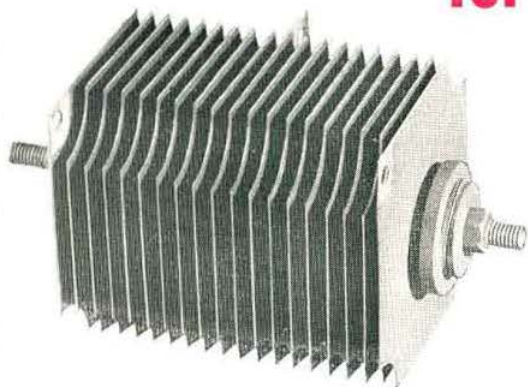


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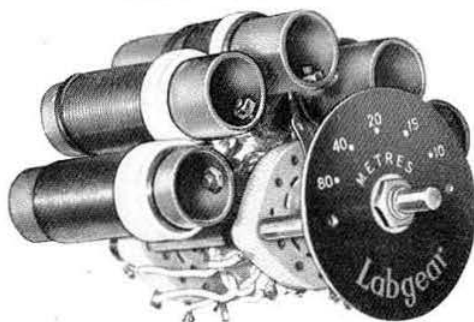
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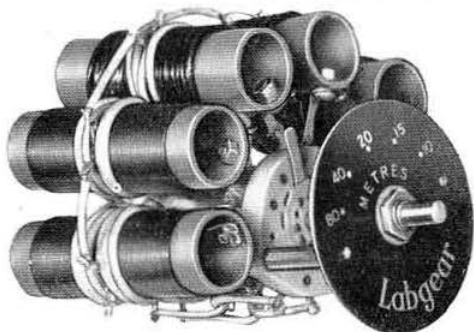
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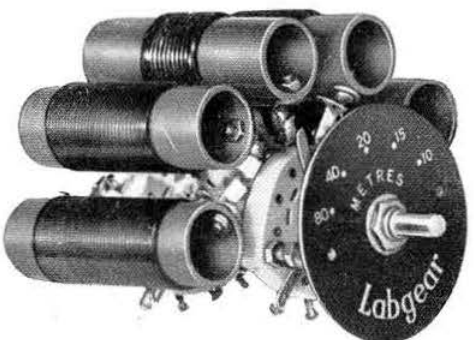
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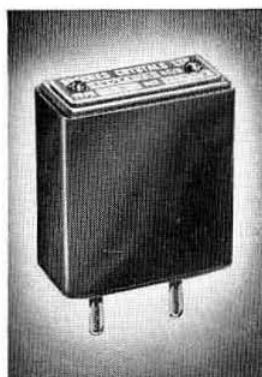
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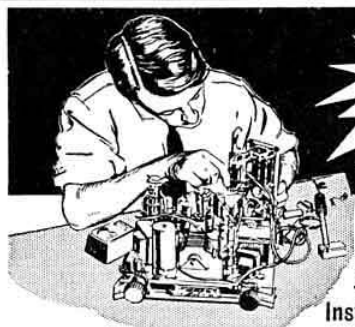
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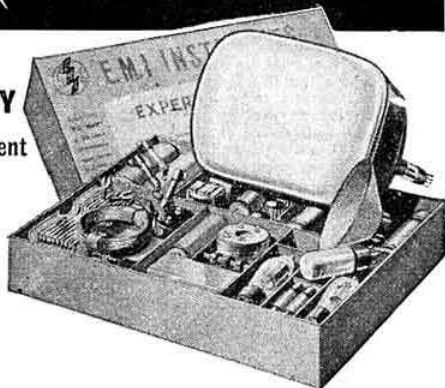
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R.S.G.B. BULLETIN, November, 1953.

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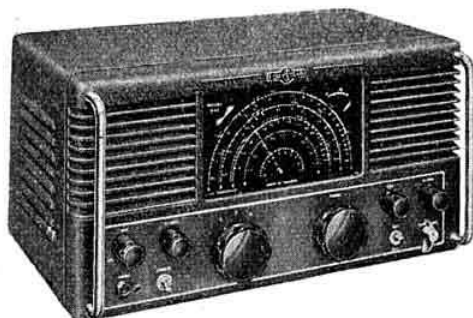
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A Big Step Forward

ELSEWHERE in the present issue appears a statement on that topic of all topics—probably the most urgent that confronts Amateur Radio in these post-war years—that of interference to television reception by amateur emissions.

The statement, tracing the history of recent negotiations between the Society and the G.P.O., goes on to disclose that the Post Office has now reviewed its policy in respect of interference by amateurs with sound and television reception.

This is a decision which will give a lift of the heart to British Amateur Radio at large, coming as it does after the period when it seemed that the transmitting amateur was holding "the sticky end" of the TVI problem.

The first thing that needs to be said of this development is that this is no concession wrung from a reluctant Post Office. The negotiations between the Society and the Licensing Authority do not operate that way. Rather, close and cordial relations exist between the two bodies that allow each to see the other's point of view. Readers may in fact recall the remark made here a couple of months ago, that the G.P.O. have the thankless task of "keeping everybody happy" by placating viewers where needed, yet at the same time not batten down too hard upon amateur transmitters. Nevertheless, it may be confidently stated that this latest development would not have come to pass without constant and persistent enquiry by the Society of the G.P.O. on this vital TVI question.

Now for a word of warning: none of us, cock-a-hoop, should throw his hat in the air and cheer too soon. The easing in part from the amateur's shoulders of the onus of TVI doesn't mean that we can all go back to harmonic-radiating breadboard transmitters—or fail to screen any such transmitters where they still exist! The transmitting amateur has rights certainly. Equally certainly he has responsibilities, and the first of these is to make absolutely sure that his own house is in order. On TVI he has had advice aplenty in this magazine in the last several years and if, by failing to heed it, he causes trouble to viewers, then he alone is responsible. Remember though, that in this latest development, the radio industry is being given roughly ten more months in which to deal with the not inconsiderable technical problem of intermediate frequencies that clash with amateur frequencies.

Proxies Again!

HARD upon the Extraordinary General Meeting last month—the satisfactory conclusion of which will assuredly give pleasure all round—comes in the present issue of the BULLETIN the notice convening another meeting at the I.E.E. next month—two further meetings in fact, another "extraordinary" to follow the customary "annual general."

The purpose of the Extraordinary General Meeting on December 18 will be to consider the adoption of the revised Articles of Association.

Included with this issue of the BULLETIN is a fresh printing of the Articles, which are now brought up-to-date to embody all the amendments suggested by the Board of Trade and the Society's legal advisers. Confronted with this massive document the average member could be excused if he said he would "read it another time"—for legal documents such as this do indeed tend to look rather forbidding. But it must be asserted that if all members could be persuaded to study the Articles, not "another time" but *now*, they would have a better idea of the subject on which they will be asked to vote on December 18; what is more, they would have a better idea of how it is proposed this Society shall operate in the years ahead.

Truly, these Articles are of the greatest importance. If adopted they will supplant those earlier Articles which have stood the test of time so well. Which is the best of reasons why they should be good Articles, that will stand an equal test of time in the future.

Getting the Articles to their present—and it is hoped, final—stage has been one of the most arduous tasks to face the Councils of the last few years. Behind their framing was the consciousness that only one thing matters, and that is that they should be of the greatest possible benefit to the membership.

The membership now is asked to approve them. Those who cannot come to the meeting on December 18 should—once again—use that Proxy Form (a copy will be found with the Articles of Association in this issue). Cut it out, fill it in, and send it off to arrive at the latest 48 hours before the meeting takes place. And if every member can see his way to giving an "Aye" vote, then the job will have been well and truly done.

VHF Band Planning

IT is just four months since the British Isles 2 m. and 70 cm. Band Plans were adopted by the various interests that are concerned in any way with British Amateur Radio, in a spirit of mutual co-operation that was good to see.

How have the Plans worked? Very well, by and large. But it is still clear that one or two operators on the 2 metre band do not conform. One feels that in the general interest they should—and perhaps this friendly reminder will hasten the purchase of that new crystal!

What is not so reassuring, however, is the action (again only by one or two) of moving out of the home zone into another (generally lower in frequency) with a view to snatching a choice DX contact—and some brief, ill-earned glory at the same time. Such practices, being infectious, are the surest way to wreck the well-ordered 144-146 Mc/s spectrum.

It is a hollow boast to say that one has worked Yugoslavia on "Two" when 500 listening "conformists" could hear that it was not done by fair means.

The 70 centimetre plan is working well, too, even though the plaint has been heard that the self-excited adherents are now short of space. Let there be comment, by all means—and the BULLETIN correspondence columns are every man's forum. But let there be no unilateral action. The Plan was accepted by all. Let's stick to it.

Backstage

THE main purpose of this note is to remind any who may possibly be unaware—though that is not likely!—that the Seventh Annual R.S.G.B. Amateur Radio Exhibition opens its doors in ten days' time, namely, on Wednesday, November 25.

Once again, the attendance will run well into four figures. Once again, too, many a member will return home with the feeling of well-being

that comes from mixing with his own kind, tempered with that vague dissatisfaction engendered by the fact that his confreres seem to build very much better equipment than he can himself!

When he enters the hall there will be set forth the exhibition as a *fait accompli*, and as such most visitors will accept it. It would be very nice, though, to feel that all those of us who derive such satisfaction from it could spare a thought for those "backroom boys" who make the thing possible at all. A proportion of the staging of the exhibition is, of course, professionally done, but a great deal, too, is the work of enthusiastic members of the Exhibition Committees operating in an entirely amateur capacity and labouring often long hours not only in their "pre-Show" meetings but also in the last hectic days and hours before the exhibition opens.

"The show goes on"—and remember that it does so largely as the result of what happens "backstage."—J.H.

Extraordinary General Meeting

Minutes of an Extraordinary General Meeting of the Incorporated Radio Society of Great Britain, held at The Institution of Electrical Engineers, London, W.C.2, on Friday, October 23, 1953, at 6.30 p.m.

Present

The President (Mr. Leslie Cooper in the Chair), Messrs. I. D. Auchterlonie, H. A. Bartlett, F. Charman, C. H. L. Edwards, D. A. Findlay, R. H. Hamman, F. Hicks-Arnold, J. H. Hum, A. O. Milne, L. E. Newnham, R. Walker and P. W. Winsford (Members of Council), Mr. S. K. Lewer (Past President), Messrs. M. Child, H. A. M. Clark, D. N. Corfield, J. W. Mathews, G. Courtenay Price and H. V. Wilkins (Vice Presidents), Mr. John Clarricoats (General Secretary), Miss May Gadsden (Assistant Secretary), Mr. J. A. Rouse (Assistant Editor) and about 170 Members.

Notice Convening the Meeting

The Honorary Secretary (Mr. C. H. L. Edwards) read the notice convening the meeting.

Special Resolution

Pursuant to notice, the President moved the following Special Resolution:—

That Article 19 of the Articles of Association of the Society be amended to read—

"The annual subscription shall be £1 10s. for Home Corporate Members, £1 1s. for Corporate Members residing outside the United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man, and 15s. for Associates or such lesser sums as the Council may decide from time to time."

and

That Article 27 of the Articles of Association be amended to read—

"At any time after having been a Corporate Member of the Society for five consecutive years, a Member may, subject to the approval of the Council, commute all future annual subscriptions by a payment of Twenty Pounds, or such other sum as may from time to time be determined by Special Resolution on the recommendation of the Council. Such payment shall entitle such Members to all the privileges and rights of Corporate Membership for the remainder of his life, subject to Article 28."

The motion was seconded by Mr. L. J. Fuller.

In reply to a question asked by Mr. Peter Cawson the President informed the meeting that, after taking legal advice, he had decided not to accept an amendment to the Resolution.

Messrs. Taylor, Newton, Lawson, Deacon, Walker, Milne, Wilkins, Jackson, Aldred, North, Cawson, Glaisher and Thorogood joined in the debate after which it was moved by Mr. F. G. Lambeth, seconded by Mr. Basil O'Brien, and RESOLVED that the Special Resolution be now put to the vote.

The President informed the meeting that he would first call for a show of hands on the Special Resolution and later, if so demanded, he would arrange for a poll to be taken.

Result of Voting

A show of hands showed that 176 Members had voted **IN FAVOUR** of the Special Resolution and **7 AGAINST**.

Ten Members then demanded a poll.

All Proxy Votes were then called in.

The Secretary announced that a total of 1,358 votes had been cast **IN FAVOUR** of the Special Resolution (including 1,182 proxies) and **144** votes (including 137 proxies) **AGAINST** the Special Resolution. Percentage in favour of the Special Resolution, 90.8%.

The President thereupon declared that the Special Resolution had been carried. Applause greeted the announcement.

Mr. Cawson, on behalf of his colleagues who had voted against the Special Resolution, thanked the President and Council for listening so patiently to their views.

The General Secretary then made an announcement on the question of interference to television caused by amateur transmitters based on a letter recently received from the G.P.O.*

The meeting terminated at 8.20 p.m.

* See page 213 of this issue.

Single Sideband Technique

Part I—General Principles and Reception

By H. M. HUMPHREYS (G13EVU)*

Single sideband suppressed carrier telephony (usually abbreviated to s.s.s.c., s.s.b., or single sideband) offers a number of advantages, both technical and economic, to the radio amateur. Its widespread adoption would do much to reduce the interference now experienced on many amateur bands while, at the same time, making communication more effective. In this important new series of articles, specially written for the BULLETIN, the author lucidly describes the techniques involved. Whether or not the reader intends using the system in the immediate future, he would do well to study the information presented here.

WHEN a carrier wave is modulated by any of the methods commonly used to achieve amplitude modulation (a.m.) the resulting waveform seen on the screen of a cathode ray oscilloscope looks something like that shown in Fig. 1. For simplicity, modulation by a single



Fig. 1.—Oscilloscope pattern of r.f. carrier modulated by a.f. sine wave.

tone sine-wave has been assumed. This type of conventional representation tends to suggest that the modulated waveform consists of one r.f. oscillation of constant frequency and varying amplitude, which is not strictly true. Any amplitude modulated waveform is really the resultant of a number of superimposed r.f. oscillations differing from each other in amplitude and frequency, each of the components in itself being constant in amplitude and frequency. The simple sinusoidally modulated waveform of Fig. 1 may, for instance, be considered as the resultant of three r.f. oscillations whose frequencies are (a) the frequency of the carrier f_c , (b) the frequency of the carrier plus the modulating frequency $f_c + f_m$, and (c) the frequency of the carrier minus the modulating frequency $f_c - f_m$. This effect, which is indicated graphically in Fig. 2, may be proved

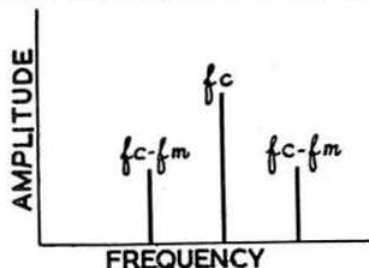


Fig. 2.—Graphical analysis of waveform shown in Fig. 1.

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

mathematically, or demonstrated experimentally by a simple modulated oscillator and very selective receiver. Any communications receiver which includes a crystal filter will give a clear indication of each of the three components of the simple waveform. With a complex modulating wave, such as that produced by speech or music, the waveform may be analysed into a c.w. oscillation at carrier frequency, plus a large number of c.w. oscillations which are above and below the carrier by amounts equal to the original component sine waves in the speech or music. This effect is illustrated in Fig. 3. It is essential for those

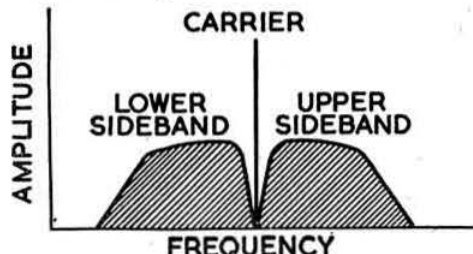


Fig. 3.—Graphical analysis of r.f. carrier amplitude modulated by complex a.f. waveform.

interested in the technique of single sideband suppressed carrier telephony to think in terms of this type of diagram rather than in terms of a normal a.m. carrier such as that depicted in Fig. 1. The band of frequencies higher than the carrier is known as the upper sideband, and that below the carrier as the lower sideband.

It follows that an amplitude modulated wave covers a band of frequencies having a width twice that of the highest modulating frequency. To prevent heterodyne interference between two adjacent channel a.m. transmitters, the difference between their carrier frequencies must be at least as great as the permitted total bandwidth.

Power Required for Amplitude Modulation

It may be shown that when an r.f. waveform is modulated to a depth of 100%, the power radiated increases by one half. This power is supplied by the modulator, which must, therefore, be capable of an output equal to half the input to the Class C amplifier. The carrier remains constant in amplitude and frequency, however, and the increase in power is used to generate two symmetrical sidebands, so that each sideband contains only one quarter of the power of its parent carrier. What this means to the amateur may perhaps be more readily appreciated from a numerical examination of what happens when a change is made from 25 watts c.w. to 150 watts telephony. Using c.w. with an input of 25 watts, assuming an efficiency of 70% for the p.a., the transmitter is capable of radiating 17.5 watts of useful intelligence. Using telephony with an input of 150 watts, however, the peak sideband power will only be 26.25 watts—not a very encouraging return for the money expended on a 150 watt

* 94 Locksley Park, Finaghy, Belfast.

p.a., a 75 watt modulator, and associated power supplies! Since, however, the carrier remains constant in frequency and amplitude, it must follow that all the intelligence in the transmission is contained in the sidebands. If the carrier could be eliminated or suppressed at the transmitting end, the waveform could still be faithfully reconstructed at the receiving end by the provision of a local oscillator of the same frequency as the original carrier. At the expense of a little inconvenience at the receiving end, the transmitting operator could, therefore, suppress 150 watts of entirely unnecessary interference-causing carrier, thereby freeing power handling capability to amplify the sidebands alone.

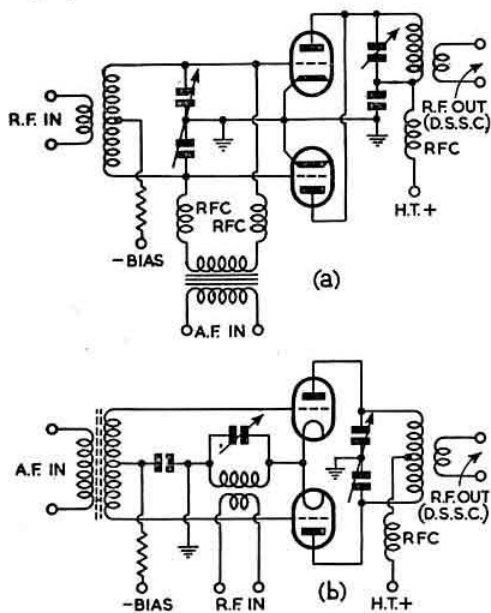


Fig. 4.—Balanced modulator circuits.

