meetings to inform their members of plans made during the summer. In **Birmingham,** for instance, the recent officers' meeting has been followed by a general meeting held on September 18 when several interesting matters were considered, including a proposal that members should make a small annual contribution to a group fund. As there have been changes in membership over a period of time a new call-out system, based on fresh information, is being prepared. The group plans to hold training classes for specialized aspects of R.A.E.N. work, and G3ICX has offered his services as a qualified instructor in map-reading. County Controller G3CNV and A.C.s G3BA, G3HBE, G3JPN, G3LNN and G3MVT have certainly given the administrative side of things some careful thought and quite some time to the matter. This is all to the good. No group can flourish without some effort being spent on the routine matters apparently unconnected with actual operations. Certainly such work has to be kept to a minimum, but it must be recognized that there is a minimum below which it is not possible to go without losing efficiency, or even risking the cohesion of the group.

R.A.E.N. Membership Cards

In an emergency the Police may require R.A.E.N. members to produce their membership cards. Carry yours with you—*always*.

London group has been concentrating on improving the equipment for B.R.C.S. Headquarters. **Norfolk's** daily net schedule has had continued support throughout the summer. Present high noise levels have often rendered their signals unreadable, but not inaudible, in Lichfield, and the writer has occasionally been able to work the net reasonably, thanks to the established practice of holding short breaks between overs to enable calling stations to join in.

Cornwall has been strengthened by recruiting another mobile operator and by the Newquay A.C., M. J. Locke, being granted the call-sign G3NKE.

Surrey nets are continuing procedure training and have adopted what A.C. G3VK calls "that shocking NATO alphabet." He also observes that "no-one likes it very much but that applied to Able Baker at first, but we must move with the times and we are all learning together." And getting some amusement at each other's expense, too, when the proper word is forgotten!

Personnel

A. F. Dennis (G3CNV), C.C. for Birmingham, has also been appointed County Controller for Warwickshire.

* *1 Shortbutts Lane, Lichfield, Staffs.*

Amateur Radio delegates to the World Radio Conference in Geneva were recently introduced to Fondu and Raclette—typical Swiss cheese dishes—by members of the Geneva Group of U.S.K.A. In this picture (left to right) are Max de Henseler, HB9RS (late Traffic Manager, U.S.K.A.), Henri Besson, HB9FF (Chairman of the local group), Major Per-Anders Kinnman, SM5ZD (Vice-Chairman, I.A.R.U. Region I Committee), Leon Newnham, G6NZ (Immediate Past President, R.S.G.B.), John Moyle, VK2JU (Wireless Institute of Australia), Mrs. Besson and John Clarricoats, G6CL (General Secretary, R.S.G.B., Secretary, I.A.R.U. Region 1 Division).

Radio Amateurs' Examination

CITY and Guilds of London Institute has announced that the remainder of the papers from overseas candidates for the May 1959 Radio Amateurs' Examination have now been received. A total of 29 took the examination, of whom 18 passed and 11 failed.

R.S.G.B. QSL Bureau Sub-Managers

THE following is a list of the R.S.G.B. QSL Bureau Sub-Managers showing the call-sign groups for which they are responsible:

G2 and DL2 calls:	**G. Verrill (G3IEC), 10 Seahorse Street, Gosport, Hants. (Certificates Manager).**
G3, 4 and 5 two-letter calls & GC	**P. Jones (G3ESY), 94 Holme Lacy Road, Hereford.**
G6 calls:	**A. J. Mathews (G6QM), 62 Ashlands Road, Hesters Way Estate, Cheltenham.**
G8 calls:	**A. W. Gover (G4AU), 20A, Cambridge Road, Bromley, Kent.**
G3AAA-BZZ:	**M. Hassall (G3EMD), 99 Shenstone Valley Road, Quinton, Birmingham.**
G3CAA-DZZ:	**C. A. Bradbury (B.R.S. 1066), 13 Salisbury Avenue, Cheltenham.**
G3EAA-HZZ:	**W. J. Green (G3FBA), 8 Lee Road, Blackheath, London, S.W.3.**
G3IAA-KZZ, B.R.S. and A numbers	**C. Usher (G2CCD), 24 Carlisle Road, Dartford, Kent.**
G3LAA-MZZ:	**G. C. Voller (G3JUL), 13 Marlborough Road, Ashford, Middlesex.**
G3NAA onwards:	**G. Verrill (G3IEC), 10 Seahorse Street, Gosport, Hants.**
GD calls:	**T. R. Moore (GD3ENK), "Glyn Moar," St. John's, Isle of Man.**
GI calls:	**W. H. Martin (GI5HV), "Swallow Lodge," Greenisland, Co. Antrim, Northern Ireland.**
GM calls:	**D. Macadie (GM6MD), 154 Kingsacre Road, Glasgow, S.4.**
GW calls:	**J. L. Reid (GW3ANU), 28 Walterston Road, Gabalfa, Cardiff.**

Envelopes for the *collection* of cards should be sent direct to the Sub-Manager concerned and not to the QSL Manager (Mr. A. O. Milne). Outgoing cards should not be sent to the Sub-Manager unless they are in the call-sign group for which he holds envelopes. For example, the holder of a G3J- call may send cards for calls in the series G3IAA-G3KZZ to his own Sub-Manager, together with envelopes for the collection of cards, but he should not send to him cards in any other call-sign series. Sending cards for general distribution to the Sub-Managers only involves the cards in delay and the Society in needless expense.

Mr. Milne's address is 29 Kechill Gardens, Bromley, Kent.

Letters to the Editor . . .

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

Making the Mickey Match

DEAR SIR,—I was indeed interested to read of the efforts of G6RC to make the Mickey Match originally described in the November 1958 issue of *QST* (see "Technical Topics," BULLETIN, February 1959) for I too have spent some time trying to coax a thin wire under the outer screen of a length of co-axial cable.

The solution is simplicity itself when one realizes that there is such material as air-spaced cable. Aerialite 499 insulant has five holes which go through the whole length of the cable and these surround the inner conductor. Pass a length of 24g. steel piano wire up one hole and with some 30g. enamelled copper soldered to the end pull the piano wire through. Steel wire is not likely to bend as would copper wire and the whole process is delightfully simple.

The Mickey Match is a beautifully easy device which I can recommend anyone to build.

Yours faithfully,

Bury St. Edmunds. P. LUMB (G3IRM).

Q Multipliers

DEAR SIR,—I read the article by G2BVN on Q Multipliers with extreme interest as my thoughts have been turning in that direction.

However, there is one point that was not mentioned, that is that the bandwidth of the Q Multiplier is a percentage of the frequency used, so while the effect at normal i.f.'s of around 460 kc/s is possibly ideal, at other frequencies may prove to be disappointing to anyone who was unaware of the fact.

The bandwidth is about 0·1 per cent of the frequency so giving a bandwidth of roughly 460 c/s at 460 kc/s and 50 c/s at 50 kc/s, while at 1·6 Mc/s half of an a.m. signal could be selected (or rejected). Each one of these has its advantages. At this station thoughts are centring on a receiver with an i.f. of 1·5 Mc/s using a Q Multiplier to obtain adequate selectivity.

Yours faithfully,

Chertsey, Surrey. DOUGLAS P. J. MEAD (G3IDM).

Contests

DEAR SIR,—I should like to add my strong support for the suggestions made by Mr. E. W. Wagner (G3BID) that, in particular, contest operation should be restricted to not more than half of the band, i.e. half the c.w. portion or half the R/T portion according to the type of contest.

The number of contests is becoming unreasonable and as Mr. S. B. Spencer (VE7AMD) says, this state of affairs is a pain in the neck to many operators. I am not anti-contest by any means, but I do think it is high time amateurs put their house in order in this respect.

In replying to Mr. Wagner's letter Mr. G. G. E. Bennett (G5BZ) has credited the former with a statement which he did not make. Mr. Wagner said that only a minority of DX enthusiasts are *contest minded.* This is entirely different to saying that only a minority take part. I agree wholeheartedly with G3BID on this point and would suggest that the reason for many people joining in a contest is that one cannot conduct a decent rag chew during contests because of constant interference from contest CQ calls, etc. One is forced either to give up operating or join in the contest (this is how I usually get dragged in).

Majority or minority it is, in my opinion, wrong for any section of amateurs to produce conditions which detract from the pleasure of others and as an active amateur (average 5,000 contacts per year . . . 75 per cent on c.w.) I hear complaints about " too many contests " very frequently. It just isn't good enough to say " Oh well, if you don't like the QRM you can go onto phone OM!" It is in this attitude where the selfishness comes in, Mr. Bennett!

There is no complete solution to the contest problem, but I think that the situation could be improved. In the first place most contests are far too long. Because of this, they are not a test of skill but merely show that some amateurs have longer staying powers (or better pep pills) than others and/or have more spare time.

I would make the following suggestions:

Restrict operation to not more than half the (c.w. or R/T) band.

Restrict contests to not more than 24 hours in any one week-end, preferably split in two with a reasonable rest period.

Spread out major events over the year (by international agreement).

Wherever possible, make the contest rules such that it will be of international interest (all having equal chance of awards).

Keep the rules as simple as possible.

Obtain agreement between amateurs, in the densely populated countries, to restrict national contests to a maximum of two per annum where DX bands are involved.

Last, but not least, *remember this is a hobby.*

Yours faithfully,

Yateley, Nr. Camberley. DONALD P. L. MAY (G2BB).

DEAR SIR,—Mr. Bennett (G5BZ) challenges my contention that only a small minority of radio amateurs take part in contests.

If one examines the international *Call Book* one will find that there are about a quarter of a million radio amateurs in the world. Let us knock off 50,000 in order to be sure that we are not exaggerating and call it 200,000. Assume that half of these are not active—this leaves 100,000 active amateurs. Assume that half of these are not on the DX Bands, i.e., occupied with v.h.f., Top Band and other activities. This leaves 50,000 on the DX bands! Assume again that half of these use c.w. and half use phone (this allows for no overlap for those who use both phone and c.w.) and we have 25,000 c.w. and 25,000 phone operators on the DX bands.

In the *CQ* World Wide DX Contest 1958, reported in the May 1959 issue of *CQ*, there were:

Single operator stations	456
Operators engaged in multi-operator stations . .	143
In addition there were five club stations.	
If we allow 10 operators for a club station, the number of operators is	50
Making a total of	649

If, for good measure, and to be quite sure that I am not overstating my case, we add on another 50 per cent and call it 1,000 operators, even then it will be clear that only 4 per cent of the total number of operators, phone or c.w. took part in the Contest. If this is not a small minority, what is?

Yours faithfully,

London, N.W.3. E. M. WAGNER (G3BID).

Whip Aerials

DEAR SIR,—I would like to make a suggestion for whip aerial construction for the benefit of fellow mobile enthusiasts.

Loading coils wound with Litz wire on ferrite rods sold for broadcast portable receiver construction are extremely efficient on 1·9 Mc/s. An experimental coil wound on a 5 in. by ⅜ in. dia. rod to give an inductance of approximately 700 μH proved to have a measured Q of the order of 250. This coil was intended to be mounted on a bottom section of 6-8 ft. in length and to be tuned capacitively by means of a short telescopic top section whip of 1-2 ft. long.

This construction will give a whip of moderate length in which the bottom current fed portion will still be of reasonable size, thus giving good radiation efficiency. With regard to the radiation from the loading coil itself I am quite in the dark, but can only say that this also should be quite appreciable. Perhaps one of the Mullard staff can throw some light on the subject.

The assembled whip was tried on two or three occasions, but unfortunately only at times of low Top Band activity so that no remarkable results were obtained.

I feel, however, that this method of construction has some promise and would like to suggest its trial by other members.

The effective capacity of the top section was obtained from a graph in the aerials chapter of the A.R.R.L. *Radio Amateur's Handbook*, and the inductance was of such a value as to be series resonant with this capacity at 1·9 Mc/s.

Yours faithfully,
C. M. PEARSON (G3IUQ).

Purley, Surrey.

Thermal Insulation as Counterpoise

DEAR SIR,—In order to make my (loft) shack more habitable, I lined the roof with metal foil. This has noticeably improved the thermal insulation, both in summer and in winter, and increased the illumination no end. In addition, it makes a useful broadcast aerial (suitably bonded), and I have no doubt that it would serve well as a counter-poise for the Top Band aerial described by G3FMO in the August BULLETIN. I am only sorry that I cannot truthfully claim that it is the complete answer to TVI!

Yours faithfully,
South Croydon. J. B. ROSCOE (G4QK).

W.A.G.M. Award

DEAR SIR,—From inquiries received both by letter and on the air it appears that many operators interested in obtaining the W.A.G.M. award, which is sponsored by the Aberdeen Amateur Radio Society, are finding it rather difficult to meet the qualifying conditions, in particular in making contact with some of the rarer GM call-signs, i.e. GM2, 4, 5, 6 and 8. I would like to mention that, in common with other countries, activity is at a higher level during local holiday periods, and this year with New Year's Day falling on a Friday the majority of Scottish amateurs will be on holiday from December 31 to January 3, 1960, inclusive. We would like to suggest that if conditions are reasonable and some of the rarer stations mentioned earlier could be persuaded to come on the air during this period many of those particularly interested in obtaining the W.A.G.M. could be satisfied.

Yours faithfully,
J. C. SINCLAIR (GM3ICS).
Aberdeen. President, Aberdeen Amateur Radio Society.

Call-sign Procedure

DEAR SIR,—While listening on Top Band during Whitsun, I was interested to hear examples of what appear to be evidence of a new form of licensing procedure by the G.P.O. The first occurred in a multi-way QSO during which I gathered that one of the participating stations had the call-sign "FRED." The second occurred during a multi-way mobile QSO, when it appeared the participants were of international status, in that they did not have a country prefix.

The regulations regarding the use of call-signs are quite simple, clear and not onerous. Do not let us be ashamed of our call-signs, but use them in the correct manner for which they are intended.

Yours faithfully,
Welwyn Garden City, R. C. HILLS (G3HRH).
Herts. B.Sc.Eng. (Hons.)

The R.S.G.B. QSL Bureau

DEAR SIR,—Arthur Milne's editorial on the QSL Bureau was both informative and interesting. His "tips" on how to help the sub-managers were, I am sure, enlightening to many.

The way G2MI and his colleagues handle the vast number of cards they receive always amazes me, and it is seldom that anyone can find cause to complain about their work. The service they provide is, in my view, one which is well worth the annual subscription to the Society.

The high standard of handling the QSL Bureau was highlighted to me the day after reading G2MI's remarks, when I received, from another Bureau to which I belong, one of my envelopes bearing 4½d. in stamps containing just *one* card from a G station. Rather an expensive and wasteful way of obtaining confirmation of one's activities!

Yours sincerely,
St. Leonards-on-Sea, W. E. THOMPSON (G3MQT).
Sussex.

Empire DX Certificate

DEAR SIR,—I wish to acknowledge with considerable pleasure and thanks, receipt of the Empire DX Certificate and Badge.

This excellently worked hand-done certificate must surely be the most attractive award ever issued for any purpose and I would like to express my appreciation of the wonderful work of the gentleman who produces them. The badge, too, is most attractive and any amateur who gains one will be proud to wear it.

Would it be possible to publish in the BULLETIN the names and calls of winners of this award? I would myself be glad to know other winners whom I might QSO as time goes on.

Yours sincerely,
Kings Country, T. K. STEWART (ZL1RD).
New Zealand.

(*A full list of Empire DX certificate holders will appear in an early issue.—Editor*)

DEAR SIR,—Thank you very much for the Empire DX Certificate 186, and for the exclusive badge.

Amongst the fair number of certificates which I have received to date from various sources, the Empire DX stands in a class of its own as an example that Britons still take pride in producing handicraft infinitely superior in aesthetic appeal to that of mass-producing machinery.

Germiston 73,
South Africa. JAC. C. VAN WYK (ZS6R).

(*Mr. van Wyk has won the Junior B.E.R.U. Contest for the last six years—Editor*)

Brief Bulletins

A CLOCK which will not gain or lose more than a second in 25 years is to be installed in the Australian Post Office Research Laboratories in Melbourne by British scientists. The clock, known as an ammonia maser, was constructed at the Signals Research and Development Establishment. One of its uses will be in the measurement of the rate at which pulses sent out by a transmitter at Rugby are received in Melbourne, some 15,000 miles away. Although the transmitting rate is constant the pulses are not received at a constant rate due to variations in the ionosphere. Measurement of these variations will provide more information about the ionosphere.

CLOSED-CIRCUIT 625 line television is being used to speed up the presentation of B.B.C. Sound News. The system uses an industrial type television camera in the News Editing Room which is connected to a 14 in. picture monitor in front of the newsreader, who can read the latest items at a convenient point in his broadcast. The camera has a 1 in. lens and scans information contained within an area of about 6 in. by 4 in.

DURING July the number of combined television and sound licences throughout Great Britain and Northern Ireland increased by 54,601, bringing the total to 9,549,789. Sound only licences total 5,324,683, including 398,838 for car radios.

CONTESTS DIARY

October 10–11	VK/ZL DX Contest (C.W. Section)
October 24–26	CQ World-wide DX Contest —Phone Section (See page 70, August, 1959)
November 7–8	Second 1·8 Mc/s Contest (Rules on page 119)

November 21–22	R.S.G.B. 21/28 Mc/s Telephony Contest
November 21–22	R.S.G.B. 21/28 Mc/s Telephony Receiving Contest
November 28–30	CQ World-wide DX Contest—C.W. Section
December 6	OK C.W. DX Contest

Regional and Club News

Aldershot and District Amateur Radio Society.—Meetings are held fortnightly at the Cannon Hotel, the next being on October 14. Morse practice classes are held on Saturday afternoons at the home of the *Hon. Secretary:* J. E. Fuller (G3IQE), 9 Laws Terrace, Aldershot.

Amateur Radio Club of Nottingham.—The club station, G3EKW, is active on Tuesdays, Thursdays and Sundays, mostly on 14 Mc/s. Activities during October will include participation in the Jamboree-on-the-Air and the VK/ZL DX Contest. On October 20, G3APY is to give a talk on his recently constructed double superhet for the h.f. bands. R.A.E. classes are held on alternate Tuesdays. Morse lessons and constructional facilities are available. Further details of meetings, which are held at Woodthorpe House, Mansfield Road, Nottingham, on Tuesdays at 7.15 p.m., may be obtained from the *Hon. Secretary:* E. C. Weatherall, 16 Avebury Close, Clifton, Nottingham.

Blackburn Amateur Radio Club.—The club now has a room in the annexe to the Corporation Park Hotel, Revidge Road, Blackburn, where meetings are held on Fridays at 8 p.m. A Morse class for beginners has been started and it is hoped to commence an R.A.E. class at a later date. A BC348 receiver has been loaned by a member for the club station and a new 150 watt transmitter is to be built. Operation at the present time is mainly on Top Band and 40m. Prospective members are invited to contact the *Hon. Secretary:* Frank Bird (G3GZE), 14 Old Bank Lane, Whinney Heights, Blackburn.

British Two-Call Club.—Membership is open to U.K. and Commonwealth subjects who hold licences in two or more B.E.R.U. call areas. The annual subscription of 2/6 includes the club newsletter *QTC*. *Hon. Secretary:* G. V. Haylock (G2DHV), 167 Engleheart Road, Catford, London, S.E.6.

Bristol.—There was an attendance of 53 at the September meeting when D. H. Collins (B.R.S.19638) and G. E. Thompson (B.R.S.20190) gave a lecture and demonstration entitled " Atoms and the Amateur." Visitors included DL1TA from Brunswick. On October 16, John A. Rouse, G2AHL (Deputy Editor, R.S.G.B. BULLETIN) will be speaking about " Mobile Operation." On November 1, the Group will be participating in an all-band contest against the Midland Amateur Radio Society. *Hon. Secretary:* D. F. Davies (G3RQ), 51 Theresa Avenue, Bishopston, Bristol 7.

Brighton and District Radio Club.—New headquarters have been obtained at the Home Guard Club, British Legion, 76 Marine Parade, Brighton, where meetings are held every Wednesday at 8 p.m. The A.G.M. is arranged for October 28. Prospective members are invited to attend meetings or to contact the *Hon. Secretary:* E. M. Large, School House, Frant Road, Hove 4.

Cornwall Radio and Television Club.—At the September meeting at the Y.M.C.A., Falmouth, arrangements for the club's field day on September 6 were discussed and a tape recording made by a former member, ZS5JF, played back. The field day was very successful, stations in other parts of the country being worked on phone and c.w. *Hon. Secretary:* G. Hubber, 9 Cardrew Terrace, Redruth.

Crosby Amateur Radio Society.—Meetings, which are held on Tuesdays at 8.30 p.m., are preceded by Morse instruction. Technical classes are held on Thursdays and constructional classes on Fridays. The society has applied for its own licence. On October 14, G3KKU will give a talk on P.O. Line Equipment. A Junk Sale is arranged for October 21. Details of the meeting on October 28 may be obtained from the *Hon. Secretary:* A. Treanor (G3FZG), 13 St. Johns Road, Waterloo, Liverpool 22.

Crystal Palace and District Radio Club.—At the meeting at Windermere House, Westow Street, Crystal Palace, on October 10, Charles Newton (G2FKZ) will give a talk entitled " Hints and Tips for the Beginner." *Hon. Secretary:* G. M. C. Stone (G3FZL), 10 Liphook Crescent, Forest Hill, London, S.E.23.

Dorking and District Radio Society.—The society meets on the second and fourth Tuesdays of each month at the Star and Garter Hotel, Dorking, at 8 p.m. On October 27, C. Crook (G5BT) will give a talk on Amateur Radio in America. *Hon. Secretary:* J. Greenwell (G3AEZ), Wigmore Lodge, Beare Green, near Dorking.

Enfield.—The Group has changed its meetings to the fourth *Thursday* in each month at 7.30 p.m. at the George Spicer School, Southbury Road, Enfield. The next meeting is on October 22.

Halifax and District Amateur Radio Society.—A membership of 25 was reported at the A.G.M. on September 1, when the following were elected: *Chairman*—R. Smith (G3NBL); *Hon. Secretary/Treasurer*—A. Robinson (G3MDW), Candy Cabin, Ogden, Halifax; *Hon. Minute Secretary*—G. Sunter; *Librarian*—P. Hopkinson.

Lothians Radio Society.—On October 22 GM3BQA is to give a talk on aerials while a Junk Sale is being arranged for November 5. A talk on " Electronics in Hospital " will be given by a

More than 100 members and friends attended this year's annual dinner of the Wirral Amateur Radio Society. Part of the large gathering can be seen in this photograph taken during coffee time.

G3FIT/A at the Yatton (Somerset) Flower Show on August 22, 1959, aroused considerable interest amongst the visitors. The equipment used included CR100 and HRO receivers, an American Heathkit DX100 transmitter, a 66 ft. centre fed aerial for 7 and 21 Mc/s and a 14 Mc/s dipole. From left to right, R. Jefferies, Norman Ashman (G3FIT) and a visitor. (Photo by M. Lane)

doctor from the Edinburgh Royal Infirmary on November 19. *Hon. Secretary:* L. Lumsden, 33 Hillview Drive, Edinburgh 12.

Mitcham and District Radio Society.—An annual contest for the " G5UX Key Award " has been instituted. Morse and theory classes have started for those wishing to obtain their amateur licences. At the Cannons, Madeira Road, Mitcham, on October 9 at 8 p.m. G4LS will give a talk on aerials.

Newbury and District Amateur Radio Society.—The Annual Hamfest is to be held at Elliotts of Newbury Canteen, West Street, Newbury, from 3.30 to 8.30 p.m. on Sunday, October 11. The programme will include competitions, a meal, film show and entertainment. Tickets, price 7/6, may be obtained from the *Hon. Secretary:* J. Gale, " Wild Hedges," Crookham Common, near Newbury. The talk-in station on Top Band will be G3MWB/A. On October 30 there will be a lecture by a representative of Racal Engineering Co. Ltd.

North Kent Radio Society.—Recent activities have included participation in the Erith Show when GB3ENT was operated on 7, 14 and 21 Mc/s as well as on Top Band. On October 22 G. M. C. Stone (G3FZL) is to give a talk on " The I.G.Y. and Amateur Radio " at the meeting in the Congregational Hall, Chapel Road, Bexleyheath, commencing at 8 p.m. *Hon. Secretary:* D. W. Wooderson (G3HKX), 75 Mount Road, Bexleyheath.

Purley and District Radio Club.—A Junk Sale is to be held at the Railwaymen's Hall, Whytecliffe Road, Purley, on October 16 at 8 p.m. Classes in basic theory and the Morse code are being held twice a week at the Roke County Secondary School, Godstone Road, Purley. Further information may be obtained from the *Hon. Secretary:* E. R. Honeywood (G3GKF), 105 Whytecliffe Road, Purley.

Ravensbourne Amateur Radio Club.—Meetings are held on Wednesdays at 8 p.m. at Malary Secondary School, Lancelot Road, Downham. *Hon. Secretary:* J. Wilshaw, 4 Station Road, Bromley, Kent.

Reigate Amateur Transmitting Society.—Classes for those wishing to obtain their amateur licences have been started; G3JDN is in charge of Morse instruction while G3BBR, G3KAX, G3NKS and G3JDN are all giving theory instruction. An extending hydraulic mast loaned by a listener, Mr. Ayling, proved very useful during the European V.H.F. Contest on September 5-6. A party of members visited the Woburn Abbey Rally on September 13. Meetings are generally held on the third Saturday in each month and it is hoped to have a regular meeting place shortly. *Hon. Secretary:* F. D. Thom (G3NKT), 12 Willow Road, Redhill.

Shefford and District Amateur Radio Society.—After 11 years of successful activity, the society has been compelled to change its meetings to Thursdays at 8 p.m. at Digswell House, Hitchin Road. On October 15 G3EUS is to give a talk on meters while the radio control of models will be the subject for J. Boylett on October 22. G2DUS will demonstrate and talk about break-in systems on October 29. There will be no meeting on November 5. Prospective members and visitors are always most welcome at meetings. *Hon. Secretary:* G. R. Cobb (G3IXG), Western House, Ampthill Road, Shefford, Beds.

Slade Radio Society.—Meetings are now held on Tuesdays and Thursdays at 8 p.m. in the club station at the rear of the Church House, Erdington. The Tuesday meetings are devoted to technical lectures and demonstrations, while the Thursday meetings are more informal, with discussions and operation of the club transmitter. *Hon. Secretary:* C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.

Representative

THE following is an alteration to the list of County (or District) Representatives published in the December 1958 issue:

REGION 7—LONDON NORTH

D. J. Bradford (G3LCK), 49 Elvendon Road, London, N.13.

International Ham Hop Club

MEMBERSHIP continues to grow quickly, the total now approaching 300, of which nearly 100 are in the United Kingdom. Amateurs in 15 countries are taking part in Ham Hop holidays this year.

EI4G is chairman and G3DTB honorary secretary of the British and Irish Division while DJ2SY is honorary secretary of the German Language Division.

Future issues of the club's official journal *Ham Hop News* will be printed.

Radio amateurs and bona fide shortwave listeners are invited to visit Central Europe as guests of Club members in that area. Full details may be obtained by sending a s.a.e. to the *Hon. General Secretary*, George A. Partridge (G3CED), 17 Ethel Road, Broadstairs, Kent.

Forthcoming Events

Details for inclusion in this feature should be sent to the appropriate Regional Representatives. T.R.s and club secretaries are reminded that the information submitted must include the date, time and venue of the meeting and, whenever possible, details of the lecture or other event being arranged. Regional Representatives are requested to set out copy in the style used below.

REGION 1

Blackburn (B.A.R.C.).—Fridays, 8 p.m., Club H.Q., Corporation Park Hotel, Revidge Road, Blackburn.

Blackpool (B. & F.A.R.S.).—November 3 ("Technical Topics," John Wells, G3IZG), 8 p.m., Squires Gate Holiday Camp.

Bury (B.R.S.).—October 13 ("150 watt TVI-proof Transmitter," G2AKR), November 10 (Debate—QRO v. QRP), George Hotel, Kay Gardens.

Crosby (C.A.R.S.). — Tuesdays, 8.30 p.m., "Colonsay," Crosby Road South, Waterloo, Liverpool, 22.

Liverpool (L. & D.A.R.S.).—Tuesdays, 8 p.m., Gladstone Mission Hall, Queens Drive, Stoneycroft.

Macclesfield (M. & D.R.S.).—October 20, November 3, 17, The Bruce Arms, Crompton Road.

Manchester (M. & D.R.S.).—October 12, November 9, 7.30 p.m., The Wellington Hotel, Nicholas Croft, High Street, off Market Street.

Manchester (S.M.R.C.).—Fridays, 7.30 p.m., Ladybarn House, 17 Mauldeth Road, Fallowfield.

Preston (P.A.R.S.).—Wednesdays, 7.30 p.m., 145 Hammond Street.

Stockport (S.R.S.).—October 21, November 4, 18, 8 p.m., The Blossoms Hotel, Buxton Road.

Wirral (W.A.R.S.).—October 16, November 6, 20, 7.45 p.m., No. 4 Hamilton Square, Birkenhead.

REGION 2

Barnsley (B. & D.A.R.C.).—October 9 ("Transistor Power Supplies," by J. Ward, G4JJ), October 23 (Pie Supper), November 13 (Recorded Lecture), 7.30 p.m., King George Hotel, Peel Street.

Cleckheaton (S.V.A.R.S.).—October 18 (Visit to O.B. Listers Succro Ltd. at Dudley Hill, Bradford), November 11 ("Z Match and the coupling of transmitters to aerials" by a B.B.C. Engineer), 7.30 p.m., George Hotel, Cleckheaton.

Halifax (H. & D.A.R.S.).—October 13 ("Oscilloscopes" by J. F. Craven); October 27, November 10 ("Aerials" by G3IBN), November 24 ("Pea and Pie Supper,") 7.30 p.m., Sportsman Inn, Ogden, Halifax.

Leeds (L.A.R.S.).—October 21, 28, November 4, Swarthmore Education Centre, 4 Woodhouse Square, Leeds, 3.

Scarborough (S.A.R.S.).—Thursdays, 7.30 p.m., Chapman's Yard, North Street, Scarborough.

REGION 3

Coventry.—October 23, 7.30 p.m., Vine Street School, Coventry.

Stourbridge (St. A.R.S.).—October 30, 7.30 p.m., Bell Hotel, Stourbridge (Annual Dinner); November 3, 8 p.m., Brotherhood Hall, Scotts Road, Stourbridge.