Carrier Suppression

Carrier suppression presents no difficulty. There are many ways of doing it, but the simplest and most convenient is to use one of the balanced modulator circuits shown in Fig. 4. In the circuit of Fig. 4a it will be seen that the arrangement is similar to the push-push doubler, the only difference being that the output is tuned to the same frequency as the input. When the circuit is adjusted for perfect balance of input to both valves, the anode outputs at carrier frequency will be in antiphase, and will therefore cancel each other. The introduction of a modulating waveform will unbalance the circuit at the sideband frequencies causing both sideband components to appear in the output circuit. The circuit of Fig. 4b operates on the same principle, but the grids are in parallel and the anodes in push-pull. The modulating audio waveform is always fed in push-pull. The output of the balanced modulator, for single tone modulation, is similar to Fig. 5, when viewed on an oscilloscope. This waveform is commonly described as double sideband suppressed carrier (d.s.s.c.). At first sight it might seem that the amateur would do well to accept the waste of power and bandwidth inherent in the radiation of two sidebands, both containing identical intelligence, as a fair price to pay for equipment simplicity. Unfortunately (or perhaps

fortunately) there can never be any argument on this score, because the requirement for carrier restoration at the receiving end is impossible to meet. For the system to be practicable, the carrier would have to be introduced at the exact frequency and phase of that suppressed at the transmitter. There is no latitude over which quality might be said to be poor but still acceptable for communications purposes. The author carried out an experiment with d.s.s.c. with the co-operation of G13VQ, but even the most stable of oscillators at the receiving end failed to resolve an intelligible signal.

With the removal of one of the sidebands, however, the transmitting operator achieves two objectives at the same time. The full capability of the p.a. is made available for the transmission of a simple "package" of useful intelligence, and the demand for accuracy in carrier restoration at the receiving end is reduced to practicable limits. The p.a. may be operated at a peak input of 150 watts of sideband signal, giving an output of 100 watts of intelligence-conveying r.f. Compared with the a.m. transmitter, this represents a really worthwhile improvement. At the same time the need for a 75 watt modulator disappears. The p.a. too, is only required to take maximum input on speech peaks, thus permitting valves to be operated at their full c.w. ratings. As a result, smaller and cheaper valves may be used than in an a.m. final stage. At the receiver, an error of up to ± 20 c/s in the restored carrier may be tolerated. This latitude is considered to be the maximum permissible for speech of "communications" quality; high fidelity speech or music demand greater accuracy. Most amateurs find little difficulty in achieving this order of accuracy.

Reception of Single Sideband Signals

At this stage it is usual to describe the technical details of removing the unwanted sideband. The question of reception (if it is dealt with at all) is touched upon only briefly. It is felt that this cavalier treatment of receiving operators is one of the major obstacles to the spread of s.s.c. techniques.

The emphasis which has hitherto been placed on the transmitting end may well have discouraged them. To re-word the old saying, "They can't work you if they can't read you." The significance of s.s.c. to the receiving station will, therefore, be dealt with fully before transmitter circuitry is discussed.

To those who have not yet heard or recognised a s.s.c. transmission it is difficult to explain how the signal sounds. In the absence of a better definition, it may be likened to the noise which Donald Duck might produce if he were speaking into the microphone of a 500% modulated a.m. transmitter suffering from a parasitic oscillation in the final amplifier! If a signal of this type is located, the operator can immediately establish whether or not it is single sideband by switching on the b.f.o.; if the pitch of the noise changes, and no steady heterodyne note appears, it is s.s.c.

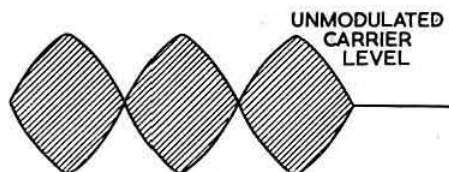


Fig. 5.—Oscilloscope pattern of double sideband suppressed carrier signal

The most likely place in the frequency spectrum to find s.s.s.c. stations is just below 3.8 Mc/s, where a number of British and European stations regularly operate. On occasions, it may also be possible to receive a few single sideband North American stations on 14 Mc/s.

Carrier Insertion Oscillator

As has already been said, s.s.s.c. cannot be demodulated until the missing carrier is re-inserted at the receiver. In the case of t.r.f. and superhet receivers this may be done by providing a local oscillator tuned as closely as possible to the nominal carrier frequency of the transmitting station. To avoid confusion between this oscillator and the others normally found in an amateur station, it will be referred to as the "carrier insertion oscillator" (c.i.o.). With the c.i.o. a signal frequency, both its output and the incoming sideband signal are fed into the receiver. In a superhet the same effect may be obtained by coupling a c.i.o. signal of appropriate frequency into the i.f. amplifier. Both these systems have their advantages and disadvantages. With the signal frequency method, intelligibility is dependent on the c.i.o. only, and drift in the receiver will have no more effect on the readability of an s.s.s.c. signal than on conventional a.m. Two controls have to be operated simultaneously, however, when tuning to a signal, so the system is not suitable for rapid searching or for net reception if the various transmitters differ from one another in frequency by more than 20 c/s. In addition, frequency multipliers have to be provided if multi-band operation is desired. The i.f. method has the obvious advantage that the c.i.o. is fixed tuned. The b.f.o. is often used for carrier restoration, but there are two main disadvantages to this arrangement. The first is drift: if the local oscillator drifts, the heterodyned sideband will move from the centre of the passband of the i.f. amplifiers, and will no longer bear the correct frequency relationship to the b.f.o. so that intelligibility will also suffer. Drift in the b.f.o. will affect intelligibility only. The difficulty is that the two oscillators are inter-dependent, so that it is difficult to decide which of the controls to adjust when a signal starts to become distorted. Even the best receivers may exhibit a degree of drift which, although unimportant for c.w. or a.m. work, may make them tricky to handle for s.s.s.c. reception. The b.f.o. control is usually too coarse to enable it to be set with any ease to the required accuracy of ± 20 c/s. The second major objection to the use of the b.f.o. is that its output may be insufficient to handle a reasonable level of incoming sideband signal. In this connection, it must be appreciated that for distortion-free demodulation, the restored

carrier must produce an amplitude at the second detector at least as great as that which the transmitting station carrier would have done had it not been suppressed. There is no such condition as overmodulation with s.s.s.c. but if the re-inserted carrier has insufficient amplitude with relation to the received sideband, the resultant audio output will exhibit all the unpleasant characteristics of overmodulation. The remedy is, of course, to reduce the r.f. gain, thereby reducing the sideband to a level at which the restored carrier can handle it.

A Practical Carrier Insertion Oscillator

As a result of considerable experiment, including the examination of a number of circuits of American origin, it was decided that carrier restoration at the i.f. is the most convenient system for most amateurs to use. In general, however, the existing b.f.o. should be replaced by a more stable oscillator of higher output if really satisfactory results are to be obtained. All the faults in the system can be overcome by constructing a crystal controlled c.i.o. such as that shown in Fig. 6. Suitable crystals can still be obtained for 15/- or less, and even if the rest of the components cannot be found in the junk-box the complete oscillator should not cost more than 30/-. The power-supply requirements are so small that most receiver power-packs can safely meet them. It is advisable to make sure that the centre of the i.f. passband coincides accurately with the c.i.o. frequency; if the receiver has no crystal filter, this may be done by re-aligning the i.f. transformers, using the c.i.o. as a signal generator.

The i.f. alignment of receivers with crystal filters should not, of course, be altered; a c.i.o. crystal of correct frequency must be used. In the interest of stability, it is advisable to screen the c.i.o. and to run its output via a shielded lead and a condenser of about $1\ \mu\text{F}$ to an appropriate point in the i.f. amplifier. This point is best found by trial, as it depends on the output level of the c.i.o., but it should be such as to allow a strong signal at the second detector without any suggestion of overloading. In the writer's receiver, the c.i.o. is mounted internally, and is very lightly run to avoid thermal drift. The "coupling condenser" is a turn of insulated wire around the grid lead to the last i.f. valve. A.V.C. must not be used with s.s.s.c. because the sensitivity of the receiver would be reduced by the strong artificial carrier produced by the c.i.o. In addition there would be no means of adjusting the level of the receiver sideband in relation to the restored carrier. With a crystal controlled c.i.o., the main tuning and the r.f. gain are the only controls used. When the receiver is adjusted to the point of maximum intelligibility, the operator may be sure that the signal is in every respect properly tuned. It may be thought that an improved result could be obtained by centring the midpoint of the sideband at the peak of the i.f. amplifier response curve rather than placing the c.i.o. there. This is shown diagrammatically in Fig. 7. If this were done, the c.i.o. frequency would require to be approximately $1.5\ \text{kc/s}$ to one side of the peak, so that a c.i.o. with a pair of switched crystals would have to be provided to allow for the reception of either upper or lower sideband transmissions. Whether or not the additional complication and cost would be worth while must be left to the individual.

The advantages gained by the addition of the s.s.s.c. reception facility are: (1) an increase in

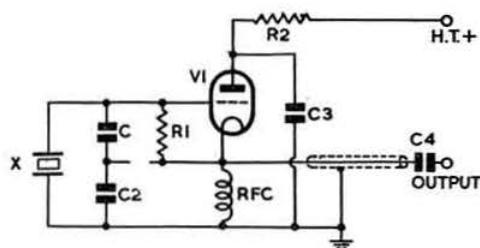


Fig. 6.—Circuit of crystal controlled oscillator for carrier restoration at intermediate frequency. C1, 500 μ F; C2, 1000 μ F; C3, 0.01 μ F; C4, 1 μ F; R1, 47,000 ohms; R2, 22,000 ohms; RFC, 2.5 mH r.f. choke; V1, 6C4, 9002, 6J5, etc.; X, crystal ground to receiver i.f.

useful incoming signal large enough to make all the difference between inaudibility and perfect readability; (2) freedom from the effects of selective fading; (3) a reduction in the ill-effects of interference, due to the strong carrier which can be controlled and which provides the "key" against which even a weak sideband may be successfully demodulated. (Strong adjacent channel carriers have much less effect on a weak s.s.c. signal than on a conventional a.m. signal); (4) freedom from heterodyne interference from adjacent channel stations which are using the s.s.c. system; (5) economical use of the amateur bands, because an s.s.c. station takes only one half of the bandwidth required by an a.m. or n.b.f.m. station.

This list should be sufficient to demonstrate that s.s.c. is an overwhelmingly superior means of communication. There is certainly a great field still to be explored by amateurs, but even at its present stage of development, this form of transmission has a great deal to offer the operator whose primary interest is in reception.

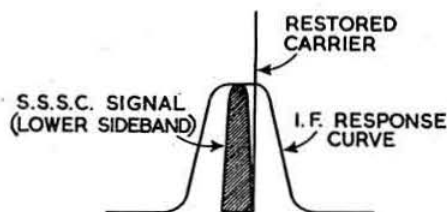


Fig. 7.—Method of centring incoming s.s.c. signal in i.f. passband

Single Sideband Tuning

Before leaving the question of reception, a tuning procedure designed to help the newcomer to get used to s.s.c. will be given. This differs in some respects from that usually advocated, but is considered better for those inexperienced in recognising s.s.c. signals, and indeed for everyone when it is necessary to locate a weak signal in a noisy band. The method is as follows: (1) allow the receiver and c.i.o. to warm up so that subsequent drift will be at a minimum; (2) switch off the a.v.c., advance audio gain to as high a level as is comfortable, and thereafter adjust volume by the manual r.f. gain control; (3) if the b.f.o. is being used in place of a crystal controlled c.i.o., tune to a steady a.m. signal and adjust the pitch control to zero beat; (4) search over the band. (A signal that exhibits no heterodyne whistle will be s.s.c. and when the receiver is tuned through it, a point will be found where the speech suddenly becomes recognisable. The point where the voice sounds most natural should be selected, but there will be a small amount of latitude on either side through which the speech will remain intelligible but will sound rather like a gramophone record which is being played at the wrong speed); (5) use the tuning control to maintain maximum quality. If the symptoms of overmodulation are present, reduce the r.f. gain and bring up the volume with the audio gain; (6) if the b.f.o. is in use, and is known to drift it will require resetting from time to time. The writer's experience does not, however, confirm the proposition that the tuning control should be left untouched and intelligibility maintained by adjustment of the b.f.o. This may be the case with those receivers in which the b.f.o. drifts much more than the local oscillator.

Finally, operators of a.m. stations should not hesitate to reply to CQ calls from s.s.c. stations;

if they are in any doubt or difficulty, they should say so. The s.s.c. operators are eager to spread the good work as widely as possible, and will be only too glad to pass their experience on to others.

This concludes the discussion of s.s.c. as it affects both transmitting and receiving operators. Part II will deal with the transmitting and test equipment necessary for eliminating the unwanted sideband.

C.C.I.R. London Meeting

THE Seventh Plenary Assembly of the International Radio Consultative Committee (C.C.I.R.) completed its work on October 7—the final session ending late that evening, after a last minute spurt to obtain approval for a number of Study Group recommendations.

Prior to, and during, the Conference more than 800 documents were issued—many of them lengthy and of considerable technical interest. Each document was printed in English, French and Spanish.

The main work of the Conference was conducted through Study Groups—of which there were 14. Recommendations made by the Study Groups were submitted to the Plenary Assembly at one of its several meetings. The Recommendations are at present being edited by the permanent Secretariat of the I.T.U. in Geneva and will eventually appear in book form.

From an Amateur Radio point of view the documents which aroused chief interest were those produced by the Groups studying receivers, transmitters, television and propagation problems.

Selectivity, sensitivity and stability were factors which received the close study of the Receiver Groups—many valuable contributions coming from the United Kingdom and United States.

The Groups studying Tropospheric, Ionospheric, and Ground Wave Propagation were aided by valuable data contributed by commercial users of both long and short distance circuits.

An interesting recommendation concerned the use of the 26 Mc/s band for broadcasting purposes. If adopted, generally, by set manufacturers it could mean that commercial short-wave receivers of the near future will be designed to tune to within a megacycle or so of the 28 Mc/s amateur band. The argument in favour of the use of 26 Mc/s is that in many parts of the world this region of the spectrum has a very low noise level. As against that viewpoint it can be argued that ignition and similar types of man-made interference are more difficult to eradicate at 26 Mc/s than at lower frequencies.

At a later date we hope to refer in greater detail to some of the technical contributions to the C.C.I.R. London Meeting, the Chairman of which was Mr. H. Faulkner, Deputy Engineer-in-Chief of the Post Office. The U.K. delegation was led by Mr. H. Stanesby, also of the G.P.O.

If present plans materialise the Eighth Reunion will take place in Warsaw during 1956.

National Radio Show, 1954

HER Majesty the Queen has consented to be Patron of the 1954 National Radio Show which will be held at Earls Court, London, from August 25 to September 4 next year.

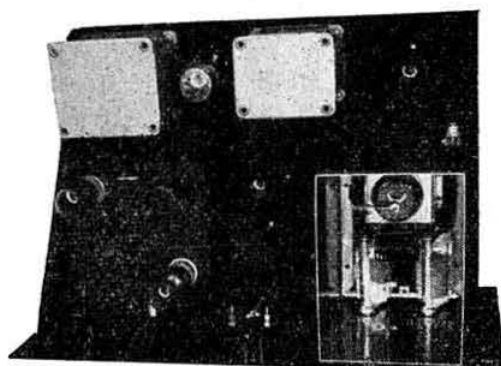
The Newcomer's Low Power Harmonic-Free Transmitter

By J. W. MATHEWS, Assoc. Brit. I.R.E. (G6LL)*

The transmitting equipment used by the present-day Newcomer to Amateur Radio must be far in advance of that which was employed when the Old Timer started. For example, it is vitally important that it shall cause no interference to sound or vision broadcasts. In the design described here these and other points have been borne in mind whilst the construction has been kept as simple as possible consistent with modern requirements.

THE impact of television on the radio amateur generally has meant an inevitable complication of his apparatus. Except in the case of those living in remote country areas the day of the simple open-type of transmitter used by the pre-war amateur is over. To the newcomer, it means that his first transmitter must, of necessity, be very much more complicated than that of his pre-war predecessor. Nevertheless, he has the advantage of being able to build the modern way from the beginning.

It may be asked "What is the modern way?" The answer is simple—it is the so-called TVI-proof way. But the phrase "TVI-proof" is not strictly accurate because it implies that a transmitter cannot interfere with television. It is well known that many amateur transmitters, which do not radiate energy in the TV bands, cause interference owing to faulty receiver design or adjustment, unfortunate choice of i.f. channel or poor receiving aerial, none of which can be remedied at the transmitter. As far as the amateur is concerned "TVI-proof" therefore means "harmonic-free." This term implies the reduction in power of all multiples of the lowest frequency used in the transmitter to an extremely low level such that their radiation will not cause interference to nearby



Top view showing the general layout. On the left is the optional v.f.o. unit built on the lid of its screening box which is bolted to the chassis. The c.o. stage is nearest the front panel with the crystal holder to the left so that the output from the v.f.o. may be conveniently plugged in. To the immediate rear is the frequency multiplier, and to the right the p.a. stage in its screening box.

receivers which may be tuned to these harmonic frequencies. The amount of reduction needed will vary in different locations.

The newcomer will be well advised, therefore, to design and build his transmitter along harmonic-free lines on the assumption that he will need a great deal of attenuation. It is far better to have too much rather than too little, and with the enthusiasm a new licence brings it is disappointing to find that on-the-air operations are usually governed by television transmission hours. Fortunately, the newcomer, being limited to a maximum input of 25 watts, will not find the problem so difficult as those using high power, since the harmonics appearing from the p.a. should be weaker.

The transmitter to be described has been designed for the new licensee who is probably most interested in working DX on 14 and 21 Mc/s.