Sutton Coldfield (S.C.R.S.).—October 24, 25 (midnight to midnight), "Jamboree-on-the-Air."

REGION 4

Derby (D.S.W.Exp.S.).—Sundays, 10.30 a.m., October 22, 29; November, 8, 12, 19, 7.30 p.m., Club Room, Nunsfield House, Boulton Lane, Alvaston, Derby.

Derby (D. & D.A.R.S.).—October 21 (Demonstration of Stereophonic Equipment); October 28, November 4 ("Perspex and Its Uses for the Amateur," A. Hitchcock, G3ESB); November 11, 18 (Film Show), 25, 7.30 p.m., Room No. 4, 119 Green Lane, Derby.

Leicester (L.R.S.).—October 19, 26; November 2, 9, 16, 23, 7.30 p.m., Old Hall Farm, Braunstone Lane, Leicester.

Lincoln (L.S.W.C.).—October 21; November 4, 18, 7.30 p.m., Technical College, Cathedral Street.

REGION 5

Cambridge (C. & D.A.R.C.).—October 16 (Junk Sale), October 30, 7.45 p.m., "Jolly Waterman," Chesterton Road, Cambridge.

REGION 6

Cheltenham.—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street.

LONDON MEMBERS' LUNCHEON CLUB

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

at 12.30 p.m. on Fridays, October 16, November 20 and December 18, 1959

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

REGION 7

Acton, Brentford and Chiswick.—October 20 ("My New Transmitter" by G3LLR), 7.30 p.m., A.E.U. Rooms, 66 High Road, Chiswick.

Bexleyheath (N.K.R.S.).—October 22, 8 p.m. ("The IGY and the Radio Amateur" by G. M. C. Stone, G3FZL), Congregational Hall, Clock Tower, Bexleyheath.

Chingford.—October 9, 23, 8 p.m., for venue 'phone SIL. 1740.

Croydon (S.R.C.C.).—November 10, 7.30 p.m., "Blacksmith's Arms," South End, Croydon.

Dorking (D. & D.R.S.).—Second and fourth Tuesdays in each month, 8 p.m., Star & Garter Hotel, Dorking. (October 27, "Amateur Radio in U.S.A." by C. Crook, G5BT.

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

East Molesey (T.V.A.R.T.S.).—November 4 ("Technical Films,") Carnarvon Castle Hotel, Hampton Court.

Enfield.—October 22, November 26, 7.30 p.m., George Spicer School, Southbury Road, Enfield.

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

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

Kingston.—Lectures alternate Thursdays, Theory and Morse Classes weekly, 7.45 p.m., Y.M.C.A., Eden Street, Kingston-on-Thames.

New Cross (C.A.R.S.).—Fridays 7.30 p.m., 225 New Cross Road, London, S.E.13.

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

Slough.—November 2, 8 p.m., "Stag Hotel," Wexham Street, Wexham.

REGION 9

Bristol.—October 16, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol 1. ("Mobile Operation" by John A. Rouse, G2AHL).

Yeovil (Y.A.R.C.).—Wednesdays, 7.30 p.m., Grove House, Preston Road, Yeovil.

REGION 10

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

Penarth.—October 26 (Impromptu Draw and Talk), November 30 ("Simple Crystal Grinding," by John Douglas, GW2CAS), Y.M.C.A., Penarth.

REGION 11

Prestatyn (F.R.S.).—November 2 (Film Show), December 7 (Social Evening), 7.30 p.m., Railway Hotel.

REGION 14

Prestwick.—Third Sunday in each month, 7.15 p.m., Royal Hotel.

REGION 13

Edingurgh (L.R.S.).—October 22 ("70 cm."), November 5 (Surplus Sale), 7.30 p.m., Y.M.C.A., 14 St. Andrew Street, Edinburgh 2.

REGION 14

Falkirk.—October 23, 7.30 p.m., Temperance Cafe.

DATES FOR YOUR DIARY

October 16.—London Lecture Meeting at I.E.E.

November 25-28.—R.S.G.B. International Radio Hobbies Exhibition, London.

December 11.—Annual General Meeting at Over-Seas House, London, S.W.1.

East London Hamfest

EAST London Group is holding a hamfest at the Lambourne Rooms, Town Hall, Ilford, from 2.30 to 8 p.m. on October 11, 1959. The talk-in station for visiting mobiles on Top Band will be G6HU/P.

Tickets may be obtained from local Town Representatives.

Can You Help?

● F. Allan Herridge (G3IDG), 95 Ramsden Road, London, S.W.12, who wishes to hear from any member who has made worthwhile improvements to the Panda Cub transmitter? Mr. Herridge also requires the circuit diagram or service sheet for the Etronic ETV1536 television receiver.

● H. Fenton (G8GG), 31 Clive Avenue, St. Annes, Lytham St. Annes, Lancashire, who requires any information regarding the British ex-Services Filter Unit H/F, Design 12, A.P.56152, F.L.3042, 30 Mc/s? Mr. Fenton is particularly interested in the design data, impedance and relevant frequencies.

GB2RS SCHEDULE

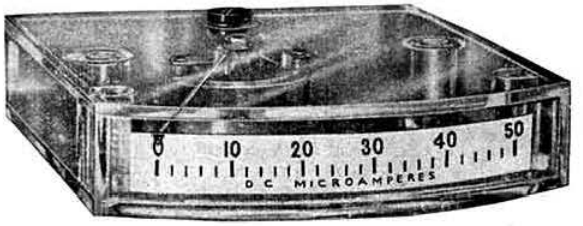
R.S.G.B. News Bulletins are transmitted on Sundays in accordance with the following schedule:

Frequency	Time	Location of Station
3600 kc/s	10 a.m.	London
	12 noon	Yorkshire
145·55 Mc/s	11.15 a.m.	Beaming south-east from Leeds
	11.30 a.m.	Beaming south-west from Leeds
	11.45 a.m.	Beaming north from Leeds
145·3—145·4 Mc/s	12 noon	Beaming north from London area
	12.15 p.m.	Beaming west from London area

The Technical Service Dept. of Siemens Edison Swan Ltd. 155 Charing Cross Road, London, W.C.2 will be glad to send a copy of their current Data Booklet covering Valves, Transistors and Cathode Ray Tubes to any R.S.G.B. member upon application. Data on the XA103, XA104, XB102 and XB104 transistors made by that company is also available upon request.

The Industrial Division of Amplivox Ltd., Beresford Avenue, Wembley, have issued illustrated leaflets describing a lightweight noise-cancelling microphone and a miniature earphone. A catalogue of other microphones and headsets is also available.

A leaflet describing small electric heaters for installation in radio, audio and test equipment for protection against moisture may be obtained from Dampp-Chaser Ltd., Langston Road, Loughton, Essex.



An "actual size" picture of the Taylor Model 200 edgewise meter.

An edgewise meter, model 200, suitable for use as a tape recorder level indicator or " S " meter and in similar applications where panel space is at a premium, has been announced by Taylor Electrical Instruments Ltd., Montrose Avenue, Slough. The panel space required is 2·5 in. × 0·62 in.

Daystrom Ltd., Gloucester, has issued an illustrated catalogue of Heathkits. Recent additions to the range include the DX100U transmitter, a direct reading capacitance meter, an r.f. probe for valve voltmeters, an f.m. tuner and an electronic switch to provide simultaneous traces of two independent signals on a single beam oscilloscope.

Details of towers for supporting rotary beams may be obtained from Francis and Lewis Ltd., 126/8 Prestbury Road, Cheltenham.

Lektrokit is the trade name for a construction system for chassis and cabinets which can be quickly built from a standard set of parts. An illustrated pamphlet is obtainable from All Power Transformers Ltd., Chertsey Road, Byfleet, Surrey.

Light Soldering Developments Ltd., have moved to 28 Sydenham Road, Croydon, Surrey (Croydon 8589).

A leaflet describing co-axial relays suitable for switching high frequency circuits without mismatch of the impedance of the feeder may be obtained from Londex Ltd., Anerley Works, 207 Anerley Road, London, S.E.20.

Lustraphone Ltd., St. George's Works, Regents Park Road, London, N.W.1, have issued a pamphlet entitled " The Selection of Microphones " and copies may be obtained on request.

A four-page folder describing quartz crystal units is available from the Quartz Crystal Co. Ltd., Q.C.C. Works, Wellington Crescent, New Malden, Surrey.

A leaflet describing v.h.f. converters for various frequency ranges, including 70-72 Mc/s, 108-109 Mc/s and 144-146 Mc/s, has been issued by R.E.E. Telecommunications Ltd., 15a Market Square, Crewkerne, Somerset. The firm has recently announced a new "Communicator" 2m mobile transmitter-receiver.

A booklet describing the uses of self-adhesive urethane foam has been published by Sealdraught Ltd., Chandos House, Buckingham Gate, London, S.W.1.

EXCHANGE AND MART SECTION

ADVERTISEMENT RATES. Members' Private Advertisements 3d. per word, minimum charge **5s. Trade Advertisements 9d.** per word minimum charge **12s.** All capitals **1s.** per word, minimum charge **18s.** Write clearly. No responsibility accepted for errors. Use of Box number **1s. 6d.** extra. Send copy and remittance to **National Publicity Co. Ltd., 20-21 Red Lion Court, Fleet Street, London, E.C.4, by 22nd** of month preceding date of issue.

ALL band G5RV 50 watt transmitter, excellent note and keying plus stabilized relay controlled power pack, prefer buyer collects, £20/10/-.—Faulkner, Grange Hostel, Farnborough, Hants. (987

ALL types of valves required for cash. State quantity and condition.—Radio Facilities Ltd., 38 Chalcot Road, N.W.1. (PRImrose 9090.) (236

AMERICAN Panoramic adaptor B.C.1031A, £20. American Reiner 5 in. model 556 laboratory scope incorporating X, Y and Z axis amplifiers and calibration meter, manual and circuit, £45. Cossor Model 1430, D.C. pre-amplifier, manual, as new, £10. Cossor double-beam scope 339A, with manual, beautiful condition, £20. Mullard general purpose scope type E800, £20. Another with long persistence tube, immaculate, £20. Bridge Ohmmeter by Record, £12/10/-. Evershed and Vignoles direct reading resistance box, £3/10/-. Furzhill L.F. Oscillator Type G 425. 1·4 c.p.s. to 30 kc/s, with manual, £25. Two Grundig Stenorette dictating machines with accessories, one in portable case, both as new, £55 the pair. Inspection and offers for bulk purchase, of the above.—Box 982, The National Publicity Co. Ltd., 20-21 Red Lion Court, Fleet Street, London, E.C.4. (982

AR88 slow motion drive wanted in good condition—DL2VW.—H.Q. Telecomms. Liaison Group, B.F.P.O. 40. (986

BC342 RECEIVER, 1-5—18 Mc/s 20m pre amp, 240/110 volt transformer, manual. Not in original case, looks a bit rough but in fair working order. Delivered up to 30 miles. £7 or offer.—G3FDU, 28 Jack Lane, Davenham, Northwich, Cheshire. (1007

COLLINS TCS 13 Transmitter and Receiver for sale, modified to crystal microphone input, good condition, with handbook, £18, also National NC 100A Receiver, 600 kc/s to 30 Mc/s with matching speaker, "S" meter. Good condition, with circuit photostat, £20. R1155A, civilian panel, modified top band, needs attention, £3.—G3JNZ, 39 Mixbury, Brackley, Northants. (1001

COMMUNICATIONS Receiver.—Eddystone 840 R with accessories. Purchased June this year. Selling for personal reasons, offers around £45. Practically unused.—Welwyn Garden 4648. Any evening. Free delivery London area. (985

FOR SALE.—BC.221.T frequency meter in A1 condition, complete in transit case, £45, buyer collects.—R. A. Klein, (B.R.S.22047), 6 Briardale Gardens, London, N.W.3. (991

FOR SALE.—Bendix TA-12-C and Modulator R208 and Manual; recalibrated Triplett Model 1200SC Multimeter; TS-184A/AP and conversion for 70 cm. Wavemeter.—Cheadle, Fir Tree End, Wise Lane, Mill Hill, London, N.W.7. (MIL. 5553 after 7 p.m.) (995

FOR SALE.—Sender 12 in working order, £6/10/-, delivered. Write first.—Box 1002, The National Publicity Co. Ltd., 20-21 Red Lion Court, Fleet Street, London, E.C.4. (1002

HALLICRAFTERS R44/ARR-5, services version of S-36 (has additional R.F. Stage), 28 to 143 Mc/s, AM-FM motor tuning, S-meter in excellent condition with separate mains power supply and instruction book for S-36 (roughly the same circuit).—Hawkstone Lodge, Weston-under-Newcastle, Nr. Shrewsbury. (988

HRO Senior, 9 coils 50 kc/s-30 Mc/s. Four bandspread; less power unit, £22 o.n.o. 1600 kc/s and 100 kc/s IFT, 5/-. Denco miniature Maxi-Q coils, 3/-. Valves 7H7, 7R7, 7S7 with holders 7/6.—Box 980, National Publicity Co. Ltd., 20-21 Red Lion Court, Fleet Street, London E.C.4. (980

MAKE ready for the coming DX season with one of our high quality log books. Space for 6,000 entries, 23/- post paid. QSL's—a wide range to choose from. Send for complete list of our stationery.—Dee-ex Products, 93 Craigton Road, Aberdeen. (979

(continued on page 136)

EXCHANGE AND MART SECTION *(Cont'd)*

METALWORK.—All types cabinets, chassis, racks, etc., to your own specifications.—Philpott's Metalworks Ltd. (G4BI), Chapman Street, Loughborough. (99

MINIMITTER MR37, £35, handbook, original condition. Will deliver reasonable distance.—Childs, " Ilex," Glamorgan Road, Catherington, Portsmouth, Hants. (1004

MR 37 Receiver, excellent condition, £30. BC 221 as v.f.o. with 200 watt 80/10 Transmitter, £25. BC 221 in excellent condition. Station available for demonstration.—Geoffrey Lusty, 21 Gentleman's Row, Enfield. (1008

PATENTS and Trade Marks. Booklet on request. King's Patent Agency Ltd. (B. T. King, G5TA, Mem. R.S.G.B. Reg. Pat. Agent).—146A Queen Victoria Street, London, E.C.4. (Phone: City 6161.) 60 years' refs. (372

QSL cards, G.P.O. approved. Log books, cheapest, best, prompt delivery. Samples—Atkinson Bros., Printers, Looe, Cornwall. (206

QST bound volumes 1939-1946 inclusive, £10. Marconi Comparison Bridge TF 202C, £10. Panoramic Adaptor BC 1031 A, £20. Receiver BC 923A 4 Channel, 27/38 Mc/s crystal calibrator, FM, no power unit, circuit, £7. APR 4 Converter TN16, 38 Mc/s/93 Mc/s, £5. Two 7½ in. fans, 12 volt D.C., 1·6A TCC Visconol Condensers 0·5 mfd., 3 KV, 0·1 mfd, 4 KV, 8/- each. Three element 20m beam (adjustable elements) with 14 ft. × 1 ft. 6 in. Steel lattice boom (Commercial), buyer collect, £4. Two high speed polarized Creed Relays, Type 27, with bases—first offer. Pair DA41 valves (TZ40), unused, 30/-. Offers.—Ellet, Ashleigh, Cardington Road, Bedford. (5567.) (997

R.A.E.? E.M.I. Correspondence course, Candler morse course, six morse record 5-25 w.p.m. certain to pass, snip, £5.—G3NEA, 32 West End, Westbury (Wilts.) (999

RECEIVER R.107 excellent condition, £7; Top band VFO Transmitter £3.—G4BX, 36 Oakwood Avenue, Boreham Wood, Herts. (Tel.: Elstree 1040.) (1003

SALE.—Labgear wideband coupler unit. New unused, £4/5/-. G.E.C. printed circuit F.M. tuner unit, new assembled and tested, £12. Tripletone stereo amplifier 4 + 4 watts complete with tone control unit. New with unused guaranteed card, £18. —G2FFM, 54 Beaufort Road, Billericay, Essex. (1005

STEEL lattice tower. 40 ft. high carrying 14 Mc/s 3 element close spaced beam rotated by Selsyn Motors. Tower motor has 60 to 1 reduction gear to beam shaft. Indicator chart in shack. Two platforms and steel ladder full length on one side. Price £85 the lot and cost nearly three times that amount. Inspection any time by appointment.—Write: Harry Beckett, G5HK, Manor Farm, Brimington, Nr. Chesterfield. (994

SURPLUS Valves, unused, original boxes. 6J5G, 6K7G, 2/6 each. Few 6V6G's, 3/6 and 12 volt aerial changeover relays, 4/6. Post free.—G3CER, 15 Ridgway Road, Farnham, Surrey. (993

WANTED.—All types of communications receivers, test equipment, tape recorders, amplifiers, etc. Prompt cash payment.—Details to R. T. & I. Service, 254 Grove Green Road, Leytonstone, London, E.11. LEYton 4986.)