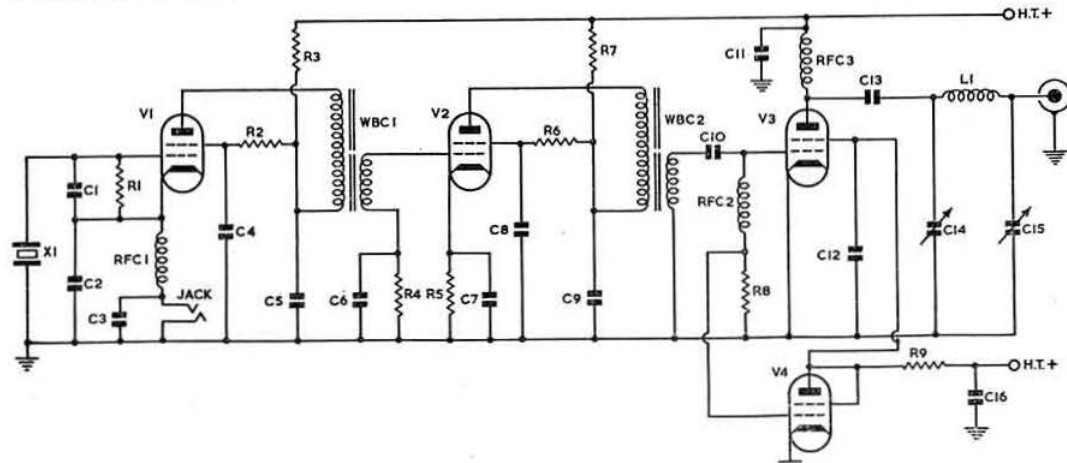


Fig. 1.—Simplified circuit diagram of the transmitter without switching. V1 is the crystal oscillator, V2 the frequency multiplier, V3 the power amplifier, and V4 the clammer valve.

Its easy modification to cover additional bands has, however, been kept in mind. It represents the minimum that should be done to ensure reasonably harmonic-free transmission and, in spite of its apparent complexity, is fundamentally simple.

is, a value determined by the common resistor. When the drive is removed, however, no voltage will be developed across the grid leak and both valves will be without bias. The clamping valve will, therefore, pass a high current limited by the

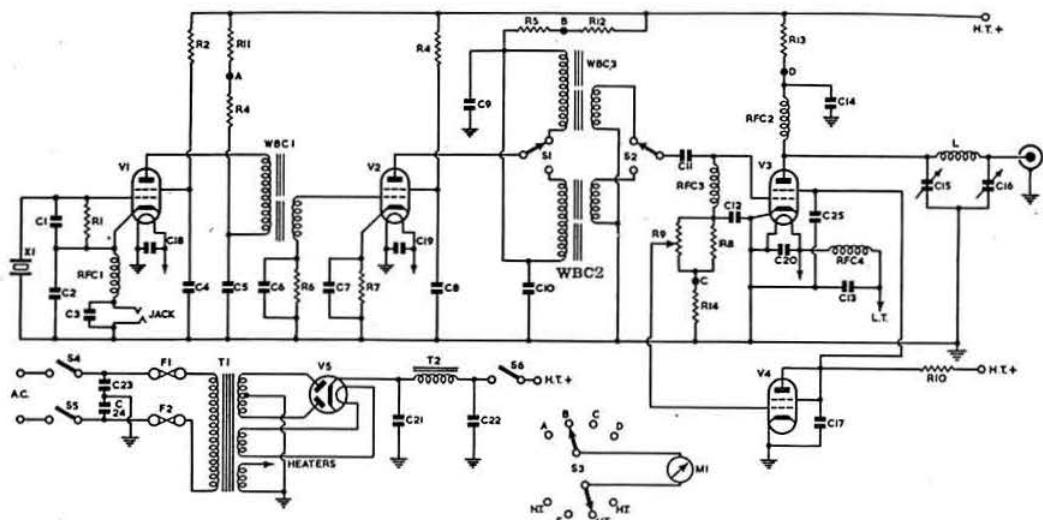


Fig. 2.—Complete circuit diagram of the harmonic-free transmitter with its power supply.

The Circuit

The basic circuit (shown in Fig. 1 shorn of all band-switching) is the well-tryed crystal oscillator-frequency multiplier-power amplifier arrangement with some refinements, one of which is the use of a p.a. screen voltage clamping valve. This arrangement acts as safeguard for the p.a. valve. It also permits keying in a low level stage, and the use of a simple grid-leak bias system. The p.a. is biased by the voltage developed across the grid-leak when drive is applied. This bias voltage is also applied to the clamping valve grid, thus reducing its anode current to a very low value. As the screen of the p.a. valve and the anode of the clamping valve are fed through a common resistor, the screen voltage will be normal; that

dropping resistor, but sufficient to reduce the voltage at the screen of the p.a. valve to a low value, thus limiting its anode current to a safe figure. The system works well, and as keying may be done in an early stage of the transmitter, interference due to key clicks is either absent or very small. Key click filters may be added if found necessary.

Further simplification is obtained by the use of wide-band couplers between stages, thus reducing the number of tuning controls. The p.a. stage employs a pi-network tank circuit, the chief benefit of which in this instance is its inherent ability to reduce considerably the harmonics appearing at the output. Another advantage is that it acts as an easily adjusted transformer to match the com-

Components List

C1	15 μ F T.C.C. Type CC31Y
C2	150 μ F T.C.C. Type CC31Y
C3	0.1 μ F T.C.C. Type 346
C4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 17, 18, 19, 20, 25	0.01 μ F T.C.C. Type 346
C11	100 μ F T.C.C. Type CC31Y
C15	160 μ F variable J.B. Type C604 SE18
C16	360 μ F variable J.B. Type C604 SE40
C21	8 μ F T.C.C. Type CE18PE
C22	32 μ F T.C.C. Type CE18PE
C23, 24	0.005 μ F, 1000 V d.c. Test. T.C.C.
L	12 turns, 14 s.w.g., air-spaced, lin. i.d., overall length 1 in.
M1	0-5 mA m.c. meter
R1	27,000 ohms $\frac{1}{2}$ W Erie
R2	10,000 ohms $\frac{1}{2}$ W Erie
R3	100,000 ohms $\frac{1}{2}$ W Erie
R4	47,000 ohms $\frac{1}{2}$ W Erie
R5	3,500 ohms $\frac{1}{2}$ W Erie
R6	10,000 ohms $\frac{1}{2}$ W Erie
R7	150 ohms $\frac{1}{2}$ W Erie
R8	27,000 ohms $\frac{1}{2}$ W Erie
R9	100,000 ohms variable, Reliance Type W
R10	5-7,500 ohms $\frac{1}{2}$ W Erie

R11	Meter shunt to read 0-25 mA
R12	Meter shunt to read 0-50 mA
R13	Meter shunt to read 0-100 mA
R14	Meter shunt to read 0-5 mA
RFC1, 2, 3	Eddystone Type 1010
RFC4	10 turns, 16 s.w.g.
T1	350-0-350 V 150 mA, 6.3 V 3 A, 5 V 2 A, Woden Type PTM 13
T2	10H smoothing choke, Woden Type PCF 12
V1	Mullard EF50
V2, V4	Brimar 6V6
V3	Brimar 807
V5	Brimar 5Z4
WBC1, 2, 3	See text.

Miscellaneous

Crystal and holder: Q.C.C.
 Valveholders: McMurdo
 Condenser dials: Webb's Radio
 Band-switch: Webb's Radio 2-pole, 2-way ceramic
 Meter switch: Bulgin Type S436
 Panel light: Bulgin Type D9
 Mains plug and socket: Bulgin Type 74
 Co-axial socket: Belling and Lee Type L604/S
 Fuses: Belling and Lee Type L356
 Switches (on/off): Claude Lyons BAT No. 2728
 Chassis, panel and screening: C4BI, Loughborough

paratively high impedance of the valve to a low impedance co-axial line.

The complete circuit of the transmitter illustrated in the photographs is shown in Fig. 2 and includes the switching necessary for an easy and rapid change to be made from 14 to 21 Mc/s. The meter may be switched into various valve circuits at the points marked A, B, C and D.

A further refinement is the power control R9 by means of which the voltage applied to the grid of the clamper valve may be varied, with a consequent variation of the p.a. screen voltage and hence of output power.

It has a self-contained power pack and could be used later as a driver for a high power p.a. The power control R9 would be useful in the latter case for adjusting the amount of drive.

All these refinements are used by Louis Varney (G5RV) in the transmitters he has described and to him must go the credit for more or less standardising the harmonic-free transmitter circuit.



A front view of the harmonic-free transmitter. The v.f.o. dial is on the left with the tuning and loading controls to the right. The controls along the lower edge of the panel are (from left to right) mains on/off, h.f. on/off, power control, meter switch, band switch and red warning light.

Construction

The transmitter is built on a 17 in. x 12 in. x 2 in. chassis equipped with a standard 19 in. x 11 in. panel which may be either rack mounted or enclosed in a metal cabinet.

The layout is simple and follows as closely as possible the circuit diagram. The p.a. valve is mounted on the chassis with a metal screen $2\frac{1}{2}$ in. square and $2\frac{1}{2}$ in. high up to the internal shield. To the rear of the p.a. valve is the clamper valve (V4). The co-axial output socket is mounted on a polystyrene block bolted to the back of the p.a. screening box. The p.a. stage may be wired-up and any adjustments made before the screening box is bolted in position, the only wiring then needed being the connection to the co-axial socket. The keying jack and the mains input socket are on the rear of the chassis.

All by-pass condensers should be connected by the shortest possible leads to the common earth tag associated with the particular stage. In the p.a. stage, all by-pass leads should be returned direct to the cathode of V3. The lead connecting the latter to the chassis should be very short and preferably made of braid or copper strip. The variable condensers in the anode circuit (C15 and C16) should have only one common earth return which should be direct to the cathode. The co-axial output socket must be insulated from the chassis and its only earth connection should be via the short length of co-axial cable necessary to connect it to the output of the pi-network.

Winding details of the wide-band couplers, originally designed by Louis Varney (G5RV), are given in Table 1. They are easily made and adjusted. If the couplers are mounted below the chassis no separate screening is necessary because the chassis has a bottom cover which, when in place, effectively shields all the under-chassis components and prevents any direct radiation from them.

Table 1

Coil	Band Mc/s	Turns		S.W.G.	Link Turns
		Pri.	Sec.		
WBC1	7	55	55	30	2
WBC2	14	28	28	24	2
WBC3	21	15	15	24	1

Details of the wide-band couplers: coils are wound on $\frac{1}{2}$ in. diameter Aladdin formers, type F804, fitted with dust iron cores. The link coil is a continuation of the primary winding wound over the earthed end of the secondary. H.T. is connected to the end of the link winding. The formers are mounted close together, side by side, for each coupler.

Screened wire, securely bonded to the chassis, should be used for all wiring apart from that actually carrying r.f. The mains input should have two condensers of suitable rating across it with their centre point earthed.

The optional v.f.o., the circuit of which is shown in Fig. 3, can be added to the transmitter later if desired. Adequate space is available for it on the chassis. Any type of v.f.o. can be used, providing it gives sufficient output to drive the EF50 c.o. stage. A Franklin oscillator, for example, would require some amplification before it could be used satisfactorily. Careful screening of the unit is essential if complete freedom from harmonic radiation is to be obtained.

The output of the transmitter is taken from the co-axial socket via co-axial cable to the aerial tuning unit, the design of which will depend on the type of aerial employed. The use of this co-axial feeder—it may be any reasonable length—is strongly recommended. It permits the insertion of an aerial filter, known as a low-pass filter, which will reduce very considerably any harmonics which may try to find their way to the aerial. It also allows the aerial tuning unit to be situated close to the lead-in point, thereby obviating the necessity for feeder wires to be trailed around the room in which the

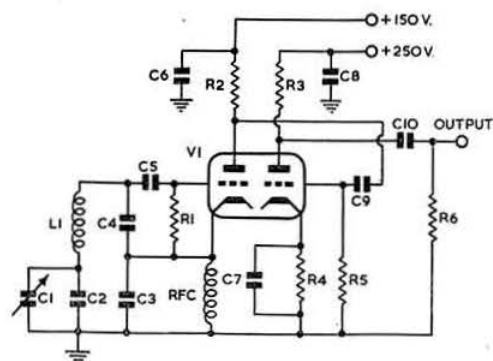


Fig. 3.—Circuit of the optional v.f.o. C1, 60 μ F variable; C2, 70 μ F silver mica, T.C.C.; C3, 4, 0.001 μ F silver mica, T.C.C.; C5, 9, 10, 100 μ F silver mica, T.C.C.; C6, 7, 8, 0.01 μ F; L1, 62 turns, 22 s.w.g. enam., $1\frac{1}{2}$ in. former; R1, 5, 25,000 ohms, $\frac{1}{2}$ W Erie; R2, 3, 10,000 ohms, 1 W Erie; R4, 500 ohms, $\frac{1}{2}$ W, Erie; R6, 10,000 ohms, 1 W (exact value determined by experiment); RFC, Eddystone type 1010.

transmitter is used. The mere fact that a link coupled circuit is used also helps to reduce harmonic radiation. A further advantage, not often stressed, is that the co-axial cable can be broken with a relay so that the receiver may be fed from the same aerial and tuning unit, thus giving an appreciable increase in signal strengths on the band to which it is tuned.

The p.a. screening box is very essential in order to eliminate the local radiation of harmonics. Ventilation is provided by two holes about 1½ in. in diameter, one near the bottom of the box and the other in the lid immediately over the valve. If brass wire mesh is used to cover the holes, it may be soldered round the edge to prevent the wires unravelling. It should be fixed to the box with 6 BA bolts.

Adjustment and Operation

If crystal control is to be used, a 7 Mc/s crystal is recommended.

The wide-band coupler between V1 and V2 is first adjusted so that the anode current taken by the frequency multiplier is at maximum. The meter is then switched to read p.a. grid current and the 14 Mc/s coupler adjusted for maximum reading. If it is found that this current is more than about 1.5 mA, the adjustment of the coupler should be altered until the reading drops to about 1 mA. This value will be found adequate for an input of 25 W, and care should be taken to ensure that it does not rise unduly as this would considerably increase the harmonic output of the p.a. stage. *It is always best to run at the lowest grid current reading possible.*

The p.a. tuning should be adjusted with a load connected to the output. It is bad practice to run a beam tetrode unloaded, because of the excessive screen current that may be drawn when the anode circuit is tuned for minimum current. To adjust the p.a. the meter is switched to read anode current and C15 (Tuning) adjusted for minimum current with C16 (Loading) set at maximum capacity. The latter control is then rotated towards minimum capacity until the meter indicates the required rise in anode current. A

slight readjustment of the tuning control may then be made and, if necessary, a corresponding slight change in the loading.

A simple check for r.f. currents both in the driver and p.a. circuits can be made with the aid of a single turn of wire and a low current bulb in series which is held near the coils concerned. This "loop lamp" should be mounted on a short length of dowelling so that it can easily be held in any required position.

The adjustment for the 21 Mc/s band is similarly carried out, with the band-switch that controls the function of V2 set so that this valve operates as a trebler. It will be found that the p.a. stage will tune to this band without changing the coil.

Conclusion

If due care is taken with the construction of this transmitter and attention is paid to by-passing, screening and adjustment, no measurable harmonics will be found in the TV band. As a safeguard it is strongly recommended that a suitable harmonic checker^{1, 2, 3} should be constructed and used frequently. Such a device becomes essential when higher power is used.

The transmitter was tested in a particularly awkward situation about 30 miles from Alexandra Palace, where the nearest television receiver is known to be extremely susceptible to interference. No trouble was experienced.

It should be realised that, although this transmitter may appear, at first sight, to be somewhat complicated, it represents the minimum that must be done if operation during TV hours is to be possible without complaints of harmonic interference.

References

- (1) *Further Advances in TVI Suppression*, Varney, R.S.G.B. BULLETIN, May, 1949.
- (2) *An Improved Harmonic Monitor*, Varney, R.S.G.B. BULLETIN, June, 1952, page 530.
- (3) *Sensitive Harmonic Indicator*, Mathews, R.S.G.B. BULLETIN, January, 1952.

National Emergency Amateur Radio Communications Service

ACTING upon the advice of the ad hoc Committee set-up to consider proposals for establishing an Emergency Communications Service, the Council has invited Messrs. W. J. Ridley, G2AJF, and C. L. Fenton, G3ABB, of Chelmsford, Dr. A. C. Gee, G2UK, of Lowestoft, Mr. R. A. Wilson, G4RW, of Felixstowe, Mr. C. T. Wakeman, G4FN, of Westcliff-on-Sea, and Mr. D. F. Willies, G3HRK, of Holt, Norfolk, to serve on an Organising Committee.

Following the appeal published in a recent issue of the BULLETIN, 28 members offered their services as "key" stations, whilst nearly 200 others expressed a wish to co-operate in any service that may be established.

A further statement will be published next month.

London Members' Luncheon Club

THERE was an attendance of 27 at the meeting of the Club held at the Bedford Corner Hotel on October 23. Among those present were Vice-President G. Courteney Price (GW2OP), Council Members Ian Auchterlonie (G6OM) and Herb Bartlett (G5QA), Region 8 Representative Dickv Donald (G3DJD), the C.R. for Bristol Roy Poeton (G3CTN), Norman Webber (ST2NW),

and Col. Tom Whimster (G2ZD). The Chairman of the Club, Stanley Vanstone (G2AYC), who presided had the support of Council Members Arthur Milne (G2MI) and Frank Hicks-Arnold (G6MB), and the General Secretary.

The Club meets at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road each month, when visitors to London, whether members of the Society or not, are assured of a warm welcome. The next meeting will be on November 20, 1953. Reservations should be made by postcard or telephoned to Miss May Gadsden at R.S.G.B. Headquarters (HOL 7373) not later than the day before the luncheon.

Thanet Radio Society Dinner-Dance, 1954

ALL who attend the Thanet Radio Society's Dinner-Dance at the San Clu Hotel, Ramsgate, on March 6, 1954 will be expected to bring a small model or drawing—to be entered in a Modern Art Contest—the theme of which will be "The Frustrated Ham." The Contest will be based on the "Unknown Political Prisoner" competition.

Radio Club de Chile

AT the Annual General Meeting of the Radio Club de Chile, Señor José Lenal (CE3AY) was elected *President* and Señor José Rojas Ghezzi (CE3QP) *Secretary*.

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

R.F. Chokes for Parallel Feed

MUCH useful information concerning pi-network tank circuits has been published in the R.S.G.B. BULLETIN^{1,2} but there is a practical difficulty in finding an r.f. choke, for the parallel feed to the p.a. stage, which is satisfactory on all bands from 3.5 to 28 Mc/s.