WANTED.—Avo Universal Minor. In exchange for Weston Universal Exposure Meter, as new.—T. Dugdale, Ampthill Park House, Ampthill, Bedford. (998

WANTED.—BC610 Hallicrafters, E.T. 4336 transmitter; BC312 Receivers, BC221 Frequency Meters and spare parts for all above. Best cash prices.—P.C.A. Radio, Beavor Lane, Hammersmith, W.6. (266

WANTED.—Communications receiver covering, say 500 kc/s to well above 30 Mc/s (preferably 54 Mc/s). Also table top 160m thro' 10m TX. Neither necessarily working or perfect. Required London area, end September onwards. Offers required now by Air Mail.—D. T. Bradford (VQ4EV), Box 30175, Nairobi, Kenya. (974

WANTED for Cash.—Good clean communication receivers and S.S.B. equipment. Please state price. Short Wave (Hull) Radio, 30-32 Princes Avenue, Hull. (Telephone 18953.) (983

WANTED.—G4ZU Minibeam, Minimitter or circular telescopic mast, beam rotator and indicator. Details and price any of above to: R. Wright, 27 Haverstock Court, St. Paul's Cray, Kent. (SOO 4266.) (996

WANTED to purchase in clean condition.—R.S.G.B. Bulletins for May 1954 and October 1958, also valves type 5763.—Box 981, National Publicity Co. Ltd., 20-21 Red Lion Court, Fleet Street, London E.C.4. (981

WANTED.—Transformer telephone No. 13. Z.A.3153 used as output transformer in R107 receiver, or winding details.—Wilson, 52 Westmead, Windsor, Berks. (1000

WANTED URGENTLY.—Circuit diagram of DST 100. To buy or borrow for photostat copying.—G3JNF, 23rd Signal Regt., New Barracks, Burton Road, Lincoln. (989

WANTED.—Wireless Sets 31 (AFV type) ZA.39058. Power supply and L.F. amplifier units No. 3 (ZS.39057), Aerials vertical, 4 ft. No. 1 (ZA.26826). Aerials vertical, 14 ft. (ZA.-27098).—Box 990, National Publicity Co. Ltd., 20/21 Red Lion Court, Fleet Street, E.C.4. (990

805 (PA1R), 50/-. BC454 and BC455 with 6 volt valves, 30/- each. 717A (2), 7/6 each. Dynamotors: TA12, 30/-; 12/400 volt, 7/6; 12/150 volt Vibrapack, 15/-. U.S.A. Morse Keys (2), 7/6 each.—G2ACT, 67 Bare Lane, Morecambe. (1006

APPOINTMENTS SECTION *(Situations Vacant)*

RADIO OPERATORS.—Air Ministry have vacancies for temporary Radio Operators (Male). Good prospects of permanent, pensionable appointments and promotion. Initial appointments in U.K. but subsequent tour of duty in Far East likely. Trainees, £422/10/- to £605. Qualified Operators, £507/10/- to £975. (These rates are subject to a small reduction at provincial stations and a small increase in London and overseas). Special allowances payable for overseas service.—Apply Air Ministry, C.E.4d, Cornwall House, Stamford Street, S.E.1. (984

TELEVISION ENGINEERS.—Vacancies exist at branches throughout the country for television engineers of all grades. This is an exceptional opportunity for men who place a value on loyalty and integrity. Salary dependent on skill and ability. An outstanding man can earn £1,000 per annum. Replies to, Technical Advisor, Family Television Ltd., Duracraft Works, Franklin Road, Portslade, Sussex. (976

INDEX TO ADVERTISERS

Council Proceedings

APRIL 1959 MEETING

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, April 20, 1959, at 6 p.m.

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

Apologies for Absence: The Secretary submitted apologies for absence from the President (Dr. R. L. Smith-Rose), Mr. D. A. Findlay and Mr. J. H. Hum.

Absent: Mr. H. W. Mitchell.

* * *

Cash Account

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

Donation

The Secretary reported that a Member who wished to remain anonymous had donated the sum of £5 to the Society in appreciation of the valuable service rendered by the QSL Bureau.

The Secretary was instructed to write a suitable letter of thanks to the member in question.

Geneva Radio Conference

It was reported that Mr. L. E. Newnham would probably be invited at an early date to join the U.K. delegation to the Geneva Radio Conference. On the assumption that a formal invitation would be forthcoming it was:

Resolved to authorize Mr. Newnham to incur expenditure up to a maximum of £200 in connection with the Geneva Radio Conference.

Membership

Resolved to elect 123 Corporate Members and 26 Associates.

The Chairman thanked Mr. Kay for the fine service he had rendered to the Society in enrolling 253 new members since he began his personal drive in 1957.

Application for Affiliation

Resolved to grant affiliation to the Leeds University Union Amateur Radio Society.

Bulletin Delivery

The Secretary in his capacity as Editor of the R.S.G.B. BULLETIN reported upon a discussion he had had with representatives of the Post Office and the Society's printers in regard to uneven BULLETIN deliveries.

R.A.E.N. Officials Badges

Resolved to inform the R.A.E.N. Committee that the Society is prepared to stock special badges for R.A.E.N. officials for sale at a price of 8/- each post free.

Radio Show—Earls Court 1959

Resolved to accept an invitation from Radio Industry Exhibitions Ltd. to take space at the Radio Show, Earls Court 1959 on the same terms and conditions as in previous years.

Mullard Award 1958

It was reported that one nomination had been received in respect to the Mullard Award 1958.

Resolved to send the nomination forward to Mullard Ltd. for consideration by the Mullard Award Committee.

I.A.R.U. Region I Conference 1960

It was reported that an hotel in Folkestone, Kent, could provide full facilities for a Region I Conference during the period June 12-19, 1960.

Resolved to authorize the Secretary to enquire from all Member Societies in Region I (Europe and North Africa) whether they would be prepared to appoint delegates to attend a Conference in Folkestone during the period June 12-19, 1960, and if so how many persons would be likely to be included in the delegation.

" Radio Wales "

It was reported that the Society and individual members had written to the Editor of *The Daily Telegraph* to protest against a suggestion that radio amateurs had been responsible for the operation of the unlicensed station " Radio Wales." *The Daily Telegraph* in a subsequent issue had made it clear that the persons referred to earlier were amateurs only in the sense that they had no wide technical knowledge of radio and were not members of the general body of radio amateurs.

R.S.G.B. Amateur Radio Call Book

Resolved to place an order with Bentley & Co. Ltd. for printing 7,000 copies of the 1960 edition of the *R.S.G.B. Amateur Radio Call Book*, the edition to be on sale at the opening of the 1959 Radio Hobbies Exhibition.

It was reported that only a few hundred copies of the 1959 edition remained to be sold.

Proposal to extend U.S. Phone Band

It was reported that a number of members, including several in Canada, had written to protest against a proposal, sponsored initially by the A.R.R.L., to extend the U.S. phone band up to 14,350 kc/s. A letter had been written to the A.R.R.L. expressing the hope that the proposal would not be proceeded with. No reply had been received to date.

I.A.R.U. Calendar No. 57

Copies of the *Calendar* were tabled.

Attention was drawn to the fact that nominations are now in order for Societies to be considered for the Radio Club Argentino Trophy. The Trophy is to be awarded to the Member-Society with ten years' standing and upwards which is judged to have contributed most to the amateur communications art and international understanding amongst amateurs.

London Lecture Meetings

Resolved (*a*) that an application be made to the Institution of Electrical Engineers for permission to hold (i) two lecture meetings in the Tea Room during the 1959-60 session, one in October 1959 and the other in March 1960; (ii) the Presidential Address Meeting in the Lecture Theatre on January 22, 1960; (*b*) that the two Lecture Meetings be held on Thursday evenings, or, if accommodation is not available, on Friday evenings; (*c*) that a Council Member shall be appointed to attend each meeting to affect introductions; (*d*) that the subject matter of the two Lectures shall be made more popular; (*e*) that friends of members shall be invited to attend; (*f*) that good publicity shall be given to the two Lecture Meetings.

An earlier motion that, in view of the poor support recorded in recent years, no further Society lecture meetings be held at the I.E.E., other than the Presidential Address, was not accepted.

Reciprocal Licensing Arrangements

A letter was submitted from a member in which he enquired whether the Society would be willing to reopen the question of short-term reciprocal licensing arrangements with the G.P.O. in view of a statement made by the Home Secretary recently that the U.K. Government is prepared to consider dispensing with the formality of passports in the case of visitors to the U.K. from O.E.E.C. countries.

It was agreed to write to the G.P.O. and ask, for the information of members, the present position in respect to reciprocal short-term licenses.

Handbook Committee

In order to provide a link between the Council and the Handbook Committee it was agreed that Mr. Newnham should serve on that body.

R.S.G.B. Radio Hobbies Exhibition

Resolved to authorize Mr. P. A. Thorogood to organize the 1959 R.S.G.B. Radio Hobbies Exhibition on the same terms and conditions as in previous years. (The Exhibition will open on Wednesday, November 25.—EDITOR.)

Reports of Committees

Minutes of Meetings of the R.A.E.N., Contests, V.H.F., Finance and Staff and TVI/BCI Committee were submitted as Reports.

Resolved to receive the Reports and to accept certain of the Recommendations contained therein.

The Recommendations dealt with R.A.E.N. Rally trophies, 70 Mc/s band operation within 50 miles radius of Jodrell Bank Observatory, a new v.h.f. beacon station at Wrotham, Kent, and a proposed change to Article 88.

The meeting terminated at 9.35 p.m.

MAY 1959 MEETING

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, May 25, 1959, at 6 p.m.

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

Apologies: Apologies for absence were submitted on behalf of the President (Dr. R. L. Smith-Rose), Messrs. H. A. Bartlett and E. G. Ingram.

Absent: H. W. Mitchell.

Geneva Radio Conference

It was reported (*a*) that Mr. L. E. Newnham, B.Sc., G6NZ (Immediate Past President) had been invited to serve on the U.K. Delegation to the Geneva Radio Conference as a technical adviser on Amateur Radio matters; (*b*) that the B.B.C. had been unable to accept a suggestion put forward by the Society that amateurs in Region I should be allowed to operate between 7·15 and 7·3 Mc/s on the basis of non-interference with the Broadcast Service.

(*c*) that the first two sections of the *Book of Proposals*, totalling 860 pages,

had been received from I.T.U. Headquarters. Australia had proposed drastic reductions in the width of the 3·5, 7 and 14 Mc/s bands, whilst certain European Common Market countries had proposed that the 7 Mc/s band should be reduced to 7·7·15 Mc/s on a world-wide basis and that the 28 Mc/s band should be reduced by one half (i.e. 28-29 Mc/s). The frequency proposals of the U.K., U.S.A. and many other countries had not yet been published.

The Secretary reported that Australian amateurs had not been informed until early in May 1959 of the proposals of the Australian Post Office, a fact which had led to severe criticism in the Australian Houses of Parliament.

Visits

It was agreed to set up a small *ad hoc* Committee to explore the possibilities of arranging visits to places of technical and/or scientific interest.

Finance Act 1958

It was reported that the Society had been " approved " for the purposes of Section 16 of the Finance Act 1958. (This matter was reported upon in the June 1959 issue of the R.S.G.B. BULLETIN.—EDITOR.)

Reports of Committees

The Minutes of Meetings of the Contests, Exhibition, R.A.E.N. and Handbook Committees were submitted as Reports.

Resolved to receive the Reports and to accept certain of the Recommendations contained therein.

The Recommendations which were accepted dealt with, inter-alia, the judging of various contests, trophy awards, rules for future contests; Exhibition expenses; R.A.E.N. membership, R.A.E.N. officers' badges.

After considering the Report of the Handbook Committee it was resolved that the Secretary should inform Mr. Lewer that the publication date of November 25, 1959, must be adhered to. In view of the fact that the Handbook Committee had reported to the Council that the progress of the Handbook was being retarded by lack of editorial assistance the Secretary was instructed to submit to Mr. Lewer the name of a qualified member who would be prepared to assist.

The meeting terminated at 10.10 p.m.

JUNE 1959 MEETING

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, June 22, 1959, at 6 p.m.

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

Apologies for absence were submitted on behalf of the President (Dr. R. L. Smith-Rose) and Mr. E. G. Ingram.

Absent: Mr. H. W. Mitchell.

* * *

Aerial Mast Appeal

A letter was submitted from Mr. W. James (G6XM) in which he asked whether the Council would be prepared to pay some portion of the legal expenses which he incurred in connection with his successful appeal to the Minister of Housing and Local Government against the decision of his local authority refusing him permission to erect an aerial mast in his garden.

The Secretary recalled that the Council at its meeting on February 23, 1959, had agreed to give consideration to the question of providing financial assistance in cases similar to the one now under discussion. Mr. James had received an account from his legal adviser in the sum of £28/5/-.

Resolved to make an ex-gratia payment of £15/15/- to Mr. James.

Membership

Resolved (i) to elect 74 Corporate Members and 21 Associates; (ii) to grant Corporate membership to two Associates who had applied for transfer.

Application for Affiliation

Resolved to grant affiliation to the Reigate Amateur Transmitting Society.

Mullard Award

It was reported that for health reasons Mr. Peter Odell (G3MUM) who had been nominated for the Mullard Award, would not be able to attend a presentation ceremony outside his home town, Redcar, Yorks.

Resolved to authorize Mr. Milne and the General Secretary to represent the Society at the Mullard Award presentation ceremony if their private arrangements permit.

London Lecture Meetings

Resolved to hold lecture meetings at the Institution of Electrical Engineers on Fridays, October 16, 1959, and March 11, 1960.

Printing Dispute

The Secretary submitted a report on the printing dispute.

Resolved to authorize Headquarters to issue a circular newsletter to R.R.s, C.R.s, and T.R.s, if the dispute continues after about the middle of July.