A suitable design, based on a product of the National Company of America, is shown in Fig. 1, and several chokes wound on plastic formers to these dimensions have been made. Electrically, the chokes have proved very successful, but it is important not to overheat the former or serious physical distortion will result. As considerable heat is produced when using valves such as the 813 in a totally screened box, *Carp* brand tufnol was tried for the former (*Kite* brand would be more suitable if available), but some modification of the windings was necessary for efficient operation on the higher frequency bands. Efforts are being made to interest the trade in a suitable ceramic former which would combine the excellent electrical features of the plastic with the heat resisting properties of the tufnol.

Testing the Choke

A grid-dip oscillator will indicate which section or sections exhibit undesirable resonances. Alternatively, the following method may be used. The transmitter should be run for a few minutes on each band, with reduced input and a dummy aerial. When all supplies have been switched off, the choke should be examined for hot spots. The number of turns on any winding which is running hot is then varied until satisfactory performance is obtained.

Experience has shown that an 813 valve, in spite of its appreciable capacity, will give satisfactory performance up to 30 Mc/s in a suitably designed and adjusted pi-network tank circuit when using a choke of the type described.

G(W)8SC.

References

- (1) *The Design of Pi-Network Tank Circuits*, Whalley. R.S.G.B. BULLETIN, April, 1952.
- (2) *A 5 Band 150 W TVI-proof Power Amplifier*, Varney. R.S.G.B. BULLETIN, April, 1952.

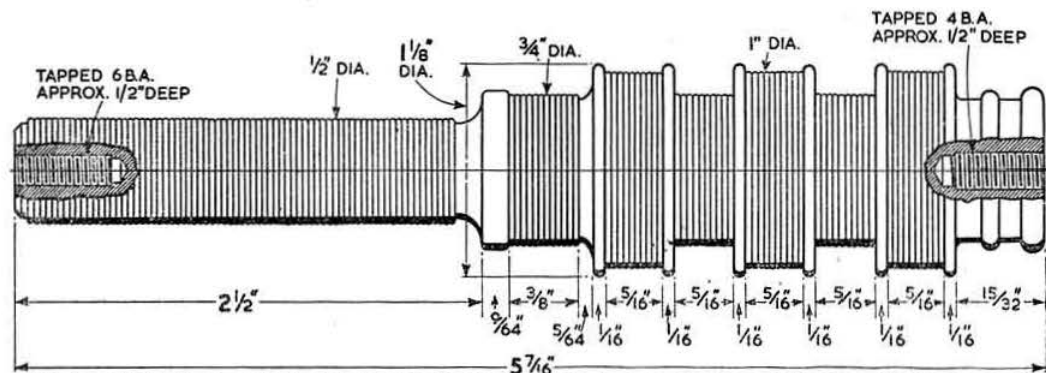


Fig. 1.—Details of the former used for the r.f. choke described. The winding is 280 turns (± 5 turns) of 30 s.w.g. double silk covered wire. The inductance of the choke is 225 μ H, distributed capacity 0.6 μ F, d.c. resistance 6 ohms and maximum d.c. current permissible 800 mA.

B.B.C.'s London Television Station

CONTRACTS have now been placed with Marconi's Wireless Telegraph Company, Ltd., for two 15 kW vision transmitters and two 4.5 kW sound transmitters for use at the new London Television station to be erected on the Crystal Palace site. Each pair of transmitters will be operated together so that, in the event of failure of one transmitter, the service can be maintained without interruption. By the use of a high-gain aerial system, mounted on a self-supporting 640 ft. steel mast, the effective radiated power will be approximately 250 kW. This compares with the 34 kW of the present transmitter at Alexandra Palace and the 100 kW of each of the four post-war high-power stations.

Television Weather Charts

THE Television Weather Charts are now shown five minutes before the opening of the evening programmes, except on Thursdays and Saturdays, when they are shown during the interlude following the repeat of the previous Sunday's play and the omnibus edition of the week's Television Newsreels respectively. The new arrangements will be of particular interest to members who use these charts in studying v.h.f. conditions.

LONDON MEETINGS

Programme, 1953-4

November 20, 1953: Messrs. H. de L. Banting, D. N. Corfield, D.L.C.(Hons.), A.M.I.E.E., and E. A. Dedman.

"THE TELEVISION SOCIETY'S NEW TV STATION."

December 18, 1953: Annual General Meeting, followed by Extraordinary General Meeting.

January 29, 1954: Mr. F. H. Brittain, D.F.H. (Research Laboratories, the General Electric Co., Ltd.)

"ART AND SCIENCE IN SOUND REPRODUCTION."

February 26, 1954: Mr. S. A. Lacey (Research Department, Murphy Radio, Ltd.)

"PRACTICAL ASPECTS OF TAPE RECORDING."

March 26, 1954: Mr. G. P. Thwaites, B.Sc.(Eng.), A.M.I.E.E., A.M.Brit.I.R.E.

"'TRUSTWORTHY' VALVES AND THEIR MANUFACTURE."

All meetings are held at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2. Buffet Tea from 5.30 p.m. Meetings commence at 6.30 p.m.

Modified Pierce Crystal Oscillator

by G. R. Pearce (ZL1AKL/C3AYL)

NO particular originality is claimed for the circuit shown in Fig. 1, which is basically a Pierce crystal oscillator acting between the control and the screen grids of the valve, followed by a conventional amplifier or frequency multiplier, depending on the values of L and C. It is, however, capable of useful output up to the 6th harmonic provided it is not intended to use this output to drive a final stage direct.

This type of oscillator is fairly common and the 6AG7 valve has been used in a number of variations of more complex design, but the earlier circuits required rather more components and were somewhat difficult to adjust. Table I shows the results obtained by a member of the Technical Committee with the present circuit using a number of crystals chosen at random.

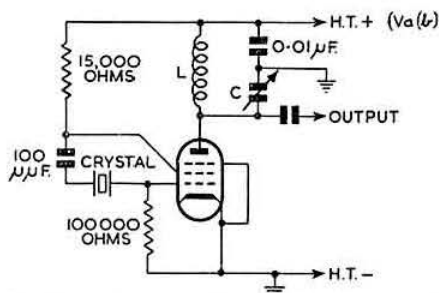


Fig 1.—Circuit diagram of the modified Pierce oscillator. Suitable valves are EF91, 8D3, 6AM6 and 6F12.

Fundamental Crystal Frequency (kc/s)	At 2nd Harmonic Resonance		Harmonic Output Voltage									
	Ia	Ig1	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Va(b)
3750	2.75mA	25μA	37	15	7.6	5	2.5	1.36	1	0.58	0.3	100
„	8.5	74	117.0	58.0	27.0	21.5	11.5	7.1	6.4	3.95	2.8	250
5000	2.7	25	44.0	18.0	4.2	3.75	2.25	1.25				100
„	7.8	82	142.0	71.0	21.0	15.9	12.5	7.4				250
5540	2.8	20	42.0	12.2	4.0	3.1	1.51	0.6	0.37	0.27	0.1	100
„	7.8	55	142.0	39.0	15.6	13.7	9.7	3.6	2.9	2.1	0.8	250
10850	2.1	35	13.0	13.6	5.9	1.37	0.42	0.85	0.81			100
„	5.8	110	43.0	49.0	26.0	6.7	2.7	2.9	3.3			250
14142.5	2.1	34	8.3	6.0	2.85	1.7	0.53					100
„	5.8	105	41.0	25.0	15.3	9.5	4.3					250

Table I.—Results obtained with modified Pierce crystal oscillator.

C.C.I.R. Delegates Entertained by R.S.G.B. Council

ON Saturday October 3, at the Kingsley Hotel, London, W.C.1, the President (Mr. Leslie Cooper, G5LC) and other Members of the Council entertained informally for lunch, delegates to the C.C.I.R. Seventh Reunion in London. Those present included Mr. G. C. Gross, HB9IA (Assistant Secretary General, I.T.U.), Mr. K. S. Sainio, OH2NM and Mr. H. E. Dinger, W3KH. A number of other delegates, who are active amateurs, had either just returned home or were engaged on Conference duties.

Opportunity was taken on the same occasion to meet the European members of the I.A.R.U. Region I International Committee, namely, Capt. Per-Anders Kinnman, SM2ZD (Chairman of the Committee and President of S.S.A.), Harry Laett, HB9GA (also a C.C.I.R. delegate) and W. J. Dalmijn, PA0DD. The other three members of the International Committee (G2MI, G2IG and G6CL) were also present.

Morse Examinations, January, 1954

FURTHER to the statement published in the October issue of the BULLETIN, the G.P.O. announce that Morse Examinations will be held at Birmingham, Cambridge, Derby, Leeds and Manchester during January, 1954, provided sufficient applications are received. The closing date for such applications, which should be addressed to O.T.D., Radio Branch, G.P.O. Headquarters, London, E.C.1, is December 20, 1953.

W.A.N.E. Certificate

THE Port City Radio Club of Portsmouth, N.H., U.S.A., offers a new proficiency certificate known as the "Worked All New England" Award. In order to qualify, an applicant must show proof of having worked stations in at least 50 of the 67 counties comprising the New England States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont. All States must be represented. Both phone and c.w. contacts are allowed on any amateur band. Applications for the award, accompanied by QSL cards in support of the claim and return postage, should be addressed to John W. Singleton, DX Manager, P.C.A.R.C., 1 Ashland Street, Portsmouth, New Hampshire.

"Antennentechnik"

G. C. OXLEY, A.M.I.E.E. (G8MW) is the joint author, with Alfred Nowak, Dipl. Ing., of a profusely illustrated manual on the theory and practice of aerial systems which has been published by Siegfried Schutz, Hanover, Western Germany, under the title of *Antennentechnik*. The text is in German.

British Institution of Radio Engineers

LECTURE on "Remote Control Devices and Servomechanisms" will be given by A. E. W. Hibbitt (Muirhead, Ltd.), to the West Midlands Section at 7.15 p.m. on November 24, at the Technical College, Wulfruna Street, Wolverhampton.

ANNUAL REPORT

THE Council is pleased to submit to the membership a Report covering the major events and activities of the Society during the year ended June 30, 1953.

Royal Patronage

The Council is conscious of the great honour which was conferred on the Society when it was announced from Buckingham Palace on November 1, 1952, that His Royal Highness, the Duke of Edinburgh, K.G., had been pleased to extend his patronage to the Incorporated Radio Society of Great Britain. The announcement was received with great satisfaction by all members.

His Royal Highness is kept informed of the activities of the Society through the medium of the R.S.G.B. BULLETIN.

The Loyal Address

An Illuminated Address, signed by the President and Council, was presented to Her Most Gracious Majesty, Queen Elizabeth the Second, on the occasion of her Coronation. The Address expressed the earnest hope that Her Majesty would long be spared in health and happiness to reign over her loyal and devoted subjects. A reproduction of the Address appeared in the June, 1953, issue of the R.S.G.B. BULLETIN.

The Coronation Relay

On the initiative of the Council, all Commonwealth Radio Societies were invited to relay, through Amateur Radio channels, Loyal Greetings to Her Majesty the Queen, on the occasion of her Coronation. The Council is glad to report that messages were received from most parts of the Commonwealth.

The warm thanks of Her Majesty for the expressions of loyalty and devotion contained in the Address and in the messages from Commonwealth Radio Societies, were conveyed to the Society by the Home Secretary (the Rt. Hon. Sir David Maxwell, Fyfe, P.C., Q.C., M.P.) in a letter written in command from the Queen.

Articles of Association

During the year a great deal of time and thought was devoted to the task of preparing, in final draft form, a revised set of Articles of Association. Following the holding of a Conference between the Council and the Regional Representatives in July, 1952, the draft Articles, amended in several respects to meet the wishes of the R.R.s, were later printed and a copy sent to each Corporate Member. Subsequently the Council gave most careful consideration to the various suggestions and comments which had been received from the membership.

Early in the New Year the Articles, after being finally approved by the Council, were sent to the Society's legal advisers for their comments. Certain minor amendments proposed by the Society's legal advisers were later adopted. The Articles were then submitted to the Board of Trade for consideration. After some weeks the Board of Trade intimated that it would like the Council to make a number of amendments and additions to the draft.

At the end of the year under review the draft, as revised by the Board of Trade, was under consideration by the Council. Subsequently, as members are now aware, the Council decided to submit the revised Articles of Association to the membership at an Extraordinary General Meeting to follow the Annual General Meeting on December 18, 1953.

Subscription Rates

Appreciating that some time might elapse before Board of Trade approval could be obtained to the revised Articles of Association, the Council decided, in October, 1952, to submit to the membership a Special Resolution relating only to those Articles which deal with subscription rates.

An Extraordinary General Meeting was held after the Annual General Meeting on December 19, 1952. At that meeting the Special Resolution was lost by 278 votes (252 by proxy, 26 in person) to 157 votes (39 by proxy, 118 in person).

The Council made a further attempt, at another Extraordinary General Meeting in February, 1953, to revise the Articles relating to subscriptions but the Special Resolution was declared "not carried" because the necessary 75% majority had not been secured. The voting was: For the Special Resolution 2,247 (including 1,991 proxies). Against the Special Resolution 1,019 (including 966 proxies). Percentage in favour of the Special Resolution 68.8.

Following the defeat of the Special Resolution the Council decided to wait until after the end of the then current financial year before making a further approach to the membership.

The R.S.G.B. Bulletin

The 12 issues of the Society's Journal which, together, form Volume 28 (July, 1952—June, 1953) contain 552 pages compared with 568 pages in the previous Volume. A reduction in the price of paper, together with certain other economies, resulted in the net charge for production falling by £566, compared with the previous year.

The standard of technical contributions again reached a very high level. The Norman Keith Adams Prize for the most outstanding contribution was awarded to Mr. Paul Sollom, B.Sc., A.C.G.I. (G3BGL) for his paper entitled "Skybeams, Moonbeams and Howitzers." The Bevan Swift Memorial Premium was awarded to Mr. D. Clift (G3BAK) for his paper entitled "Amateur Microwave Experiments." Other notable contributions were made by Messrs. B. Sykes (G2HCG): "Stacks v. Yagis" and "Skeleton Slot Aerials"; J. W. Mathews, Assoc.Brit.I.R.E. (G6LL) and W. H. Allen, M.B.E. (G2UJ): "The Measurement of Noise Factor in Receivers"; G. T. Peck (B.R.S. 15402): "Apparatus for D/F Contests"; F. C. Judd (G2BCX): "Remote Control by Radio"; W. H. Allen, M.B.E. (G2UJ): "Mixer-Master Oscillators"; R. T. Jago (G2JG): "A Three Element Close Spaced Reversible Beam"; L. Knight (G2DXK): "Low Pass Filters for TVI Reduction"; C. E. Newton (G2FKZ), G. M. C. Stone (G3FZL) and S. F. Weber (B.R.S. 19317): "Receiver Design for 70 cm." Mr. Sollom also contributed a unique series of articles entitled "Skip Distance Predictions for the Amateur Bands." The Predictions undoubtedly proved of interest to many members but insufficient evidence of their value was received at Headquarters to warrant the continuation of the series after six months.

In order to assist members desirous of obtaining a transmitting licence, Mr. B. W. F. Mainprise, B.Sc.(Eng.), A.M.I.E.E. (G5MP), contributed a series of six articles entitled "The Radio Amateurs' Examination—Model Questions and Answers."

Regular monthly features were contributed by Messrs. W. H. Allen, M.B.E. (G2UJ), "Around the V.H.F.s," and A. O. Milne (G2MI), "The Month

on the Air." Messrs. M. Barlow (G3CVO) and H. F. Knott (G3CU) contributed bi-monthly articles on Amateur Television and the single sideband system of transmission respectively. Mr. Barlow also contributed the first three of a new series of articles entitled "Television Transmission for the Amateur."

Rules for, and reports of, Contests again occupied a good deal of space. Other regular features included Résumés of the Proceedings at Meetings of the Council, Regional and Club News, and lists of New Members. "It's Topical"—first introduced in the previous volume—was continued and extended.

The Council records its thank to all contributors to Volume 28 of the BULLETIN, and also to the Society's Advertisement Manager (Mr. Horace Freeman) who succeeded in obtaining somewhat more advertising for that Volume than for Volume 27. Income to the Society from this source amounted to £2,733 compared with £2,664 for the previous year.

Membership

For the fifth successive year a fall in membership has to be recorded. The comparative figures for the past few years are given in the following table:

Grade	Sept. 30 1948	June 30				
	1948	1949	1950	1951	1952	1953
Corporate :						
Home	12,336	11,851	10,936	10,119	9,578	9,077
Overseas	651	672	672	700	775	840
Life	90	95	105	107	116	129
Honorary	8	8	7	7	8	9
Associates	1,354	1,412	1,303	1,201	1,148	1,135
Totals	14,439 (+569)	14,038 (-401)	13,023 (-1015)	12,134 (-889)	11,625 (-509)	11,190 (-435)

The Council had hoped that with an improvement in the National economy the decline in membership would have been arrested. An examination of the Society's records shows that a high proportion of those who failed to renew their subscription during the year, or who resigned, joined the Society within the last few years. Very few pre-war members allowed their subscriptions to lapse.

The number of amateur transmitting licences in force in the United Kingdom as at June 30, 1953, was 7,718, compared with 7,787 as at the same date in 1952 and 7,677 a year earlier.

Affiliated Societies

During the year the Council granted affiliation to 15 Societies and Clubs. As at June 30, 1953, 118 Societies and Clubs were in affiliation, compared with 132 a year earlier. Since the end of the year a number of Societies who allowed their subscriptions to elapse have renewed their affiliation.

Long Service Recognised

At the February meeting of the Council, Mr. William Arthur Scarr, M.A. (G2WS) (Past President) was elected an Honorary Member in recognition of his long service to the Society. Mr. Scarr left England during September, 1952, to take up a new appointment with the British Council.

International Affairs

In August, 1952, the then President (Mr. F. Charman) and the General Secretary represented the Society at the 25th Anniversary meeting in Copenhagen of the Danish National Society (E.D.R.). Whilst in Denmark the Society's repre-

sentatives took the opportunity of discussing matters of mutual interest with representatives of the other European Societies present at the meeting. Preliminary discussions also took place in readiness for the forthcoming I.A.R.U. Region I Conference. This Conference was duly held in Lausanne, Switzerland, during May, 1953, when the R.S.G.B. was represented by Mr. R. H. Hammans and the General Secretary. Mr. A. O. Milne attended in his capacity as Hon. Secretary, Region I Bureau Committee. The Conference was supported by representatives of 13 European Societies. The business of the Conference was transacted through an Administrative and a Technical Committee. A full account of the work done by these two Committees appeared in the July and August, 1953, issues of the BULLETIN.

The Conference decided, unanimously, that each National Society should be asked to make a financial contribution, based on the number of licences in each country, to enable the work of the Region I Bureau to progress. The Conference also elected an International Committee, comprising representatives of four European Societies. The task of the International Committee will be to take such steps as seem appropriate to safeguard the interests of all radio amateurs in Region I. The Committee has already held one meeting in London when a draft constitution was agreed for submission to the Member Societies in the Region.

It will be a primary responsibility of the International Committee to prepare for the next I.T.U. Administrative Conference, which is expected to take place in Europe during 1957. The Council appreciates the great importance of establishing a strong case in support of the Amateur Service prior to that Conference.

Licence Matters

Negotiations carried out by the G.P.O. Liaison Committee resulted in the release of the remaining portion of the 21 Mc/s band (21.2-21.45 Mc/s) on October 10, 1952, and to the raising of the maximum power permitted in the 420 Mc/s band from 25 watts to 150 watts.

During May, 1953, the G.P.O. announced that, in accordance with the provisions of the Atlantic City Radio Regulations, the allocation to U.K. amateurs in the band 1715-2000 kc/s would be reduced to 200 kc/s (1800-2000 kc/s). Although difficulties were foreshadowed, due to the re-arrangement of maritime allocations in the band concerned, the Council is satisfied that members generally have accepted the situation, realising that had it not been for the presence of R.S.G.B. representatives in Atlantic City during 1947, U.K. amateurs would probably by now have lost all frequencies in the "Top Band." The Council wishes to emphasise that the United Kingdom is the only major administration in Europe which permits its amateurs to use that band.

The continued presence in exclusively amateur bands of commercial and broadcasting stations has been the subject of a number of protests by the Society to the G.P.O. Unfortunately the Post Office appears to be quite unable—presumably because the United Kingdom is itself at fault—to take effective action to stop this abuse of international agreements. In view of that fact the Council feels that it must now openly protest against the action of those Governments which have contravened, and are still contravening, the Cairo and/or Atlantic City Radio Regulations by permitting unauthorised stations to operate in bands exclusively allocated, by international agreement, to the Amateur Service. The Society will continue to press for the transfer of such stations from all exclusive amateur bands.

During the year the G.P.O. introduced a Boy Scout Training Licence which permits 5 watt operation on a spot frequency in the 144-146 Mc/s band.

The G.P.O., after receiving a request from the Liaison Committee, agreed to permit qualified radio amateurs to operate Maritime Mobile equipment on frequencies in the 28 Mc/s band. The Committee's efforts to obtain permission for Maritime Mobile operation to take place in the 7, 14 and 21 Mc/s bands have not, so far, proved successful.

The Council has been informed by the G.P.O. that a new Amateur Transmitting Licence is in course of preparation. It is anticipated that the new licence will remove some of the irksome conditions which at present tend to restrict portable operation.

Television Interference

The Council is aware of the difficulties which have arisen in some parts of the country, due to the choice by television receiver manufacturers of intermediate frequencies which are approximately the same as frequencies allocated to the Amateur Service. The Council, through its Technical Committee, has pressed the G.P.O. to exonerate an amateur from blame when it can be shown that (a) his transmitter is so designed as not to emit harmful harmonics; (b) the interference is due to the choice of an unsuitable intermediate frequency by the set maker.

The Council hopes that the G.P.O. will recognise the soundness of the arguments which have been advanced by the Society in this particular aspect of the TVI problem and that a just settlement will eventually be reached. (A statement outlining a new G.P.O. policy in connection with certain important aspects of the TVI problem appears elsewhere in this issue.—Ed.)

The Council regrets to note that there is an increasing tendency on the part of transmitting members to keep off the air during the main television hours. It is the view of the Council that amateurs should endeavour to accept the challenge of TVI and take such steps as may seem to be desirable to combat it.

The Council is grateful to Mr. R. L. Varney, A.M.I.E.E. (G5RV), and others who, by example, have demonstrated that the problem of harmonic radiation is capable of solution. The Council is also grateful to Mr. H. Whalley, M.A. (G2HW) for contributing details of the Darwen-Blackburn Plan to the BULLETIN.

London Lecture Meetings

During the period from November, 1952, to March, 1953, three lecture meetings were held at the Institution of Electrical Engineers. A list of the speakers and their subjects follows:

November 21, 1952: P. H. Sollom, B.Sc., A.C.G.I. (G3BGL)—"The Sky Beam Propagation Problem."

January 30, 1953: R. H. Hammans (G2IG)—"Single Sideband Transmissions."

March 20, 1953: F. Charman, B.E.M. (G6CJ)—"V.H.F. Aerial Developments."

At the meeting held in October, 1952, the National Field Day film taken earlier that year was screened for the first time.

The Council takes this opportunity of thanking the Society's Film Curator (Mr. J. R. Wenn) for his valued services.

Amateur Radio Exhibition

The Sixth Annual R.S.G.B. Amateur Radio Exhibition, held in London during the last week of November, 1952, was opened by Lt.-Col. Sir Ian Fraser, C.H., C.B.E., M.P., a Past President of

the Society. As in previous years, the Exhibition was well supported by manufacturers and technical publishers. Outstanding exhibits were also staged by the War Office and the Air Ministry.

Representation

During the year covered by this Report, Regional or County Meetings were held in five centres. Details of the various meetings are given below.

Region	Venue and Date	Approx. Attend.	Council Representatives Present
1	Liverpool (R.) (Sept. 14)	130	Messrs. H. A. Bartlett (G5QA), C. H. L. Edwards (G8TL), and the General Secretary.
6	South'ton (C.) (Oct. 12)	40	Messrs. D. A. G. Findlay (G3BZG), R. Walker (G6QI), and the General Secretary.
7	London (R.) (Nov. 1)	200	The President (Mr. F. Charman, G6CJ), Messrs. A. O. Milne (G2MI), L. Cooper (G5LC), J. Hum (G5UM), and the General Secretary.
9	Bristol (C.) (Oct. 5)	160	The President (Mr. F. Charman, G6CJ), Messrs. H. A. Bartlett (G5QA), L. Cooper (G5LC), F. G. Lambeth (G2AIW), R. Walker (G6QI), and the General Secretary.
14	Falkirk (R.) (Oct. 18)	70	The President (Mr. F. Charman, G6CJ), Messrs. H. A. Bartlett (G5QA), and the General Secretary.

(R.) Regional Meeting. (C.) County Meeting.

In view of the need to effect economies the Council decided to hold no official meetings during the second half of the financial year. Local activities were, however, maintained at a high level, particularly in those towns and areas where an attractive programme was arranged and well publicised. The assistance of the local Press in this connection is acknowledged.

The Council records its thanks to all Regional, County, District, Town and Area Representatives for their loyal and valued support.

Technical Committee

The Technical Committee, under the Chairmanship of Mr. H. A. M. Clark, B.Sc.(Eng.), M.I.E.E. (G6OT), has again rendered most valuable service to the Society. Individual members of the Committee have also given valuable assistance to the Editorial staff in connection with articles submitted for publication.

The Committee has devoted much time and thought to the problem of interference to television reception by amateur transmitters and has given advice wherever possible to members who have experienced difficulties.

Technical Booklets

The Council regrets that it has not yet been possible to publish any new Technical Booklets. An improvement in the Society's financial position will enable further titles to be prepared.

Radio Amateurs' Examination

The number of candidates for the two examinations held during the year was rather less than in the previous year (546 compared with 584) but the percentage of passes remained about the same (80%). As in previous years courses of instruction were held at Technical Colleges and Institutes in various parts of the country.

Slow Morse Transmissions

Slow Morse practice transmissions for the benefit of those anxious to obtain an amateur transmitting licence were radiated daily on frequencies in the 1.8 Mc/s band.

The Council records its thanks to all who assisted in the operation of this service which was organised, once again, by Mr. C. H. L. Edwards, A.M.I.E.E. (G8TL).

Contests

The 1952 Direction Finding Contest was won by Mr. J. A. Walley, of Slade Radio, and the 1953 Affiliated Societies' Contest by the Coventry and Stourbridge Societies who tied for first place. National Field Day resulted in a win for Bristol for the second year in succession. The runners-up were Coventry with East Molesey leading the "A" and Croydon the "B" stations.

The Senior B.E.R.U. Contest attracted a fair number of entries but support for the Junior, Receiving and Telephony Contests was again rather disappointing. There was good support for the "Top Band," Low Power and 2 Metre Contests and also for the 70 cm. Tests.

The task of drawing up the rules for, and subsequently judging, the various contests and field events again placed a great deal of responsibility on the members of the Contests Committee who are cordially thanked for their services. The Chairman of the Committee was Mr. R. Walker (G6QI) up to June, 1953, when Mr. W. H. Matthews (G2CD) took over. Mr. Walker then became Hon. Secretary in succession to Mr. S. E. Fryer (G3ERO), who resigned from that office owing to pressure of private business.

V.H.F. and U.H.F. Work

Although interest in long distance communications appears to have fallen off in recent years, due to a spell of poor radio conditions, interest in v.h.f. and u.h.f. work is now higher than it has ever been. In this connection the Council has noted with satisfaction that the London U.H.F. Group, led by Mr. P. A. Thorogood (G4KD), now attracts an attendance of up to 50 members at its monthly meetings.

The introduction of 2 m and 70 cm. Regional Ladders in the BULLETIN helped to stimulate interest in these two bands.

Flood Disaster

During the last weekend in January, 1953, the East Coast of England and many parts of Holland were ravaged by a flood disaster of immense magnitude. British amateurs in the stricken areas immediately placed their stations and their services at the disposal of those in authority. In at least one area (Hull-Grimsby) local amateurs took over temporarily the duties of a Post Office Coast Station (Humber Radio) when that station was put out of action. The Council is glad to place on record its warm appreciation of the services rendered by members during the emergency.

Immediately after the floods subsided the Council appointed a special Committee to look into the possibilities of setting up a National Emergency Amateur Radio Communications Service. As the result of publishing a preliminary notice in the BULLETIN an excellent response came from the membership. Steps are now being taken to establish the Service on a national basis.

QSL Bureau

The organisation of the Society's QSL Bureau was again in the hands of Mr. Arthur Milne (G2MI), who had the assistance of a number of

sub-managers. The Council records its thanks to all who contributed to the successful operation of the Bureau.

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

Although no new edition was published during the year the Call Book Editor (Mr. John Tyndall, G2QI), maintained the master record in readiness for the time when a new edition could be put in hand. As members are aware, the Third Edition is now in course of preparation.

Council Meetings and Attendances

The Council met on 16 occasions during the year. A list of attendances follows:

Name	Possible Attendances	Actual Attendances
Auchterlonie, I. D.	3(a)	3
Barlett, H. A.	16	16
Charmant, F.	16	15
Cooper, L.	16	14
Edwards, C. H. L.	16	16
Findlay, D. A.	15	13
Hammans, R. H.	8(b)	7
Herdman, T. L.	8(c)	2
Hicks-Arnold, F.	8(b)	8
Hum, J. H.	16	16
Lambeth, F. G.	8(c)	8
Milne, A. O.	16	15
McConnell, H.	10(d)	8
Newham, L. E.	8(b)	8
Scarr, W. A.	8(c)	2
Walker, R.	9(d)	9
Winsford, P. W.	16	14

(a) Elected Jan., 1953. Resigned Feb., 1953. Re-elected

June, 1953.

(b) Elected Jan., 1953.

(c) Retired Dec., 1952.

(d) Retired Dec., 1952. Re-elected June, 1953.

(e) Resigned Feb., 1953.

Headquarters

Council places on record its appreciation of the continued loyalty and hard work put in by Headquarters' staff.

Special mention must be made of the additional work which has befallen the General Secretary and Miss Gadsden, occasioned by the preparation of the many documents relating to the Articles of Association.

Council is very conscious of the unstinting efforts so freely and loyally given by J.C. and M.G.

Conclusion

In retrospect, the year has been a hard and difficult one. However, emerging from the stormy earlier months comes a feeling of better understanding of the many conflicting viewpoints and a better appreciation of the many difficulties facing both members and Council alike.

The end is in sight of the long and arduous work of revising the Articles of Association, and with reasonable hopes of having the Society's finances improved ere many more months have passed, we can confidently look forward to applying our efforts to those outstanding items which will improve the active side of our hobby. A strong and virile future is indicated.

For and on behalf of the Council,

LESLIE COOPER,

President.

Society's Legal Advisers

THE Council has appointed Lee Ockerby Johnson & Co., 3 & 4 Wardrobe Place, Doctors Commons, London, E.C.4, as Legal Advisers to the Society in succession to Stanley Johnson and Allen.

The TVI Problem

New Post Office Policy Announced

IN January 1952, at a meeting between representatives of the G.P.O. and the R.S.G.B., the subject of the response of television receivers to signals from amateur stations was raised. The discussion was with reference to cases in which there is no appreciable harmonic radiation from the transmitter and the only emission is within a licensed frequency band. It was pointed out by the R.S.G.B. that, due to inadequate input selectivity, and other undesirable features of the design of the receiver, signals from an amateur transmitter can cause the receiver to respond—

- (a) due to image response within the amateur band,
- (b) due to leakage into the i.f. amplifier where the pass-band of the latter embraces an amateur band,
- (c) due to cross-modulation and blocking in the early stages of the receiver.

Although the representatives of the G.P.O. were sympathetic towards radio amateurs in the case of image response the Chairman of the meeting (Col. A. H. Read) stated it was the considered policy of the G.P.O. at that time, that the responsibility for interference with television from causes (b) and (c) must be borne by the amateur and that he must close down on the offending frequencies until the receiver was modified to eliminate the interference.

The G.P.O. representatives did, however, agree to approach the British Radio Equipment Manufacturers' Association with a view to drawing their attention to these phenomena and asking that every possible care should be taken to avoid the trouble. At the same time it was stated that a letter would be sent by the G.P.O. to any complainant where it had been established that the fault lay with the receiver manufacturer, suggesting that the set should be modified to overcome the effects of interference from amateur transmitters.

In June of this year a further meeting took place between representatives of the G.P.O. and the R.S.G.B. At that meeting the Society's representatives pointed out that, since the earlier meeting, the number of television receivers had increased several fold and many new models had been introduced by the industry. They also explained that many of these sets have i.f. pass-bands which embrace amateur frequencies or suffer from cross-modulation when in the vicinity of nearby transmitters. They pointed out that in most cases the addition of a filter to the receiver would permit satisfactory reception of the television programme but if the owner of the receiver refuses to complain to the manufacturer, or if the manufacturer refuses to fit a filter the amateur must remain permanently closed down on those frequencies which cause interference.

The R.S.G.B. representatives emphasised that it was the view of the Society that the amateur should not be held responsible for the rectification of faults that can only be remedied by modifications to the receiver. They pointed out that it is, in fact, not permissible for an amateur to modify equipment which is under guarantee, nor equipment which is rented under a hire-purchase agreement.

The Society's representatives asked that if the G.P.O. is satisfied that a particular case of interference is not due to unlicensed emissions from a neighbouring amateur transmitter, and the fault can be remedied only at the receiver, the onus for

preventing the reception of the licensed emissions from the station in question should be on the complainant and the manufacturers of the receiver. The Society's representatives also expressed the view that the licensee of the amateur station should not be expected to modify the receiver nor to pay for the cost of modifications carried out by another party.

New G.P.O. Policy

As a result of the foregoing discussions the G.P.O. has now reviewed its policy in respect to interference by amateurs with sound and television reception.

The G.P.O. has decided that to enable the Radio Industry to make the necessary arrangements the present policy shall be continued until 30th September 1954. After that date, the G.P.O. will continue to expect the amateur to suppress all harmonics outside his authorised bands, but once this has been done, if the wanted signal is good and the interference is due to the choice of the i.f. for the complainant's receiver, or to the image response of his receiver, the G.P.O. will allow the amateur to continue operating after an interval of one month from the date on which the cause of the trouble is notified to the complainant by the Post Office.

The G.P.O. does not feel justified in applying the same arrangement automatically where the interference is proved to be due to the close proximity of the amateur transmitter to the complainant's receiver. In the few cases which are likely to arise, the G.P.O. will continue to look to the amateur to prevent the interference.

It is the intention of the G.P.O. to confine these new arrangements to areas in which the signal which the complainant is trying to receive is a good one. The G.P.O. is at present reviewing the whole question of interference to television in fringe areas. Members will appreciate that this is a complex problem and is likely to take a little time to sort out. In the meantime the G.P.O. wishes to make it clear that it will have to look to amateurs to cease any interference which their operations might cause in television fringe areas.

TVI in Reverse

IN the House of Commons on October 21, 1953, Mr. Mitchison asked the Assistant Postmaster General whether he is aware that some television sets cause interference with the reception of sound broadcasts; and what steps he proposes to take, by way of promoting legislation or otherwise, to control the manufacture of television sets, so that purchasers may not find themselves unable to use them without breach of a condition of their receiving licences.

Mr. Gammans, in reply, said, "I am aware of this difficulty, but I do not think we need power to control manufacture of television sets. Radio manufacturers are fully alive to the problem and I am confident that, in their own interests, they will produce sets that meet the licence conditions." (Indeed we hope so!—Ed.)

LONDON U.H.F. GROUP

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road,
at 7.30 p.m. on December 3.
All u.h.f. enthusiasts welcome.

Report of Extraordinary General Meeting

THIS Report of the Extraordinary General Meeting held on October 23, 1953, should be read in conjunction with the Minutes of the Meeting as published on Page 198 of this issue.

Opening Remarks by President

Mr. Cooper stated that the Special Resolution which he intended to move was the same as the one submitted to the meeting on February 27, 1953, except that the reference to an Entrance Fee had been deleted.

Since the previous meeting the Council had decided to budget for a Corporate Membership subscription of 27/6 and a statement explaining their reasons for asking for this sum had been published in the Society's Journal.

Mr. Cooper then moved the Special Resolution and **Mr. L. J. Fuller** seconded.

Discussion

Mr. Taylor felt that the proposed ceiling was too low, a figure of £3 3s. would, he suggested, be more in keeping with the status of the Society.