International Short Wave League

Resolved (i) that a letter be sent to the I.A.R.U. Member-Societies who continue to despatch QSL cards to the International Short Wave League pointing out that they are required in accordance with I.A.R.U. rules to despatch cards only to the R.S.G.B.; (ii) that a suitable letter written in Russian be sent to Box 88, Moscow, asking the Russian QSL Bureau to send cards for United Kingdom amateurs only to the R.S.G.B.; (iii) that Mr. Milne should contribute a *Current Comment* to the R.S.G.B. BULLETIN on the work of the R.S.G.B. QSL Bureau.

Amateur Radio Mobile Society

Resolved to invite the Amateur Radio Mobile Society to organize a Mobile Rally at Woburn Abbey during September 1959 on behalf of the R.S.G.B.

O.R.M.s

Resolved to appoint the following representatives of the Council to attend forthcoming O.R.M.s:

September 12 (Glasgow), September 13 (Prestwick). Messrs. Findlay, Ingram and Milne.

September 20 (Southampton). Messrs. Caws, Newnham and Scarr.

September 26 (Cardiff). Messrs. Metcalfe, Yeomanson and Williams.

The General Secretary was appointed to attend the Cardiff meeting if his Geneva Conference and personal commitments permit him to do so.

Geneva Radio Conference

The Secretary reported that he was proposing to spend about eight weeks in Geneva between August 14 and November 14 and that during that time he expected to return to England on three occasions.

Mr. Newnham was proposing to spend three weeks in Geneva at the commencement of the Conference.

The Secretary reported that it was the intention of the U.K. Administration to propose to the Conference that all present amateur allocations be retained in Region 1. Minor proposals for extension in the s.h.f. position of the spectrum were also included in the U.K. " Brief ".

Duplicating Machine

Resolved to purchase an Ellams Type D100 Self-Feeding Duplicating Machine at a list price of £47/10/- less £10 allowance on the present machine.

(The machine which has now been replaced was purchased second-hand 18 years ago.—EDITOR.)

Intruder Watch

A report on the work of the R.S.G.B. Intruder Watch over the past two years prepared by Major D. W. J. Haylock (G3ADZ) was submitted.

Resolved to publish the Report, suitably amended where necessary, and to send copies of the issue of the R.S.G.B. BULLETIN containing the Report to other I.A.R.U. Societies in Region I.

Raffle Prizes

Resolved to issue a revised version of a circular letter dealing with raffle prizes to all Society representatives. (A copy of the letter is reproduced on page 139—EDITOR.)

Bristol Group

It was reported that the Bristol Group had received a cheque for £8/8/- from the B.B.C. in connection with material filmed and recorded during N.F.D. at the Bristol Group's sites on Dundry Hill. The Hon. Treasurer of the Group (Mr. D. F. Davies) had written to ask whether the money could be retained by the Group or should be sent to Headquarters.

Resolved to authorize the Bristol Group to retain the sum of £8/8/-.

The Amateur Radio Handbook

A letter was submitted from the Society's printers in which it was reported that paper to the value of £668/10/- had been purchased for the Handbook some two years ago and that an expenditure of £460 had been incurred in connection with composition. It was also reported that the original estimate for printing the Handbook would have to be revised in view of the dispute in the printing industry.

Reports of Committees

TVI/BCI

The Minutes of a Meeting of the Committee held on May 27, 1959, were submitted as a Report.

Resolved to receive the Report.

It was agreed to write to the Radio Services Department of the Post Office drawing attention to the fact that as no comments had been received on the Society's letter dated March 26, 1959, outlining the matters discussed at a meeting with representatives of the G.P.O. held on January 5, 1959, the Council presumes that the Post Office has no objection to the

Society now publishing the information on TVI policy set out in the letter referred to.

Exhibition

The Minutes of a Meeting of the Committee held on June 9, 1959 were submitted as a Report.

Resolved to receive the Report and to accept the Recommendations contained therein.

(The Recommendations dealt, *inter alia*, with the Society's participation in the National Radio Show, Earls Court, and to the R.S.G.B. Radio Hobbies Exhibition.)

It was agreed that the R.S G.B. Radio Hobbies Exhibition shall in future be described as the R.S.G.B. International Radio Hobbies Exhibition.

The meeting terminated at 10 p.m.

JULY 1959 MEETING

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, July 20, 1959, at 6 p.m.

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

Apologies: Apologies for absence were submitted on behalf of the President (Dr. R. L. Smith-Rose), Messrs. H. A. Bartlett and W. A. Scarr.

Absent: Mr. H. W. Mitchell.

* * *

Annual Accounts

The Hon. Treasurer reported that income had exceeded expenditure for the year to June 30, 1959, by approximately £1,056 compared with a surplus of £590 for the previous year.

Membership

Resolved (i) to elect 66 Corporate Members and 16 Associates; (ii) to grant Corporate Membership to two Associates who had applied for transfer.

It was reported that Mr. Kay had enrolled 268 members since he began his personal drive for new members three years ago.

Application for Affiliation

Resolved to grant affiliation to the Northern Rhodesia Amateur Radio Society.

I.A.R.U. Region I Conference

Resolved (i) that the R.S.G.B. shall be the host Society at a Region I Conference in Folkestone during the period June 12–June 18, 1960; (ii) to authorize the Secretary to make a firm booking with the Grand Hotel, Folkestone.

The Secretary confirmed that the main secretarial and translation services would be a charge on I.A.R.U. Region I Fund 2. Early next year the Society would be required, in accordance with decisions reached at the Bad Godesburg Conference, to submit to the Executive Committee for approval a detailed budget of proposed expenditure and a programme of activities.

(Members will recollect that at the I.A.R.U. Region I Conference held in Bad Godesberg during 1958 the then President of the R.S.G.B. (Mr. L. E. Newnham) informed the delegates present that the R.S.G.B. would be pleased to act as the host society at the 1960 Conference. Mr. Newnham's offer was subsequently ratified by the Council.—EDITOR).

Geneva Conference

It was reported that the sum of $25,000 (£8,800) had been made available by the A.R.R.L. to cover the expenses of the General Manager, Assistant General Manager, Technical Director, Canadian General Manager and other representatives of the League at the Geneva Conference.

A.R.R.L. Subscriptions

It was reported that as from August 1, 1959 the membership subscription for U.S. and possessions would be increased from $4.00 to $5.00 (36/- approximately). (The overseas subscription was recently increased from $5.00 to $6.00.—EDITOR).

Reports of Committees

The Minutes of Meetings of the Contests, Technical, TVI/BCI, R.A.E.N. and Exhibition Committees were submitted as Reports.

Resolved to receive the Reports and to accept the various Recommendations contained therein.

The Recommendations dealt, *inter alia*, with R.A.E.N. publicity, Contest results and awards, publication of a report of a meeting with the G.P.O. when TVI problems had been discussed, technical development programme, components for parametric amplifiers, the Society's stand at Earls Court Radio Show, the award of Society Premiums and Trophies.

Morse Practice Records

Resolved to take no action on a suggestion that the Society should offer for sale at a price of about 35/- each, Morse practice records produced by a member.

The meeting terminated at 9.20 p.m.

Raffle Prizes

THE following is the text of a letter recently issued to all Society representatives.

"The attention of the Council has again been drawn to the fact that certain local representatives have made application to radio manufacturers and book publishers for gifts to be used as raffle prizes at Hamfests, Dinners and Mobile Rallies without obtaining the permission of R.S.G.B. Headquarters.

Whilst appreciating the interest which a well organized raffle holds for the membership as a whole, the Council is of the opinion that a simple procedure must be laid down in order to avoid certain criticisms which have been levied against the Society by donors of prizes.

In future, therefore, no request should be made for raffle prizes unless the function is a good deal more than of a purely local character. *No request should be made on R.S.G.B. Members' Correspondence notepaper unless sanctioned by Headquarters, and no tickets should be sold for prizes which have been donated.*

The organizers of a raffle should take steps to ensure that every prize winner writes a personal letter of thanks to the company or firm responsible for supplying the gift. In recent years manufacturers and book publishers have frequently expressed disappointment that their gifts have not been acknowledged.

The Council look forward to your co-operation in this matter of raffle prizes."

Courses of Instruction for the Radio Amateurs' Examination

IN addition to the centres listed in the July and August issues of the BULLETIN, courses in preparation for the Radio Amateurs' Examination are being held at the following institutes:

Croydon Technical College, Fairfield, Croydon, Surrey. The course covers the requirements of the Radio Amateurs' Examination. Classes are held on Fridays and the fee is 25/-.

Liverpool 19: Riversdale Technical College, Riversdale Road, Aigburth. Classes in preparation for the R.A.E. and the G.P.O. Morse Test are held on Mondays and Thursdays from 7 to 9.30 p.m. Enrolments will be accepted at the College on those nights. The instructor is A. D. Taylor (GW8PG).

Preston: The Harris Institute Technical College, Corporation Street. Classes covering the R.A.E. only are being held on Thursday evenings from 7.15 to 9.15 p.m. The course has been arranged at the request of Preston Amateur Radio Society.

Yorkshire: Vermuydin Institute of Further Education, County Primary School, Dunsville, Doncaster. Classes in Radio Transmission (theory and operating procedure) take place on Tuesdays from 7 to 9 p.m.

R.S.G.B. QSL Bureau—Important Notice

The R.S.G.B. QSL Bureau will be closed from Thursday, October 1, to Saturday, October 17, inclusive. Members are asked not to send cards or correspondence to the Bureau which would normally be delivered during this period. Envelopes for the collection of incoming cards should be sent direct to the appropriate Sub-Managers whose addresses are given on page 124.

New Members

THE following have been elected to membership.

APRIL, 1959

Corporate Members, Home (Licensed)

G2TG †Lt.-Cmdr. W. Stockburn, 40 Netherburn Road, Sunderland, Co. Durham.
G2HAW †T. C. Turner, 13 Park Road, Hounslow, Middx.
G3FM †J. Duckworth, Jasmine Cottage, Main Street, Queniborough, Leicester.
G3BEZ †H. G. Peers, 3 Monks Brook Close, North Stoneham, Eastleigh, Hants.
G3CWV †C. Wallis, 5 Three Corner Close, Majors Green, Shirley, Solihull, Warwicks.
G3DCF †G. E. Cox, 44 Bowerdean Street, Fulham, London, S.W.6.
G3GCO †S. A. Bowen, 31 The Crescent, Donnington, Wellington, Shropshire.
G3ECH †R. J. Price, 4 Heath Row, Bishop's Stortford, Herts.
G3HEO †D. P. Hobbs, 36 Stanley Avenue, St. Albans, Herts.
G3HPJ T. Shepherd, 72 Warwick Street, South Bank, Middlesbrough, Yorks.
G3JDM †P. J. Wright, 63 Probert Road, Oxley, Wolverhampton, Staffs.
G3KKN N. G. Armstrong, c/o "The Roost," New Road, Southam, Cheltenham, Glos.
G3KWI †R. W. G. Stewart, "Wharncliffe," 113 Radbourne Street, Derby.
G3MDH P. A. L. Shoosmith, 31 Fairfield Close, Hythe, nr. Southampton, Hants.
G3MTD B. V. Kissack, 348 Clarendon Street, Dukinfield, Ches.
G3MUV J. E. MacDonald, "The Bungalow," Greengarth Hall, Holmrook, Cumberland.
G3MWB W. C. Povey, 35 Valley Road, Newbury, Berks.
G3MWY F. C. Jones, 16 East Way, Shirley, Surrey.
G3NAA R. C. Polley, 25 Tower Avenue, Chelmsford, Essex.
G3NAS W. K. Ginder, 122 Chester Road, North, Sutton Coldfield, Warwicks.
G3NCN J. A. Ellerton, 16 Hallgate, Cottingham, East Yorks.
G3NCK W. C. Dennis, 54 Langley Crescent, St. Albans, Herts.
G3NFP L. R. Beckwith, 154 Philip Lane, Tottenham, London, N.15.
G3NGB B. C. R. Hall, 3 James Street, Flowery-Field, Hyde, Ches.
G3NHV D. A. Hare, Aux. Ketch "*Polaris*," Fishers Quay, Great Yarmouth, Norfolk.
G3NJE T. H. Hayhurst, 25 Ashburn Road, Heaton Norris, Ches.
G6QC †E. T. Pethers, 32 Tuckett Road, Woodhouse Eaves, nr. Loughborough, Leics.
GI3NEB J. E. Wilson, 47 Coolfin Street, Donegall Road, Belfast, Northern Ireland.
GM3OM †O. M. Derrick, 261 Main Street, Larbert, Stirlingshire.
GM3INH J. D. Paterson, 9 West Road, Haddington, East Lothian.
GM3LER J. G. Stewart, 14b, Mount Street, Aberdeen.
GM3NHQ T. Harrison, 6 Meadow Green, Sauchie, By Alloa, Clackmannanshire.
GM3NHW W. K. Heggie, 80 Leslie Terrace, Aberdeen.
GW3AJ †W. H. Abraham, 1 Bassaleg Road, Newport, Mon.
GW3NAM †F. Meredith, 102 Pontypridd Road, Barry, Glam., South Wales.

Corporate Members, Overseas (Licensed)

CN8JD D. Warfield, Navy No. 214, NCF, Box 50, c/o F.P.O., New York, N.Y., U.S.A.
F7DP/DL4HA/K2YDZ. H. E. Riggs, Wayne Avenue, Stony Point, New York, N.Y., U.S.A.
DL4MG/W5WW William W. Adams, N.S.A. Europe, APO 757, U.S. Forces, Germany.
DL7GV Fred Wagenknecht, Berlin-Britz, Bendastr. 11a, Germany.
K1DNW Edward J. Sochon, RFD. 1, Plainfield, Conn., U.S.A.
K3EUY K. R. Burnett, Box 7875, Philadelphia 1, Penn., U.S.A.
K4OCN F. S. Milburn, P.O. Box No. 7, Burlington, Kentucky, U.S.A.
K6CQM R. T. Murphy, 864 Rorke Way, Palo Alto, Calif., U.S.A.
K7AAW E. G. Dolan, Box 485, Linfield College, McMinnville, Oregon, U.S.A.
K9PPX Scott C. Millick, 222 North Jackson Street, Litchfield, Ill., U.S.A.
MP4DAA A. E. Goodwin, Abu Dhabi Marine Areas Ltd., Das Island Base, P.O. Box 330, Bahrain.
OZ7BR J. K. Rasmusen, 31 Borgevej, Lyngby, Denmark.
VE3CNB R. C. Abell, 1385 Moy Avenue, Windsor, Ontario, Canada.
VE3DDU Wm. G. Eason, 86 Millwood Road, Toronto 7, Ontario, Canada.
VE8MX J. Campbell, Pin Main, Federal Electric Corpn., Box 2330, Edmonton, Alberta, Canada.
VP3WM D. Woo-Sam, c/o Sandbach Parker & Co. Ltd., P.O. Box 308, Georgetown, British Guiana.
VQ2MS M. G. Serrao, 76 A Avenue, Luanshya, Northern Rhodesia.
VS6ED B. S. Mudge, Gibson, 36, Royal Air Force, Little Sai Wan, Hong Kong.
VS9AL †E. G. Lintott, I.A.L., P.O. Box 1185, G.P.O., Aden.
W1MUJ L. A. Copp, P.O. Box 455, Wolfeboro, New Hampshire, U.S.A.
W2HGM K. D. Kemper, 62 Buckingham Road, Rockville Centre, New York, U.S.A.
W5PSB Harry Lee Parrish, Jr., 2701 Dunoon, El Paso, Texas, U.S.A.
W6THN R. L. Gunther, Research Unit in Radiobiology, Mt. Vernon Hospital, Northwood, Middx.
W8GMY James L. Gray, R.R. No. 2, New Lebanon, Ohio, U.S.A.
W8LPE R. F. Kleiber, 2420 Bremont Avenue, Cincinnatti 13, Ohio, U.S.A.
W4ZJY/F7CV D. H. Knight, 1272-1 AACS Detachment, APO 84, New York, U.S.A.
W8UEM D. E. Ogron, 1605 Wrenford Road, South Euclid 21, Ohio, U.S.A.
ZD2CKH C. K. Harrisson, c/o G. B. Ollivant Ltd., P.O. Box 38, Jos, N. Nigeria.