Mr. Newton enquired how much it cost the Society to send the BULLETIN to members who are up to three months overdue with their subscription.

The General Secretary estimated that the cost was approximately one shilling per month.

Mr. Lawson suggested that all subscriptions should become due on the same date.

Mr. Deacon in a long speech expressed the view that the subscription to be paid by Corporate Members should not exceed 25/- for the current year. He criticised various statements and editorial comments published in recent issues of the BULLETIN.

Mr. Walker explained that he voted in Council for a figure of 25/- because he felt it was an effective way of proving to the membership the inadequacy of that amount.

Mr. Milne emphasised that the purpose of the Special Resolution was to fix ceiling figures.

Mr. Wilkins felt that the Council should be allowed to get on with the job. If members are not satisfied they have an opportunity each year to make changes.

Mr. Jackson felt that many members had lost sight of the main point "what is the Society worth to me?" He referred to encroachments into the amateur bands and the TVI problem. He suggested that the speaker who had criticised the Special Resolution (**Mr. Deacon**) would probably criticise any resolution. We should keep in mind the value of the Society, what it means to us as individuals and what we hope to get from it in the future. It has a good standing in the eyes of the world today.

The President referred briefly to his recent visit to the D.A.R.C. Convention in Germany and of the high esteem in which the R.S.G.B. is held abroad. **Mr. Cooper** hoped that the Membership would, in December, approve the new Articles of Association so that the Society could get back to doing its real job—the promotion and advancement of Amateur Radio.

Mr. Aldred did not accept the argument that members cannot afford an extra few shillings for their subscription. He reminded the meeting that the Council had been elected by the membership to govern the Society. This they could not do effectively unless provided with adequate financial resources. He believed that many senior members

would willingly contribute an extra amount of money each year if it could be shown that the new subscription rates were a hardship to young enthusiasts.

Mr. North, holding up a packet of 20 cigarettes, commented that prior to the war the packet would have cost 1/-. Today the price is 3/7. Everything is two or three times more expensive than in the days before the war. In supporting the resolution he hoped the Council would do their best to economise in the matter of travelling expenses.

The President explained that the item for travelling expenses had risen recently because several Provincial Members were now serving on the Council.

Mr. Cawson enquired whether the President would accept an amendment to the Special Resolution.

The President informed the meeting that, after taking legal advice, he had decided not to accept an amendment to the Resolution.

Mr. Cawson, in a lengthy speech, criticised the financial statement published in the September issue of the BULLETIN. He did not accept the view that no working capital was available to finance technical booklets. He failed to see the necessity, at this stage, of scheduling 1/1 per member to pay for the cost of a year book. As the Zonal Scheme of representation (if approved by the Membership in December) would not operate until 1955, he could see no justification for setting aside a further 1/1 per member for that purpose. He considered that past losses should be recovered at a rate of not more than 4d. per member, instead of 10d. as scheduled. He could see no justification for setting aside a further 4d. per member for the BULLETIN. Referring to the estimated loss of membership, **Mr. Cawson** expressed the view that the figure of 5% was much too small. He suggested that the Council's estimated figure of 26/3 could be reduced to 23/5 without serious difficulty. He felt that a Corporate rate of 25/- would be adequate for the current year.

The President explained to the meeting that most of the points raised by **Mr. Cawson** had been answered either by himself or by the General Secretary at the recent Region 1 Hamfest held in Manchester.

Mr. Glaisher commented that many U.K. amateurs pay an R.S.G.B. subscription for U.S. and other foreign amateurs. He wondered whether the proposed overseas rate of 21/- was not too high.

The General Secretary explained that the new rate would be less than 3 dollars in U.S. currency. He also pointed out that the annual subscription to QST is 36/-, for which sum no privileges whatsoever (except QST) accrue to persons outside the United States.

Mr. Thorogood expressed the view that members generally do not want the Council to provide them with a year book free of charge. Money is, however, urgently needed in case it becomes necessary for the Society to engage in litigation. Money is also required for a new Amateur Radio Handbook.

Mr. Lambeth then moved and **Mr. O'Brien** seconded that the Special Resolution be now put to the vote.

The result of the voting and subsequent business is set out in the Minutes.

Amateur Radio EXHIBITION

Royal Hotel, Woburn Place, London, W.C.1

from
Wednesday,
November 25th,
1953



to
Saturday,
November 28th,
1953

THE EXHIBITION WILL BE OPENED AT 12 NOON ON
WEDNESDAY, 25th NOVEMBER BY BRIGADIER ERIC COLE, C.B.E.
(CHIEF SIGNAL OFFICER, SOUTHERN COMMAND)

Hours of Opening
11 a.m. to 9 p.m.

Admission
Charge 1/-

EXHIBITORS' CATALOGUE

AIR MINISTRY

Royal Air Force.

VISITORS to the Royal Air Force stand can see a demonstration of the third-line servicing of radio sets as carried out at No. 30 Maintenance Unit. Repairable sets collected from individual units are broken down into sub-assemblies, repaired, tested, and when perfect, re-assembled into complete serviceable sets. On the stand is a reproduction of the assembly line at No. 30 Maintenance Unit; the airmen on the repair benches are dealing with sets collected in the usual way.

Among the exhibits are a number of up-to-date test sets, and an example of the 10-channel v.h.f. equipment which is fitted to most service aircraft.

Radio is of paramount importance to the Royal Air Force as is the need for skilled technicians to service and operate it. Many career opportunities exist for enthusiasts; details may be obtained from the stand or from any Royal Air Force Recruiting Centre. Those interested in *spare-time* activities should write to the Officer Commanding, No. 3700 (County of London) Radar Reporting Unit, 77 Hallam Street, London, W.1. Telephone LANgham 5511.

AUTOMATIC COIL WINDER AND ELECTRICAL EQUIPMENT CO., LTD.,

Winder House, Douglas Street, London, S.W.1.

ON the AVO stand are shown a wide range of electrical and electronic instruments employed in the radio field, many of which are finding applications in every industry using electrical power in any form. Visitors are invited to ask questions about the instruments which are unboxed for internal inspection. A catalogue giving full details of all the test gear exhibited is available on request.

The Company—the biggest coil winding machine manufacturer in Europe—is also displaying examples of its smallest machines. More than 30 different models are available.

BRITISH AMATEUR TELEVISION CLUB

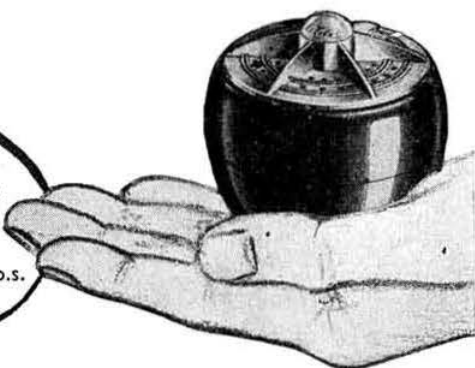
THE British Amateur Television Club is displaying simple TV transmitting equipment including various units which have been described in the R.S.G.B. BULLETIN. Visitors are invited to "Televise their own call-signs" with the aid of a caption scanner made by G2BCB. Converters for 70 cm and a full range of B.A.T.C. publications are also exhibited.

2 New MODELS

~~ACOS~~ quality crystal
microphones at a
reasonable price

MIC 33-1: A crystal hand or desk omni-directional microphone for the high quality public address and tape recording field, incorporating a specially designed acoustic filter giving a response flat from 30 to 7,000 c.p.s.

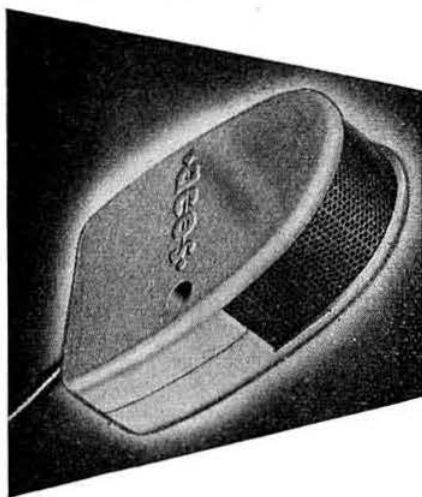
RETAIL PRICE £2-10-0d.



Ideal for tape and disc recording,
P.A. and amateur radio.

MIC 35-1: A general purpose hand microphone of robust construction with substantially flat response from 50 to 5,000 c.p.s. Suitable for recording apparatus, Public Address equipment etc.

RETAIL PRICE £1-5-0d.



always well ahead

ACOS devices are protected by patents, patent applications and registered designs in Great Britain and abroad.

COSMOCORD LIMITED • ENFIELD • MIDDLESEX

COSMOCORD LTD.,

Enfield, Middlesex

IN addition to their existing range of products, Cosmocord, Ltd., are exhibiting a new range of general purpose microphones suitable for home recording and for use by Amateur Radio enthusiasts. The latest developments in gramophone pickups and cartridges are also on show. the H.G. P40 pickup—a new addition to the Hi-g series—is designed to track with ease all the latest types of long-playing records which are now on the market. It has a tracking weight of only 8 grammes for both standard and long-playing records ensuring extremely low record and stylus wear.

DENCO (CLACTON) LTD.,

357/9 Old Road, Clacton-on-Sea, Essex.

THIS exhibit is devoted to components for the home constructor and includes i.f. transformers, filters, chokes, coils, coil turrets, television components and other accessories. Several new products are also shown including a modulated test oscillator and components for the *Universal*, *Supervisor* and *Magnaview* large screen televisions and for car radio.

A new innovation are the "tailor made" chassis seen together with a range of blank aluminium and steel chassis all of which are proving popular in the amateur field.

Technical bulletins giving comprehensive details of all these products are on sale.

THE GENERAL ELECTRIC CO., LTD.,

Magnet House, Kingsway, London, W.C.2

QUALITY reproduction is featured by G.E.C. whose exhibits include a new metal-cone loudspeaker, ribbon microphone heads, a 30 watt amplifier and a 12 watt home-constructor amplifier with pre-amplifier.

The BRT400 communications is exhibited in contrast with an experimental bedside receiver, using two transistors, for local station reception.

Display panels carry the Company's germanium diodes, as well as the *Osram* receiving, amplifying and transmitting valves. The "Q" series of special Service valves for use in aircraft, transport and industrial plant control equipment are shown, whilst a new publication "Art and Science in Sound Reproduction" is on sale.

DAVID GODWIN,

37 Dollis Hill Avenue, Cricklewood, London, N.W.2.

THE *Minimitter* transmitter foundation units, consisting of four basic items, have been designed to allow the radio amateur to assemble a complete TVI-proof table top transmitter at minimum cost. The units comprise a band-switched exciter, pre-tuned for five bands, incorporating a high stability v.f.o.; a power amplifier, using two tetrodes in parallel, with a band-switched pi-section tank circuit; a high

Osram

VALVES

for Transmitting, Receiving and Industrial use

G.E.C.

ELECTRONIC DEVICES

STAND N° 15

R.S.G.B. EXHIBITION
NOV. 25th—28th

or write to Osram Valve and Electronics Dept. for full technical information on all these products.

GERMANIUM DIODES.

A complete range of G.E.C. Germanium Diodes will be on view. These crystals have many advantages over the thermionic diode including small size, low capacitance, long life and require neither valve holders nor heater supply. Applications include modulation meters, speech clippers, standing wave indicators, wave meters, single side band telephony filters, field intensity meters, V.H.F. mixers signal and A.G.C. rectifiers etc.

CATHODE RAY TUBES

television and instrument types

GEIGER-MULLER TUBES

PHOTOELECTRIC CELLS

The new Osram valve amplifier book "Art and Science in Sound Reproduction" will be on sale on the stand—price 2/6d. (by post 3d. extra).

THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, KINGSWAY, LONDON, W.C.2

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

217

'AVO' Precision ELECTRICAL TESTING INSTRUMENTS

A dependably accurate instrument for testing and fault location is indispensable to the amateur who builds or services his own set. Stocks are now available of these two famous "Avo" Instruments. If you have any difficulty in obtaining one locally, please send us the name and address of your nearest Radio Dealer.



D.C. VOLTAGE	A.C. VOLTAGE
0-75 millivolts	0-5 volts
0-5 volts	0-25 "
0-25 "	0-100 "
0-100 "	0-250 "
0-250 "	0-500 "
0-500 "	
D.C. CURRENT	RESISTANCE
0-2.5 milliamps	0-20,000 ohms
0-5 "	0-100,000 "
0-25 "	0-500,000 "
0-100 "	0-2 megohms
0-500 "	0-5 "
	0-10 "

The UNIVERSAL AVOMINOR

A small but highly accurate instrument for measuring A.C. and D.C. voltage, D.C. current, and also resistance. It provides 22 ranges of readings on a 3-inch scale, the required range being selected by plugging the leads supplied into appropriately marked sockets. An accurate moving-coil movement is employed, and the total resistance of the meter is 200,000 ohms.

The instrument is self-contained for resistance measurements up to 20,000 ohms and, by using an external source of voltage, the resistance ranges can be extended up to 10 megohms. The ohms compensator for incorrect voltage works on all ranges. The instrument is suitable for use as an output meter when the A.C. voltage ranges are being used.

Size: 4½ ins. × 3½ ins. × 1½ ins.
Nett weight: 18 ozs.

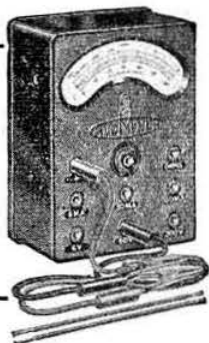
Price: £10:10:0

Complete with leads, interchangeable prods and crocodile clips, and instruction book.

GUARANTEE

The registered Trade Mark "Avo" is in itself a guarantee of high accuracy and superiority of design and craftsmanship. Every new Avominor is guaranteed by the Manufacturers against the remote possibility of defective materials or workmanship.

CURRENT
0-5 milliamps.
0-50 "
0-120 "
VOLTAGE
0-6 volts.
0-12 "
0-60 "
0-120 "
0-300 "
0-600 "
RESISTANCE
0-10,000 ohms
0-60,000 "
0-600,000 "
0-5 megohms



The D.C. AVOMINOR

A conveniently compact 2½-inch moving coil precision meter for making D.C. measurements of milliamps, volts and ohms. The total resistance of the meter is 100,000 ohms, and full scale deflection of 300 v. or 600 v. is obtained for a current consumption of 3mA. or 6mA. respectively.

Size: 4½ ins. × 3½ ins. × 1½ ins.
Nett weight: 12 ozs.

Complete as above.
Price: £5:5:0

• Complete descriptive Booklet available on application to the sole Proprietors and Manufacturers:

THE AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO. LTD.
WINDER HOUSE • DOUGLAS STREET • LONDON S.W.1 Telephone VICTORIA 3404-9

SEE OUR DISPLAY ON STANDS 25-26 R.S.G.B. EXHIBITION.

level modulator giving full power 'phone operation; a power supply providing all the necessary voltages to operate the above units and incorporating all the control switching needed for a complete station. An all-enclosing cabinet of pleasing design completes the equipment. Each unit may be purchased separately.

GRUNDIG (GREAT BRITAIN) LTD.,

Kidbrooke Park Road, London, S.E.3.

THE photographic background to the Grundig stand features a prominent radio amateur whose equipment includes a Grundig "Reporter" 700L two-speed tape recorder—the instrument which has made such a great name for itself in its first year. Compact, and complete with the unique Grundig condenser microphone, this efficient tape recorder is easily portable and swift in operation—two invaluable assets to the radio enthusiast.

Two-speed facilities — which provide one speed for music and singing (one hour of recording and play-back time at 7½ in. per second) and one for speech (two hours of recording and play-back at 3½ in. per second)—and magic eye tuning are embodied in the two Grundig products exhibited, namely, the "Reporter" and the Console 700C. While these tape recorders are alike in ability, they differ greatly in appearance, one is neat and obviously portable, the other is housed in a superb walnut cabinet designed for the studio.

A full range of Grundig accessories, including remote controls (hand and foot operated), telephone adapter, stethoscopic earset and a new mixer unit for combining several recordings are available for demonstration.

ILIFFE & SONS LTD.,

Dorset House, Stamford Street, S.E.1.

DISPLAYED on the Iliffe & Sons Ltd. stand are:—

Wireless World. Britain's leading technical magazine in the general field of radio, television and electronics; for over 40 years it has provided a complete and accurate survey of current technique. Of topical interest is a set of line and frame deflector coils made in accordance with the details in "Deflector Coil Construction," *Wireless World*, December 1952. Frame and line time-base units with fly-back e.h.t. using a voltage-trip'er are also exhibited. These units were described in "Modernising the *Wireless World* Television Receiver" which appeared in the *Wireless World* for May, June and July, 1953.

Wireless Engineer. Accepted by research engineers, designers and students as an international source of information for advanced workers. The editorial policy is to publish only original work, whilst the correspondence columns form a recognised debating ground.

Technical Books. Selections from the comprehensive Iliffe range covering many aspects of radio and television.

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SEE OUR EXHIBITS ON

STAND No. 16

OUR SERVICE to the Radio Amateur includes the supplying of a comprehensive range of well-made, attractive and robust cabinets for receivers and transmitters, chassis for modulators, amplifiers, converters, etc. We also make racks and panel assemblies.

We shall be pleased to send you our AMATEUR PRICE LIST.

For metalwork designed to customers' specifications please contact:—

E. J. PHILPOTT'S METALWORKS LTD.

CHAPMAN STREET, LOUGHBOROUGH.

Telephone No.: 2864

TROUBLED WITH TVI?

Better write PANDA and have done with it!

See the NEW **PANDA** on **STAND No. 9**

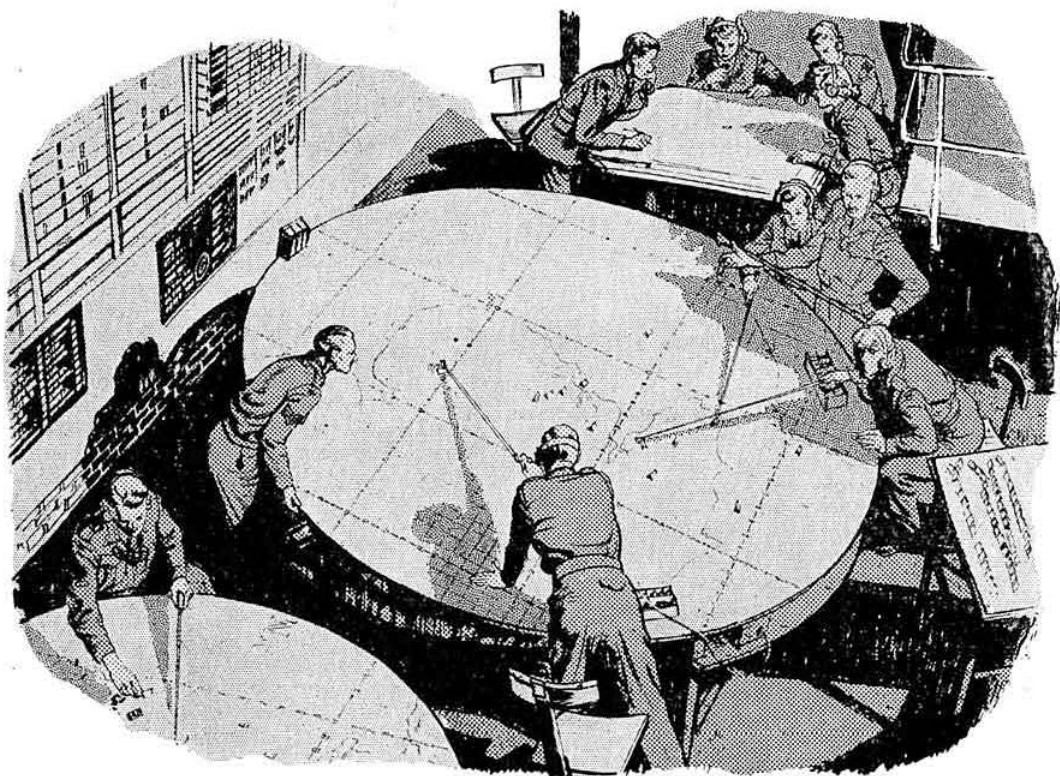
and arrange for a demonstration at your own QTH. If you are really interested in the PANDA we will put it through its paces in your own home in order to prove that this Table Topper does all that we claim. This is entirely without obligation. Subject to full approval we will then personally instruct you in its use, and if required even carry out a complete installation. The PANDA carries a 90-day guarantee.

Better write PANDA and have done with it!

Delivery is Immediate.

PANDA RADIO CO. 58 School Lane, Rochdale.

Works: 16-18 Heywood Road, Castleton, Rochdale. Export Dept.: 59-61 Union Street, London, S.E.1. Telephone: HOP 4567. Cables: "Allrite" London.



MANNING BRITAIN'S RADAR DEFENCES

There's a place for YOU in the R.A.F. part-time

In building up Britain's air defences the Royal Air Force needs a large, fully trained reserve of men and women on whom it can rely in any emergency. On their skill the whole fighting efficiency of the R.A.F. hinges — and there's a place for you among

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TO: ROYAL AIR FORCE (R.S.G.B. 78), VICTORY HOUSE, LONDON, W.C.2

Please send me particulars of part-time service with the R.A.F.

NAME

ADDRESS

(If ex-R.A.F. or W.R.A.F., please give rank, trade and number)

PANDA RADIO COMPANY,

58 School Lane, Rochdale, Lancashire.

THE 1954 model of the popular Panda Table Topper sets a new standard in equipment specially designed for the amateur. Important features include a heavy gauge chassis and panel, both of which are cadmium plated and passivated. The case is stronger, bonderised and available in black wrinkle or in various colours of "hammer tone." A recessed lid, making good electrical contact, ensures a high degree of screening. The new v.f.o. is temperature compensated to provide the high stability demanded by modern standards. Handles are fitted to the cabinet for easy handling. All power leads are filtered and screened.

The aerial tuning unit designed for use with the Panda Table Topper demonstrates the ease with which it can be switched from band to band when a long wire aerial is employed.

It is hoped that the Panda Cub, a new low power, band-switched, moderately priced, self-contained phone/c.w. transmitter, will be on show for the first time. The Cub covers all amateur bands from 1.8 to 28 Mc/s.

E. J. PHILPOTT'S METALWORKS LTD.,

Chapman Street, Loughborough.

AS in previous years, standard designs of metalwork for the amateur constructor are displayed. No major alterations have been made during the last year, fashion in equipment remaining unchanged. There is, however, a

tendency for brighter and more colourful finishes, examples of which are exhibited.

The Company is anxious to keep abreast of present trends and, being mindful of the needs of the amateur, invites suggestions and criticisms from visitors to the Exhibition in order that services already available can be still further improved.

RADIO SOCIETY OF GREAT BRITAIN,

New Ruskin House, Little Russell Street,
London, W.C.1.

Headquarters Stand

A FULL range of R.S.G.B. publications is displayed including the Third Edition of the *R.S.G.B. Amateur Radio Call Book*—the most up-to-date list of Amateur Radio stations in the United Kingdom and Eire. In addition, a supplement to "Television Interference," which lists technical data on more than 300 recently introduced television receivers, and the *British Isles Two Metre Zone Plan Map* are also on sale.

Copies of the Society's Journal—now in its 29th year—are available to prospective members at a specially reduced price.

R.S.G.B. pennants, members' notepaper, car plaques and badges are offered at list prices. Orders may be placed for subscriptions to *QST*, *CQ* and *Audio Engineering*, and for a wide range of other American publications. Limited quantities of the 30th Edition of the *Radio Amateur's Handbook* and the *A.R.R.L. Antenna Book* are on sale.

A selection of modern amateur-built equipment loaned by members of the Technical Committee

R.S.G.B. Exhibition STAND No. 10

S.E.I. PRECISION POTENTIOMETERS
QUARTZ CRYSTAL UNITS
"GECALLOY" RADIO & TV CORES
SAPPHIRE GRAMOPHONE NEEDLES
SELENIUM & COPPER OXIDE
RECTIFIERS
PORTABLE & PANEL MOUNTING
INSTRUMENTS.

**SALFORD ELECTRICAL
INSTRUMENTS LTD.**

SILK STREET, SALFORD 3, LANCs.



VISIT US ON
STAND 27
AT THE
R.S.G.B. Exhibition

*We are displaying a full range of
Aerials for Transmitting,
Receiving and Television.*

TELECRAFT LTD.

QUADRANT ROAD,
THORNTON HEATH, SURREY.

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CQ... CQ... CALLING CQ... CQ... CQ

YOU NEED THIS

GRUNDIG

TAPE RECORDER...



The Grundig "Reporter" 700L has rapidly become an indispensable part of the enthusiast's equipment. It is ideal for recording QSOs, faint contacts, rare DX, for putting out CQ calls, for quality monitoring (including Morse!) as well as for "taping" educational lectures and experimental technical information.

GRUNDIG "Reporter" 700L
2 - SPEED TAPE RECORDER
 as compact and portable as
 a suitcase PRICE 80 GNS.
 including Condenser Microphone.
H.P. terms available.

Grundig Accessories

HIGH-FIDELITY CONDENSER MICROPHONE. Type G.C.M.1.

As sensitive as the human ear.
 Price £6 6s.



JACK PLUGS. Type J.1.
 Price 5/- each.

STETHOSCOPIC HEAD SET. Type Stet.1.



Comprises small speaker and very light, plastic ear tubes.
 Price £3 3s.

SINGLE HEADPHONE. Type SE.1.

Comprises small speaker and plastic ear loop.
 Price £2 10s.

TWO - WAY TELEPHONE



ADAPTOR. Type TA.1.

Attaches to telephone by rubber suction cup without alteration to instrument.
 Price £3 3s.



MIXER UNIT. Type GMU.1. Enables four sound inputs—from one or two microphones and three independent sound sources (e.g. disc, radio or tape recorder) to be mixed and fed on to one tape. Each channel individually controlled.
 Price £7 17s. 6d

STOP-START REMOTE CONTROL. Type RCH.1.



Hand Operated.
 Price £1 7s. 6d.



Fully Foot Operated (including tape "Back-spacer"). Type RCF.1.
 Price £2 5s.

SHELL VITREA OIL 21. Specially blended for Tape Recorder lubrication.
 Price, per bottle, 2/6

Grundig **ANTI - STATIC POLISH No. 99.** For polishing plastic decks, etc. Price, per tube, 3/6

See them
 Hear them
 AT
STAND 14

GRUNDIG

The Finest Tape Recorders in the World.

Write for illustrated folder to:
 Grundig (Gt. Britain), Ltd., Kidbrooke Park Road, London, S.E.3.

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

and other well known amateurs, is a feature of the stand. The items on show include the New-comer's Low-Power Harmonic-Free Transmitter (described elsewhere in this issue), the Elizabethan transmitter (described in the July, 1953, *BULLETIN*), a simple converter for 144 Mc/s (using only three valves), a reflectometer (the principle of which will be described in the December, 1953, issue of the *BULLETIN*), and a silicon diode noise generator.

Members of Headquarters Staff are on duty to answer questions concerning the work of the Society.

* * *

Of particular interest is a unique display on a special stand of coloured diagrams, prepared by Paul Sollom, B.Sc., A.C.G.I. (G3BGL), showing the behaviour of simple amateur aerials at different heights above ground and a series of models illustrating the presentation of aerial performance in three dimensions. A transparent great circle-wave angle map is available for visitors to check the coverage of aerials.

* * * Amateur Constructors' Section

This section is devoted entirely to home-constructed apparatus loaned by London and Provincial members. There are separate stands displaying v.h.f./u.h.f., single sideband and miscellaneous equipment.

SALFORD ELECTRICAL INSTRUMENTS LTD.,

Peel Works, Silk Street, Salford 3, Lancs.

SALFORD Electrical Instruments Ltd., are exhibiting a complete range of quartz crystal units for stable frequency control from 400 c/s to 22 Mc/s.

A new range of wire wound toroidal potentiometers is also on show. The standard sizes include power ratings up to 8 watts, with resistance values from 300 to 500,000 ohms. The production technique enables a very high degree of precision to be maintained with exceptionally low tolerance.

The radio and television cores displayed are samples from the ever extending field of applications covered by the "Gecalloy" products.

Selenium and copper oxide rectifiers, covering a wide variety of current and voltage ratings, and synthetic sapphire gramophone needles are also to be seen.

SHORT WAVE MAGAZINE LTD.,

55 Victoria Street, Westminster, London, S.W.1.

SHORT Wave Magazine Ltd. are the proprietors and publishers of the *Short Wave Magazine* and *Radio Quarterly* which, together, cover the whole field of experimental Amateur Radio—transmission, reception, construction and operating activities on all bands—and short wave listener interests.

Short Wave Magazine is a large-size monthly production of 64 pages, now in its 11th year, circulating throughout the world. It is entirely independent. Every issue is of direct and lasting value to all radio amateurs. It costs 2/- monthly at bookstalls or 24/- per year by subscription.

Radio Quarterly appears in June, September, December and March. It is a 96-page pro-

REGULAR ARMY

Royal Corps of Signals stand

IF YOU WANT TO BE EMPLOYED AS A RADIO OPERATOR OR MECHANIC in the event of a major emergency, why not join the Army Emergency Reserve NOW?

This ensures that in the event of war, you will be called up to do a job you know something about. If you wish to have training in peace, that can be arranged but if you only wish to be registered without any training liability in peace, that also can be arranged.

The terms during peacetime are :-

- A. Liability for 15 days service a year. Pay and Allowances similar to the regular army during this period. A tax free £9 bounty annually. The duration of service can be for 2, 3, or 4 years as you wish.
- B. No liability, merely register your name and have a certain position to take up in the event of an emergency.

Facilities will be arranged for affiliation to permanent units for Reserve personnel to practice with army equipment.

*Application forms
and further details
are available on*

STAND 2

At the Amateur Radio Exhibition

G2AK THIS MONTH'S FINE BARGAINS G2AK

SPECIAL VALVE OFFER: 832/832A, 40/-; 8012, 12/6 each; 6L6C, 10/6; 5R4CY, 12/6; 829/3E29, 80/-; 100TH, 90/-; 866A, 17/6, or 30/- per pair; 807, 10/- each or 17/6 per pair; 931A, 45/-; 83MV Rectifier, 10/-.

METERS: 2½ in. Flush Mounting 0-100 mA, 12/6; 0-2 A Thermo, 7/6; 2 in. Flush, 0-4 A Thermo, 5/-; 0-5 mA square, 2 in., 10/-; 0-20 V, 7/6; 20-0-20 A, m.c., 5/-; 0-350 mA, Thermo, 7/6; 0-15 A Thermo Proj. 2½ in., 7/6.

MULTI-METER: Basic unit, 400 µA, F.S.D., scaled 8 ranges, a.c./d.c. V, LO and HI ohms, with rectifier. Made by Triplett, U.S.A. Only 32/6, post free.

TWIN FEEDER: 300 ohm twin ribbon feeder, similar, K25, 6d. per yard. K24 150 ohm, 9d. per yard. Co-ax. cable ½ in. 50 ohm, 8d. per yard; ¾ in. diameter, 70 ohm, 11d. per yard, or 12 yards, 9/6, post and packing 1/6; K35B Telcon (round) 1/6 per yard, and cable 1/6, any length.

EDDYSTONE, WODEN, RAYMART, AVO, &c., COMPONENTS AND A GOOD RANGE OF COMMUNICATION RECEIVERS ALWAYS AVAILABLE.

Carriage paid on all orders over £1 except where stated. Please include small amount for orders under £1. PLEASE PRINT YOUR NAME AND ADDRESS

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MAIL ORDERS TO
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ALL CALLERS TO
110 DALE END, BIRMINGHAM.

Central 1635

DEAF AID CRYSTAL MIKE UNITS, 12/6 each, post and packing, 9d.

RACK MOUNTING PANELS: 19 in. x 5½ in., 7 in., 8½ in., or 10½ in., black crackle finish, 5/9, 6/6, 7/6, 9/-, respectively, postage and packing, 1/6.

THIS MONTH'S SPECIALS

CRYSTAL HAND MICROPHONES: High quality, complete with lead and plug. Very sensitive. Chrome finish. List 2 gns. Our Price 25/-.

STREAMLINED BUG KEYS by famous maker. Listed over £4. Our price 45/- only.

AR88 MATCHING SPEAKERS by R.C.A. in Black Crackle case, fitted with rubber feet and 6ft. of cord, 65/-.

AR88 SPARES: Cabinets, £4 15s., packing and carriage, 7/6; complete set of 14 valves, £5 10s.; Perspex escutcheons, 22/6; "D" type i.f.s., 12/6; matching speaker, 65/-.

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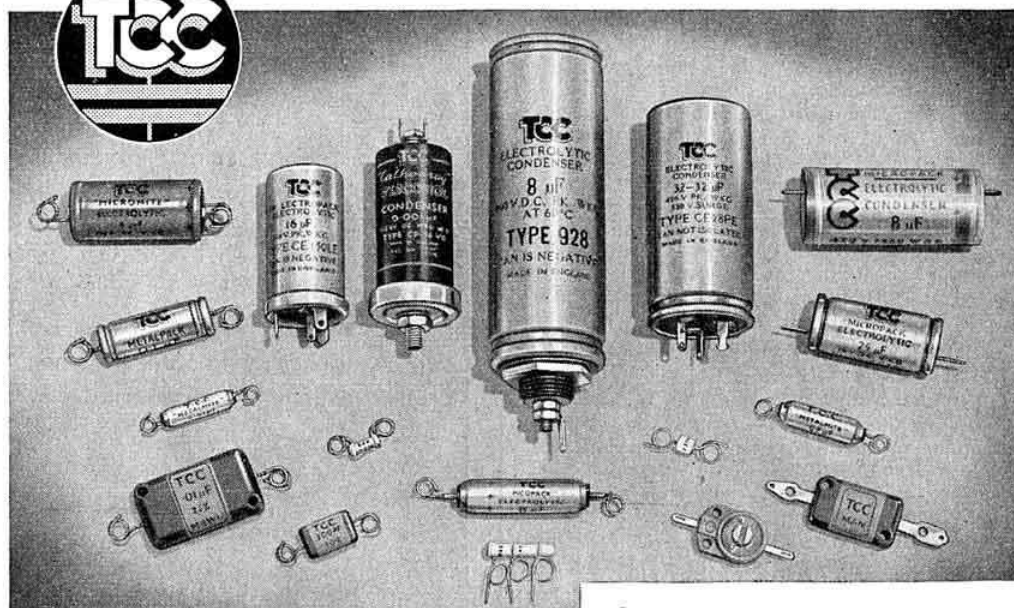
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TELECRAFT LTD.,

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WAR OFFICE

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A display panel shows the component parts of a prototype man-pack set while a mechanical

model illustrates how radio waves are reflected from the ionosphere. Some of the equipment used during the last war by the Special Air Service is exhibited and here miniaturisation and portability is the keynote as the equipment had to be dropped and used behind the enemy lines.

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17	.056	1/4	2/1	1/4	2/1	1/4	2/1	1/4	2/1
18	.048	1/4	2/2	1/4	2/2	1/4	2/2	1/4	2/2
19	.040	1/4	2/3	1/4	2/3	1/4	2/3	1/4	2/3
20	.036	1/5	2/4	1/5	2/4	1/5	2/4	1/5	2/4
21	.032	1/5	2/5	1/5	2/5	1/5	2/5	1/5	2/5
22	.028	1/6	2/6	1/6	2/6	1/6	2/6	1/6	2/6
23	.024	1/7	2/7	1/7	2/7	1/7	2/7	1/7	2/7
24	.022	1/7	2/8	1/7	2/8	1/7	2/8	1/7	2/8
25	.020	1/8	2/9	1/8	2/9	1/8	2/9	1/8	2/9
26	.018	1/8	2/10	1/8	2/10	1/8	2/10	1/8	2/10
27	.0164	1/9	2/11	1/9	2/11	1/9	2/11	1/9	2/11
28	.0148	1/9	3/-	1/9	3/-	1/9	3/-	1/9	3/-
29	.0136	1/10	3/1	1/10	3/1	1/10	3/1	1/10	3/1
30	.0124	1/10	3/2	1/10	3/2	1/10	3/2	1/10	3/2
31	.0116	1/11	3/3	1/11	3/3	1/11	3/3	1/11	3/3
32	.0108	1/11	3/4	1/11	3/4	1/11	3/4	1/11	3/4
33	.010	2/-	3/5	2/2	3/5	2/2	3/5	2/2	3/5
34	.0092	2/-	3/6	2/3	3/6	2/3	3/6	2/3	3/6
35	.0084	2/1	3/7	2/4	4/2	2/4	4/2	2/4	4/2
36	.0076	2/1	3/8	2/6	4/5	2/6	4/5	2/6	4/5
37	.0068	2/2	3/10	2/7	4/8	2/7	4/8	2/7	4/8
38	.006	2/3	4/-	2/9	4/11	2/9	4/11	2/9	4/11
39	.0052	2/4	4/2	2/10	5/2	2/10	5/2	2/10	5/2
40	.0048	2/5	4/4	3/-	5/6	3/-	5/6	3/-	5/6
41	.0044	1/6	per oz.	1/9	per oz.	1/9	per oz.	1/9	per oz.
42	.004	1/9	"	2/6	"	2/6	"	2/6	"
43	.0036	2/3	"	3/-	"	3/-	"	3/-	"
44	.0032	3/-	"	4/-	"	4/-	"	4/-	"
45	.0028	4/-	"	5/-	"	5/-	"	5/-	"
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24	1/8	2/-
25	1/10	2/2
26	2/-	2/4
27	2/-	2/4
28	2/-	2/6
29	2/2	2/6
30	2/2	2/6
31	2/3	2/8
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THE MONTH



ON THE AIR

BY ARTHUR O. MILNE, G2MI*

CONDITIONS generally during October were reasonably good, despite a few poor days towards the end of the month. Both 7 and 14 Mc/s provided plenty of interest and 21 Mc/s gave indications of what may be expected in the not too distant future.