Corporate Members, Home (British Receiving Stations)

22257 A. Cartwright, 11 Rugeley Road, Armitage, Rugeley, Staffs.
22258 A. C. Blake, 14 Chatham Road, Walthamstow, London, E.17.
22259 A. E. Smith, 70 Bennetts Lane, Bolton, Lancs.
22260 W. K. Findlay, 42 Hanover Street, Stranraer, Scotland.
22261 P. G. Browning, 11 Manor Road, Twickenham, Middx.
22262 A. L. Rawlings, 71 Bryngolau, Bridgend, Glam., South Wales.
22263 M. Morrissey, 375 Camden Road, Holloway, London, N.7.
22264 W. J. Bishop, 37 Mayfield Road, Swaythling, Southampton.
22265 B. F. M. Dennis, 86 Abbey Road, Fareham, Hants.
22266 F. Collett, 5 Rowland Road, Stevenage, Herts.
22267 D. W. Coates, 18 Hogarth Road, Tilgate, Crawley, Sussex.
22268 D. W. Hayter, 42 Hunts Mead, Billericay, Essex.
22269 P. J. F. Croset, 1 Gernhill Avenue, Huddersfield, Yorks.
22270 E. L. Devereux, 10 Marconi Bungalows, North Weald, Epping, Essex.
22271 E. D. Owen, 356 North Road, Cardiff, South Wales.
22272 B. J. Jayne, 16 Hazelwood Road, Pantside, Newbridge, Mon., South Wales.
22273 A. F. Hunt, 18 Victoria Road, Edmonton, London, N.18.
22274 A. C. Davie, 1 Magdala Place, Aberdeen, Scotland.
22275 J. Moore, 32 Mossdale Road, Landgate, Ashton-in-Makerfield, Lancs.
22276 R. Tobin, 4 Comely Park Street, Gallowgate, Glasgow, E.1.
22277 F. J. Biggerstaff, Went Road Post Office, Birstall, Leicester.
22278 R. Trevitt, 28 Delves Avenue, Tunbridge Wells, Kent.
22279 W. B. Pogson, 271 Green Lanes, London, N.4.
22280 H. D. Northey, c/o National Provincial Bank Ltd., Launceston, Cornwall.
22281 F. C. Webb, 119 Shakespeare Avenue, Hayes, Middx.
22282 G. R. L. Smillie, c/o P/O Palin, R.A.F. Station, Hullavington, Chippenham, Wilts.
22283 P. S. McLaughlan, 3 Invercanny Place, Glasgow, W.5.
22284 G. A. J. Beytagh, 5 Colgrove, Welwyn Garden City, Herts.
22285 A. J. M. Buttar, 95 North Parade, Sleaford, Lincs.
22286 N. C. Weston-Pewtress, Swn-y-Don, 15 Glynderwen Crescent, Sketty, Swansea, Glam.
22287 H. A. Schaller, 29 Wayland Avenue, Hackney, London, E.8.
22288 H. D. Brandley, 42 Lucas Avenue, Harrow, Middx.
22289 W. Roxburgh, 3 Henrietta Street, Kilmarnock, Ayrshire, Scotland.
22290 F. J. Snow, 26 Merrilees Crescent, Holland-on-Sea, Clacton-on-Sea, Essex.
22291 R. Gray, 1266 Cathcart Road, Glasgow S.2, Scotland.
22292 W. Smart, 59 Sandringham Drive, Leeds 17, Yorks.
22293 W. R. Bartlett, 48 Dongola Road, London, N.17.
22294 R. C. Lowndes, 61 High Street, Kingswood, Bristol.
22295 G. Rimmer, 260 West Princes Street, Glasgow C.4.
22296 J. F. Enfield, 23 Russell Street, St. Neots, Hunts.
22297 C. W. Reynolds, 1 Primrose Hill Road, London, N.W.3.
22298 H. R. B. Scantlebury, 81 Devonshire Road, Mill Hill, London, N.W.7.
22299 F. Whalley, 1 Cinnamon Hill Drive North, Walton-le-Dale, nr. Preston, Lancs.
22300 R. E. Chapman, 27 Mowbray Avenue, Byfleet, Surrey.
22301 F. Klein, 9 Westridge Road, Southampton.
22302 E. D. Fieldson, 6 Yeading Avenue, Harrow, Middx.
22303 E. J. Stephens, 4 Violet Road, Claughton, Birkenhead, Ches.
22304 G. A. Ashley, 120 Lower Oldfield Park, Bath, Som.
22305 C. P. Little, Ivy House, Wangford, Beccles, Suffolk.
22306 J. M. Esmarch, 12 Westfield Grove, Wakefield, Yorks.
22307 P. A. Seamer, 114 Engleheart Road, London, S.E.6.
22308 D. L. Paterson, c/o 31 Chesterfield Road, Leicester.
22309 F. W. Fairclough, 28 Rimmer Green, Carr Cross, Southport, Lancs.
22310 P. F. C. Bedingfeld, 3 Mitchell Road, Wharley End, Cranfield, Bletchley, Bucks.
22311 M. Hannah, 3 North Cresent, Bletchley, Bucks.
22312 H. Hogg, 35 Glen Avenue, Logan, Cumnock, Ayrshire, Scotland.
22313 W. T. Boucher, 40 Sandringham Road, London, N.W.2.
22314 J. W. Tomlinson, 14 Queensway, Winsford, Ches.
22315 J. H. Johnstone, 43 Grange Road, Ilford, Essex.
7238 †W. A. Whitehouse, 2 Church Crescent, St. Albans, Herts.
12810 †J. Sugarman, 23 Hall Road, Cottingham Road, Hull, East Yorks.
18300 †R. W. Jarman, Lord Mayor Treloar Orthopaedic Hospital, Robertson House, Alton, Hants.

* Denotes transfer to Corporate Grade.
† Denotes previously a Member.

Corporate Members, Overseas (British Empire Receiving Stations)

1012 23530384 Sig. G. W. Horrell, RM 107, Receiver Troop, 2 Squadron, 3rd G.H.Q., Signals Regiment, B.F.P.O.53.
1013 D. Allen, African Timber & Plywood (C) Ltd., P.O. Box 1, Samreboi, Ghana.
1014 E. Wadsworth, 81 North Town Line, Ingersoll, Ontario, Canada.
1015 E. Roberts, 17 Miriam Street, Masterton, New Zealand.

Corporate Member, Overseas (Foreign Receiving Station)

305 E. Soltysik, 15 Tower Road, Pye Green, Hednesford, Staffs.

Associates

1916 P. J. Smith, 8 Oakleigh Gardens, Whetstone, London, N.20.
1917 A. Thornton, 6 The Orchards, Sawbridgeworth, Herts.
1918 M. J. Lees, 14 Brandon Avenue, Eccles, Lancs.
1919 M. J. McKee, 146 Tredworth Road, Gloucester.
1920 D. Gough, 36 Holmes Hill Road, St. George, Bristol 5.
1921 C. Mungall, 10 Lothian Drive, Clarkston, Glasgow.
1922 K. P. R. Jones, 54 Springfield Drive, Ilford, Essex.
1923 R. T. Rothwell, 109 Central Street, London, E.C.1.
1924 M. A. R. Young, 51 Gaysham Hall, Longwood Gardens, Ilford, Essex.
1925 J. G. Summerhill, 36 Eldorado Road, Cheltenham, Glos.
1926 B. J. Piatkus, 26 Fernhall Drive, Ilford, Essex.
1927 G. A. Ashcroft, 86 Avondale Avenue, North Finchley, London, N.12.
1928 D. A. G. Williams, 2 Kelston View, Temple Street, Keynsham, Bristol.
1929 J. M. Brierley, 33 Moore Street, Frenchwood, Preston, Lancs.
1930 P. J. Reynolds, Laurel Cot, First Green, Thorpe-le-Soken, Essex.
1931 P. F. Bullivant, 17 Yateley Road, Edgbaston, Birmingham 15, Warwicks.
1932 M. F. Docker, 16 Yarningale Road, Kings Heath, Birmingham 14, Warwicks.
1933 R. J. McClements, Sandyknowe, Northton, S. Harris, Outer Hebrides, Scotland.
1934 P. J. Dell, Shirley, Woodcote Park Road, Epsom, Surrey.
1935 W. A. Denne, Restormel, West View Avenue, Bideford, N. Devon.
1936 R. J. Leman, 128 Felstead Road, Orpington, Kent.
1937 M. D. Leighton, 5 Moor Grange View, West Park, Leeds 16, Yorks.
1938 A. W. Ralls, 13 Rokeby Gardens, Woodford Green, Essex.
1939 R. T. Skene, Hillside, Drumadd, Armagh, N. Ireland.
1940 J. K. Lowndes, 75 Granville Road, North Finchley, London, N.12.

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MAY, 1959

Corporate Members, Home (Licensed)

G2FFO †R. Johnson, 1 Ormerod House, Higher Red Lees, Cliviger, Burnley, Lancs.
G2XY †H. T. Littlewood, 985 Scott Hall Road, Leeds 17, Yorks.
G3DG †H. E. Bettney, 5 Albert Avenue, Carlton Hill, Nottingham.
G3CIV †J. M. F. Sweet, 30 Preston Road, Lytham, Lancs.
G3GBI †A. C. Elliott, 142 Canberra Road, Charlton, London, S.E.7.
G3IZM J. S. Harper-Bill, 11 Longfield Road, St. Andrews, Bristol 7.
G3LAP A. J. E. Hill, 24 Fellowes Way, Stevenage, Herts.
G3LSW K. L. Willis, 60 Black Butts Lane, Barrow-in-Furness, Lancs.
G3MLY I. R. Dodd, 36 Blenheim Street, Princes Avenue, Hull, East Yorks.
G3MME P. A. Whitford, 26 Frederick Street, Accrington, Lancs.
G3MMI G. Cole, 6 Devonshire Gardens, Winchmore Hill, London, N.21.
G3MMT L. John, 17 Valetta Gardens, Stanton-St. Quintin, nr. Chippenham, Wilts.
G3MNL †G. W. Lamb, 110 Boundary Road, Carlisle, Cumberland.
G3MSB H. Holmes, 69 Crosby Avenue, Scunthorpe, Lincs.
G3MZD J. W. Harris, 170 The Downs, Harlow, Essex.
G3NAP †B. C. Sowter, 121 Hollyfast Road, Coundon, Coventry.
G3NCB H. A. A. Bourner, "Woodpeckers," Richborough Road, Sandwich, Kent.
G3NCL *R. Ray, 16 Holystone Avenue, Gosforth, Newcastle-on-Tyne 3.
G3NJL G. C. Clark, 15 Lambourne Gardens, Chingford, London, E.4.
G3NJU N. Harrison, 3 Rostherne Road, Wilmslow, Ches.
G3NKL R. M. Jones, 64 Lexton Drive, Southport, Lancs.
G3NKS *D. Thom, 12 Willow Road, Redhill, Surrey.
G3NKT F. D. Thom, 12 Willow Road, Redhill, Surrey.
G3NKW †H. White, 23 Edale Grove, Sale, Cheshire.
G3NKX C. Waterman, 46 Danbury Road, Loughton, Essex.
G5IZ †F. H. Humphries, 448 Warwick Road, Solihull, Warwicks.
G5HH †H. J. Hunt, 29 Newcastle Road, Reading, Berks.
GI3IEO W. B. Johnston, 17 Carleton Street, Portadown, Northern Ireland.
GM3KTZ †C. Lindsay, 17 Dukes Road, Cambuslang, nr. Glasgow, Scotland.
GM3NIF R. Craig, 272 Bellrock Street, Glasgow, Scotland.
GM3NJS C. B. Smith, Belford, Dunmuir Road, Castle Douglas, Kirkcudbrightshire, Scotland.
GM3NKY *J. T. Christie, 32 Thomson Street, Kilmarnock, Ayshire, Scotland.
GM3NLB *F. Inglis, 39 Melville Street, Kilmarnock, Ayrshire, Scotland.
GW3MTY J. R. Howe, 85 Cardiff Road, Abercynon, Mountain Ash, Glam., South Wales.

Corporate Members, Overseas (Licensed)

K4SXR Emmet O. Herman, Jr., P.O. Box 132, Newton, North Carolina, U.S.A.
K9EWL S. Soltes, 2014 Erie Street, Racine, Wisconsin, U.S.A.
SF9KJ Jerzy Szczesniak, Krakow, Sarego 24/5, Poland.
VE2WT Claude Dugre, 656 St Antoine Street, Joliette, Que., Canada.
VE6QZ E. J. King, 3823-11 Str. S.W., Calgary, Alberta, Canada.
VE6XJ K. D. Symington, 4711 Coronation Drive, Calgary, Alberta, Canada.
VK3AWF W. J. Falconer, 21 Irilbarra Road, Canterbury E.17 Victoria, Australia.
VK5QR R. V. Galle, 5 Turnbull Road, Enfield, South Australia.
VP8EP D. Savins, c/o Lynwood, Everton Road, Hordle, Lymington, Hants.
W1HDW/5 R. E. Spidell, 819th Operations Squadron (SAC) Dyess A.F.B., Texas, U.S.A.
W3BLC H. O. Lorenzen, 3713 Bangor St. S.E., Washington 20, D.C., U.S.A.
W3LUA Sam J. Maiolo, 520 W. 3rd Street, Williamsport, Penn., U.S.A.
W5LAN Marland M. Old, 4739 Sandra Lynn Drive, Mesquite, Texas, U.S.A.
W5UKK Glen J. Radcliffe, 10805 Willowisp Drive, Houston 35, Texas, U.S.A.
W8IYZ R. B. Ingraham, P.O. Box 150, Midland, Mich., U.S.A.
ZD1FG A. W. Torrie, U.N.E.S.C.O. T.A. Mission, Njala, Sierra Leona.
ZS6FE W. L. Browne, Private Bag 74, Pretoria, South Africa.
9M2CN †L. N. Narayana, c/o 84 Mountview Road, Stroud Green, London, N.4.

Corporate Members, Home (British Receiving Stations)

3655 †S. C. Fryer, 26 Hazel Drive, Derby Road, Wingerworth, Chesterfield, Derbys.
10544 †L. G. Wight, 11 Lichfield Road, Linthorpe, Middlesbrough, Yorks.
21216 †R. J. W. Guttridge, Pinetrees, Broad Oak Heathfield, Sussex.
22316 W. T. Bird, 47 Borkwood Way, Orpington, Kent.
22317 R. A. Pyatt, 23 Arundel Drive, Orpington, Kent.
22318 M. F. Wild, 186 Warley Hill, Brentwood, Essex.
22319 C. W. Lingwood, 132 St. Georges Park Avenue, Westcliff-on-Sea, Essex.
22320 H. Sollitt, 24 Stanwood Road, Sheffield 6, Yorks.
22321 B. C. Warr, 13 Kensington Drive, Knock, Belfast.
22322 E. J. Boys, 17 Heathfield Court, Heathfield Road, London, S.W.18.
22323 A. V. Bryant, Oakfield, Horsham Road, Peas Pottage, Crawley, Sussex.
22324 W. J. Bowerman, 13 Greenhill Rise, Corby, Northants.
22325 G. Lansuell, Little Spinney, Lanham Lane, Winchester, Hants.
22326 P. S. Short, 26 Cunard Avenue, Shirley, Southampton, Hants.
22327 J. F. E. Grogan, 12 Downs View, Isleworth, Middx.
22328 G. A. Seward, 15 Dorlcote Road, Wandsworth Common, London, S.W.18.
22329 G. Nutt, 7 Kirkbride Crescent, Crosshill, Ayshire.
22330 C. E. Anderson, 131 Nottingham Road, Derby.
22331 D. H. Moss, 31 Fairfield Avenue, Edgware, Middx.
22332 B. K. Middleton, 11 Pope Road, Bromley, Kent.
22333 B. J. H. Matson, 90 Lonsdale Road, Thurmaston, Leicester.
22334 C. E. Mawer, 44 Gilders Road, Chessington, Surrey.
22335 F. P. Healy, 179 Abbey Road, Barrow-in-Furness, Lancs.
22336 L. W. Brock, 33 Cazenove Road, London, E.17.
22337 A. J. Thomson, Sunnyholme, Fairview Road, Basildon, Essex.
22338 G. W. C. McClellan, 18 Dickens Drive, Laindon, Essex.
22339 K. J. Morton, 58 Burns Road, Coventry, Warwicks.
22340 A. R. Nutton, Flat 240, Foxley Estate, Mansel Lacy, Hereford.
22341 A. E. Howard, 48 Hazledene Road, Chiswick, London, W.4.
22342 W. D. Colgate, 12 Leeds Road, Slough, Bucks.

Corporate Members, Overseas (British Empire Receiving Stations)

1016 Peter Cheung, M.B.E., Post Office Box 917, Hong Kong.
1017 23440289 Sig. G. C. Hill, A Troop, 2 Squadron, Cyprus Signal Regt., Kykko Camp West, Cyprus, B.F.P.O. 53.
1018 A. T. Addo, Ghana Signal Squadron, Giffard Camp, Accra, Ghana.

Corporate Members, Overseas (Foreign Receiving Station)

306 A. R. Houssein, 71 Gloucester Road, Tottenham, London, N.17.
307 T. W. Kupicha, "Red Gables," Gt. Mongeham, nr. Deal, Kent.

Associates

1941 C. Sawtell, 28 Howard Walk, London, N.2.
1942 A. J. Fishkin, 8 Bemersyde Drive, Newcastle-on-Tyne 2, Northumberland.
1943 J. G. Barber, Army House, Bradfield College, nr. Reading, Berks.
1944 M. G. Shaw, 108 Elms Road, Harrow Weald, Middx.
1945 R. L. Jack, Huntington Court, Kington, Herefordshire.

1946 M. G. Smith, The Norchards, Knightwick, Worcs.
1947 R. D. Hackworth, 16 Rocklands Drive, Stanmore, Middx.
1948 H. E. J. Bloomfield, 7 Cartlodge Avenue, Highcliffe Estate, Wickford, Essex.
1949 J. A. Clarke, 40 Morland Avenue, Dartford, Kent.
1950 C. A. Atkins, Garden Cottage, Hazelgrove, Sparkford, nr. Yeovil, Som.
1951 M. G. Henstock, 58 Cassiobury Drive, Watford, Herts.
1952 J. J. Lockyer, 153 Ivor Road, Sparkhill, Birmingham 11.
1953 K. C. Plows, 48 Peterhead House, Usk Road, London, S.W.11.
1954 M. G. Wallace, 44 Shuttle Close, Sidcup, Kent.
1955 D. Guyett, "The Stores," 6 Poyser Lane, Kirk Langley, Derbys.
1956 R. W. Hilsley, 122 Barley Lane, Goodmayes, Ilford, Essex.
1957 B. Chambers, 30 Catharine Street, Cambridge.
1958 M. C. R. Coombes, 21 Montague Road, Bishopstoke, Hants.
1959 J. Whiting, 27 Ferndale Road, Hereford.
1960 R. H. Crowley, 31 Woolston Road, Butlocks Heath, Netley Abbey, Hants.
1961 A. G. Thompson, 39 Devonshire Avenue, Darrford, Kent.
1962 R. J. G. Jones, Morden Park Sound Studios, London Road, Morden, Surrey.
1963 J. S. Guest, 29 Waterfall Lane, Old Hill, Staffs.
1964 J. N. Morgan, 19 Brenley Close, Mitcham, Surrey.
1965 J. H. C. Farrar, Delamar, St. Hilary, Goldsithney, Penzance, Cornwall.
1966 D. N. L. Levy, 3 The Croft, Barnet, Herts.
1967 R. J. Baron, 1 Gillwell Close, London, E.4.
1968 D. H. M. Reekie, 29 Spath Road, Didsbury, Manchester 20.
1969 A. J. Black, 7 Highburgh Drive, Burnside, Rutherglen, Glasgow, Scotland.
1970 T. C. Mackereth, 27 Burns Street, Mansfield, Notts.
1971 R. P. Bown, 217 Eton Road, Ilford, Essex.
1972 D. J. Daniells, 4 Muswell Road, London, N.10.
1973 I. M. Hull, 74 Southfield Avenue, Kingswood, Bristol.
1974 A. L. Gray, 13 Balmoral Avenue, Whitefield, nr. Manchester.
1975 D. H. Fitchett, 13 Carson Road, Gainsborough, Lincs.
1976 H. R. Perrin, 30 Franchise Street, Kidderminster, Worcs.
1977 R. J. Godbolt, Wingfield, Ralliwood Road, Ashtead, Surrey.

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JUNE, 1959

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G3FIK K. W. Perfect, 94 Twycross Grove, Castle Bromwich, Birmingham 34.
G3FNQ D. T. Bagshaw, 14 Carr Lane, Southport Lancs
G3HOR J. Turnbull, 9 Claremont Place, Newcastle-on-Tyne 2.
G3HRU †G. T. Senior, 59 Buckstone Grove, Alwoodley, Leeds 17.
G3IAV †R. Bayfield, 9 Godwin Road, Hove 4, Sussex.
G3IHP R. L. Skelton, 87 Riddons Road, Grove Park, London S.E.12.
G3JZL W. K. Montford, 15 Grosvenor Road, Market Drayton, Shropshire.
G3KAE J. A. Rowley, 634 Chester Road, Bacons End, Coleshill, nr. Birmingham.
G3KRW †K. R. Whelan, 94 Manchuria Road, London, S.W.11.
G3LXJ F. J. Fisher, 52 Hall Road, Aveley, nr. Purfleet, Essex.
G3MRJ †A. Dean, 62 Long Grove, Baughurst, nr. Basingstoke, Hants.
G3MVD A. Redfern, 26 Lancaster Street, Dalton-in-Furness, Lancs.
G3MYK P. Allison, 140 Pentland Avenue, Billingham, Co. Durham.
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G3NJQ J. D. Simpson, 50 Vicarage Road, Norwich, Norfolk.
G3NHX G. L. Quarterman, 16 Wellow Walk, Wrythe Lane, Carshalton, Surrey.
G3NLD E. A. E. Burrell, 11 Milton Road, West Green, Tottenham, London, N.15.
G8UA †H. Tee, 406 Higher Brunshaw, Burnley, Lancs.
GI3MMF B. W. McAleer, 42 Woodvale Avenue, Belfast.
GI3NFM K. McElhatton, 21 Keeragh, Pomeroy, Dungannon, Co. Tyrone, Northern Ireland.
GM3DUS †W. B. Storry, Tigh-na-Chladaich, Muasdale, by Tarbert, Argyll, Scotland.
GW3KUY C. T. Edwards, 15 Heol-y-Wern, Caewern, Neath, Glam.
GW3NLC F. C. Davies, The Bungalow, Twyncynghordy, Brynmawr, Breconshire.
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Corporate Members, Overseas (Licensed)

DL4XK H. M. Flora, Technical Supervisor, H.Q.S. American Forces Network, France, A.P.O. 58, New York, N.Y.
JA3JM A. Shimizu, 397, Oka, Fujiidera, Minami-Kawachi, Osaka, Japan.
K2GHP E. S. Marsh, 611 Green Grove Road, Neptune, N.J.
K2DHA A. C. Peed, 34 Ashley Drive, Rochester 20, New York.
K2GVQ J. F. Olsson, 1230th AACSROW, R.A.F. Station Croughton, nr. Brackley, Northants.
K2HWX Mrs. D. M. Olsson, 1230th AACSROW, R.A.F. Station Croughton, nr. Brackley, Northants.
K2RDA C. M. Steinberg, P.O. Box 38, East Setauket, New York.
K4OJE J. R. L. Fitzgerald, 5800, Bloomingdale Avenue, Richmond 28, Virginia.
K4TAF P. M. LoCicero, 173 Grove Land Street, Jesup, Georgia, U.S.A.
K5HMB W. D. Morgan, 3316 Jack Island Road, Orange, Texas, U.S.A.
K5KBH K. D. Grimm, Route 1, Meridian, Texas, U.S.A.
K8KPW J. E. Decker, 1694 Manz Street, Muskegon, Michigan, U.S.A.
VE3CJ/VP5BP N. B. Eaton, R.R.3, Burlington, Ontario, Canada.
VE3DCI W. T. Mahoney, Landslide Road, R.R.H.2, Sault Ste. Marie, Ontario, Canada.
VE8PZ R. F. D. Prince, Box 70, Yellowknife, N.W.T., Canada.
VK5EU †H. S. Young, 77 Fairfield Road, Elizabeth Grove, South Australia.
VQ2CH C. B. Hickey, P.O. Box 1235, Lusaka, Northern Rhodesia.
W2HDH J. W. Jameson, 19 North Court, Hillsdale, New Jersey, U.S.A.
W3AYD †M. Solomon, P.O. Box 731, Rockville, Maryland, U.S.A.
WA6CSI J. A. Ramsay, 3279 Washington Street, Alameda, California, U.S.A.
ZC4PC/G3LSJ C. S. Gerrard, Daywatch, R.A.F. Pergamos, Cyprus, B.F.P.O. 53.
ZE7JA P. V. Dunn, P.O. Box 8093, Belmont, Bulawayo, Southern Rhodesia.
9G1CU C. B. Fianu, Post & Telecommunications Dept., Radio Division, Accra, Ghana.
9K2AD D. F. McManus, Box 402, Kuwait, Arabia.

Corporate Members, Home (British Receiving Stations)

22343 E. F. Walsh, 6 Hogarth Hill, London, N.W.11
22344 E. G. Harrison, 228a Derby Road, Sandiacre, Nottingham.
22345 E. N. A. Case, 24 Randals Hill, Half Hyde, Stevenage, Herts.
22346 C. P. Reeve, 23 Norval Road, North Wembley, Middx.
22347 S. Bradley, 214 St. Anne's Road, Blackpool, Lancs.
22348 F. W. Bailey, 25 Shepley Close, Carshalton, Surrey.
22349 V. A. Davies, 16 New Road, Llandovery, Carms., Wales.
22350 R. H. Mills, 129 Amity Road, Reading, Berks.
22351 H. T. Bentham, 7a Shaftoe Leazes, Hexham, Northumberland.
22352 W. A. McManus, 71 Upton Road, Upton, Torquay, South Devon.
22353 S. D. C. Sedgebeer, 18 Ton Teg, Pencoed, Glam., South Wales.
22354 J. N. Webb, 196 Birchfield Road, Redditch, Worcs.
22355 P. A. Lincoln, *Boat Bison*, Benbow Bridge Moorings, Cowley, Uxbridge, Middx.
22356 †G. W. Howes, 36 Lamerton Street, Deptford, London, S.E.8.
22357 G. E. Ritchie, 125 Main Street, Callander, Perthshire, Scotland.
22358 S. J. Coleman, 41 Broadmead, Penllwyn, Pontllanfraith, Mon.
22359 L. L. Lumsden, 33 Hillview Drive, Edinburgh 12, Scotland.
22360 J. R. Tilsley, 76 Ashlawn Road, Rugby, Warwicks.
22361 W. M. Roberts, 13 Blacket Place, Edinburgh 9, Scotland.
22362 J. Semple, 1 Shandon Park, Ballymoney, Co. Antrim, N. Ireland
22363 G. F. Brown, Lyss-na-Cree, Lochwinnoch, Renfrewshire, Scotland.
22364 R. C. Barrett, 26 Rockliffe Road, Leighton Buzzard, Beds.
22365 J. Topham, 12 Borrowdale Close, Huncoat, Nr. Accrington, Lancs.
22366 G. H. Baldwin, 43 Claremont Road, Bishopston, Bristol.
22367 J. Shorthouse, 41 Hillside Road, Moor Top, Ackworth, nr. Pontefract, Yorks.
22368 †B. A. Matthews, 14 Emmanuel Road, Sutton Coldfield, Warwicks.
22369 *B. C. Smith, 9 St. Margarets Road, Westgate on Sea, Kent.
22370 *L. B. Povoas, 56 Hilders Road, Leicester.
6170 †R. A. Bastow, 31 Canterbury Road East, Ramsgate, Kent.

Corporate Members, Overseas (British Empire Receiving Stations)

1019 N. J. H. Grassby, Thames House, Rinella Street, Kalkara, Malta, G.C.
1020 V. Francel, 44 Gerard Road, Rotherham, Yorks.

Associates

1978 A. Colley, 71 Hilton Road, Parkfield, Wolverhampton, Staffs.
1979 N. A. Farrell, Robin Hill, Mawnan Smith, Falmouth, Cornwall.
1980 A. L. S. Harris, Leadysmead, Derby Road, Freshfield, Formby, Lancs.
1981 M. Hearsey, Oakfield, Reading Road, Blackwater, Camberley, Surrey.
1982 S. G. Roberts, 19 Coppice Road, Solihull, Warwickshire.
1983 B. A. Sims, 3 Chapel Green Lane, Redland, Bristol, 6.
1984 D. J. Hemingway, 26 Stiups Lane, Rochdale, Lancs.
1985 P. G. Haverson, 9 Clifton Road, Sidcup, Kent.
1986 D. G. Milsom, 18 Millham Road, Bishops Cleeve, Cheltenham, Glos.
1987 J. W. Armes, 7 Westfield Road, Henlow, Bedfordshire.
1988 K. Z. Reeves, 11 Greswold Road, Solihull, Warwickshire.
1989 D. J. Lee, 33 Fullbrooks Avenue, Worcester Park, Surrey.
1990 R. K Davies, 43 Gelli Road, Pentre, Rhondda, Glam.
1991 M. G. Godfrey, 4D Bedminster Parade, Bristol, 3.
1992 A. G. R Tester, Annesley, 192 Benfleet Road, Hadleigh, Essex.
1993 G. C. Fehler, 11 Ivy Road, Gt. Tarbots, South Benfleet, Essex.
1994 D. J. King, 36 Gallows Hill Lane, Abbots Langley, Herts.
1995 A. L. Snell, 7 Eaton Park Road, Palmers Green, N.13.
1996 C. D. A. Lovell, 214 Church Road, St. George, Bristol, 5.
1997 A. D. Bailey, 157 Browning Road, Manor Park, London, E.12

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JULY, 1959

Corporate Members, Home (Licensed)

G2WK †W. A. Hayes. 44 Beechwood Avenue, Earlsdon, Coventry.

G3BAY †G. H. Addison, 4 Hilders Road, Leicester.
G3KXA †R. A. Swain, 145 Mill Lane, Bentley Heath, Solihull, Warwicks.
G3LQW *K. Wallace, 88 Oxendon Street, Highfields, Leicester.
G3MFQ S. A. Kerrison, 30 Belvoir Street, Norwich.
G3MTP P. G. Gadsden, 135 Sutton Court Road, Hillingdon, Middx.
G3NIX R. C. Hewitt, 120 Chatham Avenue, Hayes, Bromley, Kent.
G3NMF E. Frank, 47 Garden Road, Walton-on-Thames, Surrey.
G3NLH J. Dockerty, 26 Swarcliffe Road, Harrogate, Yorks.
GM3BCD †T. Simpson, 118 Braid Road, Edinburgh 10.
GM3IWX †W. J. Ritchie, 16 Ritchie Place, Grangemouth.
GM3NLO R. C. Harvie, 14 Manse Road, Motherwell, Lanarks.
GM3NMA W. T. Mains, 28 Dumgoyne Avenue, Milngavie, nr. Glasgow.
GW3JI †R. Jones, " Beirut," off Albert Drive, Deganwy, Caerns., North Wales.

Corporate Members, Overseas (Licensed)

DL4WH Brig.-Gen. Wm. D. Hamlin, Signal Div., H.Q. U.S.A.R.E.U.R., A.P.O. 403, U.S. Forces.
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K1JFR W. B. Packard, Jr., 56 Euston Avenue, Cranston 10, Rhode Island, U.S.A.
K2ZSQ R. M. Brown, 67 Russell Avenue, Rahway, New Jersey, U.S.A.
K2ZCF Donald A. Bozanic, Worcester, New York, U.S.A.
K4DLX Edwin R. Johnson, 65 Greenbriar Avenue, Hampton, Virginia, U.S.A.
OH2IK Seppo M. Palosaari, 3-E-46, Kontiontie, Tapiola, Finland.
MP4QAO Bryan A. Bisley, c/o Aviation Dept., Q.P.C., Umm-Said, Qatar, Arabian Gulf.
VE3DTG W. F. Connell, 17 Meadowlands Drive, Ohawa 5, Ontario, Canada.
VK5NO (ex-G3JUJ) L. H. Vale, c/o Mrs. V. Day, Stage 3, De Havilland Propellors Ltd., Argyle Way, Stevenage, Herts.
W1RCQ Wm. G. Baird, Jr., 6 Indian Hill Road, Winchester, Mass., U.S.A.
W2QCI Robert L. Rooney, 251 Price Street, Lockport, New York, U.S.A.
W6CZP David R. Webster, 850 Groff Street, Pomona, Calif., U.S.A.
W6USP Frank L. Swain, 1441 Brainard Road, Cleveland 24, Ohio, U.S.A.
ZC4GB G. D. Blunt, Civilian Wing, 2 Wireless Regiment, Royal Signals, B.F.P.O. 53.
ZS1LC T. S. Barclay, Wyckham Cottage, Lothian Road, Rondesbosch, C.P., South Africa.
ZD2VPF E. V. Forbes, c/o W.A.A.C. Operations, Ikeja Airport, Lagos, Nigeria.

Corporate Members, Home (British Receiving Stations)

4064 †F. Sutcliffe, 69 Cleckheaton Road, Osdal, Bradford, Yorks.
19520 †B. A. Barker, 28 Grasmere Road, Worksop, Notts.
22371 *J. P. Davey, Peterhouse, Cambridge.
22372 H. Leavesley, 19 Grays Corner, Eastern Avenue, Ilford, Essex.
22373 J. C. Ramsay, Cornton Cottage, Argaty Doune, Perthshire.
22374 I. B. Bullock, Officers' Mess, R.A.F. Wyton, Huntingdon.
22375 Miss Katharine Bell, 8 Scaur Bank Road, St. Ann's Hill, Carlisle, Cumberland.
22376 E. W. Badger, c/o 62 John Street, Worksop, Notts.
22377 G. F. Jackson, 95 Pretoria Road, Mawnays, Romford, Essex.
22378 E. W Pilgrim, 18 Park Lane, Thorpe Bay, Essex.
22379 J. C. Hockridge, 10 Barrington Drive, Chosen Way, Hucclecote, Glos.
22380 J. E. Hutchinson, 19 Glenmore Avenue, South Pelaw, Chester-le-Street, Co. Durham.
22381 R. E. Hill, 28 Fayrhurst Road, Saffron Lane, Leicester.
22382 W. A. Clapham, 239 Cambridge Road, Ellesmere Port, Cheshire.
22383 J. Martin, 53 Pembridge Villas, Notting Hill Gate, London, W.11.
22384 P. C. Dick, Drumore, The Chase, Kingswood, Tadworth, Surrey.
22385 R. H. T. Shaw-Batchford, Lyndors, Ross-on-Wye, Herefordshire.
22386 J. Thorn, 4 Highlands Close, Hounslow, Middx.
22387 J. C. Denman, 11 Glenfield Crescent, Ruislip, Middx.
22388 J. Atkinson, 6 Rochford Avenue, Loughton, Essex.
22389 E. H. Winstanley, Bryn Awel, Waun Fawr, Aberystwyth, Cards.
22390 R. D. Wilson, 38 McBeth Road, Stewarton, Ayrshire.
22391 G. J. Gillett, 41 Priestley Close, Ravensdale Road, London, N.16.
22392 G. L. Cooke, 6 Oaker Avenue, West Didsbury, Manchester 20.
22393 J. S. White, Loxford Secondary Modern Boys' School, Eton Road, Ilford, Essex.
22394 R. Cornell, 101 Oadby Road, Wigston Magna, Leics.
22395 D. J. Millington, 6 Costock Road, East Leake, Nr. Loughborough, Leics.
22396 W. Phipps, 49 St. Andrews Road, Bridport, Dorset.

Corporate Members, Overseas (British Empire Receiving Stations)

1021 A. A. Khan, Mohala Moqarab Khan, Yaka Tut, Peshawar, City, West Pakistan.
1022 Harry B. Ryan, Box 67, Netherhill, Saskatchewan, Canada.

Associates

1998 R. R. Lann, 3 Bath Street, Nairn, Scotland.
1999 G. H. Emerson, 42 Woodhouse Street, Portadown, Northern Ireland.
2000 M. M. Pritchett, Island House, Wych Hill Lane, Woking, Surrey.
2001 G. S. Hanson, 164 Redcliffe Street, Highfield, Keighley, Yorks.
2002 W. N. Clark, 5 Cameron Drive, Bearsden, nr. Glasgow.
2003 J. Howie, 11 Chapelton Avenue, Bearsden, nr. Glasgow.
2004 J. L. Schuler, 18 Chaucer Road, Wanstead, London, S.E.11
2005 J. R. Brint, 2 Wilberforce Terrace, Providence Row, Beverley Road, Hull, East Yorks.
2006 R. M. Taylor, 65 Longcroft Crescent, Hawick, Roxburghshire, Scotland.
2007 C. R. Hall, 61 Cheviot Road, Hawick, Roxburghshire.
2008 C. J. Eyles, 118 Sunny Gardens Road, London, N.W.4.
2009 M. C. Watts, 77 Halton Road, Spilsby, Lincs.
2010 R. A. Brown, 30 Kingsburgh Road, Edinburgh 12.
2011 A. J. McHutchison, Schoolhouse, Kinnell, by Arbroath, Angus, Scotland.
2012 K. F. Davies, 38 Gatley Road, Cheadle, Cheshire.

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AUGUST, 1959

Corporate Members, Home (Licensed)

G3BIK †E. Chicken, 52 Marlborough Avenue, Grange Park, Gosforth, Newcastle on Tyne 3, Northumberland.
G3EMO †H. Ward, 24 Manor Way, Woolton, Liverpool, Lancs.
G3MLE B. R. Timms, 7 Nottingham Street, London, W.1.
G3NDO P. Sorab, 60 Queen Street, Sutton Coldfield, Warwicks.
G3NLN R. E. Andrews, 84 Mayflower Road, Droitwich, Worcs.
G3NNI B. V. Chambers, 46 Ware Road, Hoddesdon, Herts.
G3NNO M. T. George-Powell, 28 Gledhow Avenue, Roundhay, Leeds 8, Yorks.
GI3MDQ G. A. H. Heaney, 182 Kings Road, Knock, Belfast, Northern Ireland.
GW3LJP W. A. Mills, 14 Tan-y-Fron, Cross Gates, Nr. Llandrindod Wells, Rads., North Wales.
GW3NKW *C. Whelan, 14 Llandinam Crescent, Gabalfa, Cardiff, Glam., South Wales.

Corporate Members, Overseas (Licensed)

K2PLD R. B. Hupper, 47 Willits Road, Glen Cove, New York, U.S.A.
K0MOA E. W. Freeman, Box 57, Yankton, South Dakota, U.S.A.
OD5CL J. L Koenreich, c/o P.O. Box 1348, Beirut, Lebanon.
UO5AA V. P. Glushkov, P.O. Box 1, Kagul, Moldavia S.S.R., U.S.S.R.
VE2ATB J. G. Boucher, 3991 St. Hubert, Montreal, Quebec, Canada.
W1GDC/K1GYB E. F. Dolloff, 179 Main Street, Derby, Conn., U.S.A.
W2UQZ Wm. Metcalf, P.O. Box 98, Sound Beach, N.Y., U.S.A.
W8DVY E. Gleason, 3971 Drew Avenue, Cincinnatti, 11, Ohio, U.S.A.
W9ZTD L. A. Bannon, RR No. 1, Box 148, New Augusta, Indiana, U.S.A.
YV5AGA Dr. Enrique J. Berrizbeitia, c/o Radio Club Venezolano, P.O. Box 2285, Caracas, Venezuela.

Corporate Members, Home (British Receiving Stations)

22397 H. L. Braham, 25 Chiltern Road, Newbury Park, Ilford, Essex.
22398 H. A. C. Sibley, 6 Winstone Avenue, Coombe Gardens, Torquay.
22399 D. M. Raistrick, 459 Idle Road, Bradford 2.
22400 A. W. Tomalin, 6 Winders Lane, Histon, Cambs.
22401 J. A. R. Sillars, 48 Tryst Road, Stenhousemuir, Larbert, Stirlingshire.
22402 E. M. Large, School House, Frant Road, Hove 4.
22403 B. H. Brown, 164 St. Albans Avenue, Bedford Park, London, W.4.
22404 P. F. Gale, 24 Old Garden Drive, Rotherham, Yorks.
22405 B. R. Wood, 5 St. Michaels Terrace, Wood Green, London, N.22.
22406 H. Eggleston, 15 Arundel Road, Sunderland, Co. Durham.
22407 J. E. Boylett, 22 The Crescent, Letchworth, Herts.
22408 B. E. Horner, Church House, Church Square, Leighton Buzzard, Beds.
22409 Z. L. Williams, 30 Brooklands Avenue, Sidcup, Kent.
22410 C. C. Nielsen, 99 Whitebeam Avenue, Bromley, Kent.
22411 A. K. Davies, 82 Woodlands Road, Ansdell, Lytham St. Annes, Lancs.
22412 *D. W. Stevens, 1 Groton Road, Earlsfield, London, S.W.18.
22413 *C. J. Clayton, 53 Hazel Oak Road, Shirley, Solihull, Warwicks.
22414 *C. R. Keeble, Wigwam, Kirby Road, Walton-on-Naze, Essex.
22415 *A M. Cameron, 6 Cluny Avenue, Bearsden, Nr. Glasgow.
22416 *J. C. Alford, 4 Edward House, Newburn Street, London, S.E.11.

Corporate Members, Overseas (British Empire Receiving Stations)

1023 †Dr. Eric Pawson, c/o Makerere College, P.O. Box 262, Kampala, Uganda.
1024 H. F. Davis, 92 Braeside Road, Toronto 12, Ontario, Canada.

Associates

2013 H. J. Randall, 10 Anston Road, Alrewas, Burton on Trent, Staffs.
2014 J. A. Hickin, 354 Hollinsend Road, Gleadless, Sheffield 12, Yorks.
2015 R. S. Offord, 51 Park Lane East, Reigate, Surrey.
2016 P. D. W. Murrell, 243 Princess Road, Moss Side, Manchester 14, Lancs.
2017 P. J. Hayler, Peterville, Etchingham, Sussex.
2018 J. R. Seaman, 67 Beatyville Gardens, Ilford, Essex.
2019 J. F. Gentry, Dunston Hall, Dunston, Nr. Stafford.

* Denotes transfer to Corporate Grade.
† Denotes previously a Member.

Radio Society of Great Britain

(INCORPORATED 1926)

Patron: H.R.H. THE PRINCE PHILIP, DUKE OF EDINBURGH, K.G.

Application for Corporate Membership

To the Secretary,
Radio Society of Great Britain,
New Ruskin House, Little Russell Street,
London, W.C.1.

I hereby apply for election as a Corporate Member of the Society and enclose herewith a remittance for the appropriate amount of my first annual subscription.

I agree that in the event of my election I will abide by and observe the Rules, Regulations and Articles of Association of the Society and that in the event of my resignation from the Society given under my hand in writing, I shall after payment of all arrears which may be due by me at that period, be free from this obligation. I further agree to observe strictly the terms of any licence issued to me by the responsible authorities to operate transmitting or receiving apparatus.

Signed.....

PERSONAL DETAILS TO BE COMPLETED BY THE APPLICANT

Surname (BLOCK LETTERS) .....

Christian Names in full (BLOCK LETTERS).....

Address for all correspondence (BLOCK LETTERS) .....

.....

Nationality..... Age (if under 21).....

Current Call-sign (if any).....

Details of previous membership (if any).....

DETAILS TO BE COMPLETED BY THE TWO PROPOSERS

I wish to propose.....for Corporate Membership.

Proposer's Name (BLOCK LETTERS).....

Address (BLOCK LETTERS) .....

Call-sign (or B.R.S. No.).....

Signed.....

I wish to propose.....for Corporate Membership.

Proposer's Name (BLOCK LETTERS).....

Address (BLOCK LETTERS) .....

Call-sign (or B.R.S. No.).....

Signed.....

FOR OFFICE USE ONLY

Approved by Council .....

B.R.S. Number Issued..... First Subscription paid.....

If the applicant is not acquainted with two Corporate Members willing to propose him for election he may submit two suitable references in writing from persons of standing.

THE APPROPRIATE SUBSCRIPTION SHOULD BE REMITTED WITH THE APPLICATION FORM—see cover ii.

Printed in Great Britain for the RADIO SOCIETY OF GREAT BRITAIN, New Ruskin House, Little Russell Street, London, W.C.1 by Loxley Brothers Limited, Letchworth, Hertfordshire

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