The month was marked by the appearance of two useful additions to the DXCC lists of many amateurs: VQ1NZK in Zanzibar and EA9DD in Rio de Oro. The former was operated by W6NZK and the latter by EA4BH. QSL cards are assured.

The 14 Mc/s band provided some unusual short skip phenomena to Western Europe around 1800 G.M.T. when stations in Paris, for example, would come roaring in for a few minutes, only to fade-out as quickly as they had appeared. Australian signals made a welcome appearance just after lunch, sometimes by the short path, sometimes by the long. West Coast Americans came through about 1900.

Real DX on Top Band

Recent Top Band tests between ZL1AH, G6GM (Holsworthy, Devon) and G6CJ (Stoke Poges, Bucks.) have met with considerable success. By working in the early morning to avoid QRM, it seemed that contacts might be possible for a short period during October. Plans were very carefully made, and as a result a signal was heard at G6CJ on the first day of the tests and identified on the second. By October 12, ZL1AH had heard both British stations many times and a contact with G6CJ at RST339 each way broke down only because of a static rainstorm. Up to this date, G6GM had heard very little, but as the daily signal disappeared at G6CJ, so it grew stronger at G6GM until, on October 15, a two-way contact with ZL1AH lasting 25 minutes at RST339 was made. On October 17, a second QSO at 339 to 559 lasted for 20 minutes, whilst on October 21 G6GM worked both ZL1AH and ZL3RB at 449. After this date the "QRN season" in New Zealand brought the tests to an end.

A notable feature was that the best conditions occurred a fortnight apart at the two British stations although they are separated by only a small difference in longitude.

Congratulations are extended to ZL1AH who was responsible for the excellent planning and to G6GM who was so successful.

Monaco

G5MP operated on 7 and 14 Mc/s from Monaco under the call 3A2BM during late October and early November. He also worked on Top Band from November 2 to 9, the first time permission to use that band had been granted by the local licensing authorities.

* 29 Kechill Gardens, Hayes, Bromley, Kent.

Thank You, Arthur—Welcome Stanley

WITH this issue Arthur Milne, G2MI, now President-Elect, hands over to another the production of "The Month on the Air." Thus comes to an end the longest regular author contribution in the annals of the Society.

Arthur Milne first began to write "The Month on the Air"—more familiarly known as M.O.T.A.—in July, 1939. When war broke out in September, 1939, its title was changed to "The Month 'Off' the Air," but G2MI still remained the author. The old title came back into its own in January, 1946.

During the past 14 years M.O.T.A. has become world famous for its accuracy, pithiness and topicality. Frequently it has been quoted by the DX editors of other journals.

In offering warm thanks to Arthur Milne for his past services we cordially welcome his successor, Stanley Herbert, G3ATU. Stan, who was licensed just after the war, quickly made his mark in the DX field—qualifying for the Empire DX Certificate almost as soon as the rules were announced. He holds numerous other DX operating certificates and his station is well known throughout the world of Amateur Radio.

Contributions for "The Month on the Air" feature should, in future, be addressed to Mr. Herbert at Roker House, Roker, Sunderland. EDITOR.

Notes and News

G4CP—one of the first to work EA9DD—says ZC3AA is now on 'phone. SU1FX has sent a Press cutting which indicates that Amateur Radio is to be encouraged in Egypt and, in fact, an exhibition has already been held in Cairo. 'FX is now on his way home to the U.K.

GM3EST has now worked 200 countries, his latest catch being EA9DD. G2HKU (Sheerness), despite difficulties due to the failure of the under-water cable which supplies the island with power, has worked ZL3GQ on 7 Mc/s and has heard VE2GM in Zone 2. He says SP3AN, worked on 3.5 Mc/s, is ex-SP3PF. 'HKU has recently received his "Worked All Sweden Award" as has G2MI. G13JU is shortly going overseas, so any station signing this call-sign should not be worked in future. 'JU used to operate GM3HRZ and will send a QSL to anyone who has not yet received one.

B.R.S. Reports

B.R.S.19771 has logged XZ2ST. 1345 G.M.T., on 14 Mc/s 'phone and KX6BC (0930), U18KAA, VP8AJ, HSIWR and EA9DD. B.R.S.18017 (Warwick) reports hearing FB8ZZ, 14085, 1250, New Amsterdam Is., FM7WD, 14065, 1800, VE7GI, 14008, FP8AP, and W00CA/KG6 (who QSLs). 1340, Guam. On 'phone, ZS3P, 1815, OQ5FL, 1820, HH2LR, 14111, 2155, VP5BE (Caymans), TG9RB and VQ1NZK have all been heard. B.R.S.19894 (Stockport) confirms the remarks about conditions made earlier and says the best Australian signal was from VK2AYP.

Shetland Is.

G3IXE, who operated from this northern outpost during the first part of October, reports that his station was set up on a disused d.f. station site about 200 ft. a.s.l. and that he had the use of four 80 ft. masts! The transmitter was a 10 watt c.o./p.a. on 1901 kc/s and the receiver an old CR100. About 30 counties were worked, GC3EML being the best DX. G3EEW in Dover was the best on the mainland of Great Britain. IXE apologises for not being able to answer all the calls made, due to so many people calling him on his own frequency.

G2RO on Tour

A propos the note in the July BULLETIN Bob Roberts (G2RO) is on his travels again and should be in the Bahamas by the time this issue is published. His itinerary is as follows: VP7, November 16 to 24; VP5, November 24 to 30; VP1, November 30 to December 14; VP5, December 14 to 18; St. Kitts (VP2), December 18 to 19; Antigua (VP2) December 19 to 23; VP6, December 23 to 30; Granada (VP2), December 30 to January 9; VP4, January 9 to 15; VP3, January

15 to February 2; VP5, February 5 to 8, returning to the U.K. on February 9, 1954. The frequency of the 15 watt transmitter which he will be using is 14060 kc/s (with 14016 kc/s as an alternative). Contacts will be QSLd 100 per cent.

Who's Who

Cards for ZC5VM, who is returning home to Sittingbourne, Kent, next January, should be sent via the R.S.G.B. QSL Bureau. G2FWA is active again from his new location on the slopes of Cleeve Hill, Gloucestershire. He is on Top Band only at present but says the site is wonderful for DX.

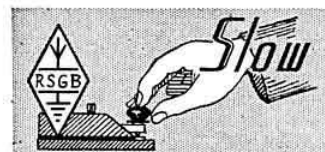
Eric Trebilcock (B.E.R.S. 195) reports that VK1BJ and VK1AF are on Cocos Is., VK1SK on Heard Is. and VK1AF, BA and RL on Macquarrie Is. Ted Ross (ZC4FB) says there are four stations in Famagusta: ZC4CA, FB, GF and LW. ZC4GT is on leave in England. G3CKK has arrived and will soon be active. 'FB himself is ex-G3CEP, Box 216, Famagusta, Cyprus. He wonders where ZC4RX is. Please ring Famagusta 2640, Norman!

G3JDC will soon be on the air again. He is ex-SU1JY and ZE2KL (1948-9) and has QSLd all contacts. MP4HBK is due back in the U.K. shortly. Bang goes another piece of rare DX! He says Sharjah is an R.A.F. Station where no one normally wants to stay more than six months, but Amateur Radio has made his two years tour of duty almost pleasant! Ken Willis, ET2KW (ex-M13KW) is another who will soon be a G.

A Word of Cheer

Roderick Wyatt is an American short-wave listener who is almost completely paralysed. His two hobbies are Amateur Radio and stamp collecting. If anyone would like to drop him a line

(Continued on page 229)



Slow Morse Practice Transmissions

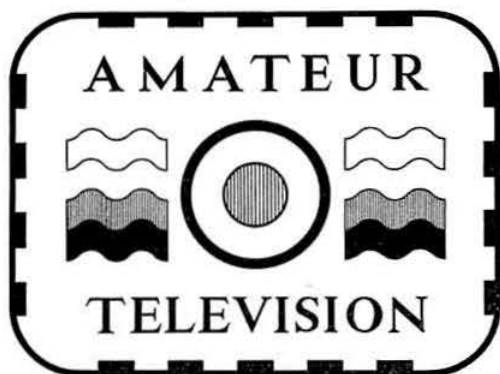
The following slow Morse transmissions, sponsored by the Society, are intended to assist those who aspire to obtain an amateur transmitting licence. More volunteers are still required for parts of the British Isles not already covered, particularly in the London Area. Stations listed who find themselves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

* Each station will operate in turn.

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

G.M.T.	Call	kc/s	Town
Tuesdays (cont.)			
21.00	G3EFA	1855	Southport
22.00	G3GIO	1915	Guildford
Wednesdays			
19.00	G3GZA	1837.5	Bristol
22.00	G3HYN	1850	Cambridge, Glos.
22.00	G3GIO	1915	Guildford
22.00	G2BND	1918	Dalston
Thursdays			
19.00	G3NC	1825	Swindon
20.00	G3FVH	1920	Hull, Yorks
21.30	G3ICX	1915	Sutton Coldfield
22.00	G3GIO	1915	Guildford
22.00	G3IFX	1910	Derby
22.30	G3OB	1803	Manchester
22.30	G3ADZ	1940	Southsea
23.00 *	G3LA	1915	Brentwood
	G4AK		
Fridays			
19.00	G3BLN	1900	Bournemouth
20.00	G3CSG	1870	Wirral
22.00	G3GIO	1915	Guildford
Saturdays			
13.00	G2FXA	1900	Stockton-on-Tees
22.00	G3GIO	1915	Guildford

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



By M. BARLOW (G3CVO)*

THE most important news of the month undoubtedly comes from the Netherlands, where Hendrik de Waard, PA0ZX, and his team, who have been transmitting TV, vertically polarised, on the 144 Mc/s band for several years, have distinguished themselves by building the first completely self-contained amateur mobile television transmitter. This project has taken only three months to complete. A 5527 iconoscope camera (fitted with an ingenious binocular, stereoscopic, coupled viewfinder), is mounted on a jeep, which also carries the power supplies, pulse generator, monitor, 420 Mc/s transmitter and aerial. A 700 watt, 220 V petrol generator is towed on a small trailer, and pictures are transmitted as the jeep drives slowly through the streets of Groningen. This is P/T/Mobile operation with a vengeance!

Intercom facilities, with the control point on top of a church tower, are via a 3.5 Mc/s link to a receiver in the jeep. Normal Continental-standard 625 line pictures are transmitted; a 5.5 Mc/s sub-carrier takes the f.m. sound channel, the total bandwidth being nearly 11 Mc/s. Efficiency of 35% is secured from a QJE03/20 power trebler, modulated on the control and screen grids to a depth of 80%. Some fading was experienced during initial tests, but in general picture quality was first-class, and the re-radiated pictures (via 144 Mc/s) caused considerable surprise to viewers as the jeep moved about. British Amateur TV enthusiasts offer heartfelt congratulations to all concerned in this first-class effort. It is unfortunate that licence regulations do not at present allow similar experiments to be made in this country.

News from Far and Wide

Now that Jeremy, of G2WJ/T, is doing his National Service, his father, Ralph Royle, has to operate the vision gear as well as the 70 cm equipment single-handed—no mean feat! Incidentally, Ralph is building a new 70 cm transmitter (using a QJE06/40) and modulator. The increased power should enable the more distant receiving stations to broaden the bandwidth of their receivers to a more reasonable level. At the moment, at 30 miles range, 0.5 Mc/s bandwidth is about the maximum. Tests will shortly take place between G2WJ/T (Dunmow) and G2CZS (Chelmsford), only 12 miles away. G2WJ also puts strong sound signals into Cambridge, where the picture should be easily resolvable; even PEIPL has been asked to have TV equipment handy in case another Continental opening occurs!

* 29 Loftin Way, Chelmsford, Essex.

Ian Waters (Ely) is taking a well-earned rest after giving five separate TV demonstrations during the summer. G3HZK, now back in Manchester, hopes soon to be able to put G3ETI's fine camera on the air. G3AST (Luton) is building a new camera monitor, which may be ready in time for the R.S.G.B. Amateur Radio Exhibition. J. Russell (Bournemouth) has also nearly finished a picture and waveform monitor designed to be used with a vidicon tube. This unit, about twice the size of a Cossor double-beam oscilloscope, is mains operated; the camera unit, which is extremely small, plugs into it, thus making a compact and portable TV unit.

Several new teststill scanners—similar to those described in the BULLETIN—have been brought into action recently. A similar unit has been designed by ZLIQS, who, although far from professional TV equipment, has turned out some very fine apparatus.

From France comes news that Pat Leball (F3HK), Alain Decavel (F9MN) and others are trying to decide upon suitable standards for Amateur TV. Domestic TV in France is being standardised at 819 lines, but this is excessive for amateur use. On the other hand, any other suitable standard removes the possibility of the use of domestic TV sets for reception.

As reported last month, the Dagenham Show was highly successful. Preparations are now in hand for staging a demonstration in the Chelmsford area sometime in the New Year.

News is to hand that the Television Society's station G3CTS/T, situated in the Norwood Technical College, South London, is due to start transmitting shortly on 427 Mc/s. By the use of a suitable converter feeding a domestic TV set, reception should be possible in the London area.

TV Enthusiasts' 3.5 Mc/s Net

Readers are reminded that a regular sked for TV enthusiasts is held on Sundays at 1430 G.M.T. Frequency 3612 kc/s. The control station—either G3CVO (when home) or any other member available—calls "CQ—TV."

* * *

The writer hopes to be in attendance at the R.S.G.B. Amateur Radio Exhibition for some part of the time, when he will be glad to meet regular readers of this column in person.

THE MONTH ON THE AIR.—(Continued from page 228)

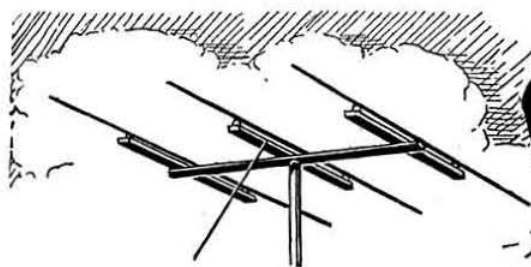
and perhaps send him a few stamps, they would be doing an act of kindness to a fellow amateur for whom life has few distractions. His address is 4524 Maryland Street, San Diego, 16, California.

G2MI

Perhaps I may be permitted a few personal words before ending my last "M.O.T.A." I would like, first of all, to thank the many members and others who have helped me to keep this feature going since I took over from G6WY in 1939. Fourteen years is a long time and I have often felt that a change would be a good thing. I think we have found the right man in Stan Herbert (G3ATU), and I trust that everyone will give him their loyal support.

Writing this article each month has been a lot of fun and I have made many friends. I hope that I have made no enemies! I take my leave because other commitments in Amateur Radio have made the step imperative. I may even be able to spend an hour or two on the air in future!

The best of DX and again, Thank You.



AROUND THE V.H.F.'s

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

Regular V.H.F. Skeds

WITH a view to implementing the suggestion made last month that the bands should be more uniformly occupied, particularly during TV hours, it is proposed to publish, commencing in the December issue, details of any regular skeds which are maintained on either 2 m or 70 cm. If stations having these arrangements will agree to look for others afterwards, so much the better as in this way more activity will be engendered, but in any case those wishing to test receivers will at least know that certain stations should be audible at given times. It is not necessary for the skeds concerned to be over long distances. To set the ball rolling we mention one which is conducted every Monday evening from 2000 G.M.T. by G5UM (Knebworth, Herts.) on 144.79 Mc/s and G3BUN (Hoddesdon, Herts.) on 145.12 Mc/s.

The Two-Metre Band

G5MR (Hythe, Kent) found conditions good on October 1, 2, 9, 10 and 11 and on the first date worked G2BMZ (Torquay, Devon). On the 11th he enjoyed a 'phone contact with G5MA/P in Rutland. 'MR raises the old question of "one way paths." He finds that towards the west, in which direction there is less screening, reports both in and out tend to be about equal but over the more difficult route to the northwest transmission is more satisfactory than reception. According to normally accepted theory this is not possible but theory can be wrong when it fails to take into consideration all the data. It would be interesting to hear the experiences of other operators in this respect together with some expert views on the subject.

It appears that HB1IV's first contact with this country was made with G6OU (Basingstoke, Hants.) and not with G8OU as stated last month. Sorry, G6OU—entirely our fault!

The only regularly active stations in the Bath, Bristol and Cardiff area heard by G3FKO (Bath, Som.) are G3FIH, 3HSD, 3YH and GW8UH. The first mentioned has a new modulator which is producing some excellent results. G6ZH (Devizes) is active using a dipole directional north and south. Between September 25 and October 19 G3FKO, using 3.5 watts input to p.p. 6AK5s and a fixed 6-element Koomans array, worked G3FIH, 3FMO, 3YH, 6NB and GW8UH and heard G2BMZ, 3BLP, 3DLU, 3HXS, 3ION, 3IRA, 4GR, 4MR, 4SA, 5TZ/A, 8FC and 8OU. Not a bad performance from such a screened site. His frequency is exactly 145.5 Mc/s.

G6XX (Goole, Yorks) has now worked eleven Regions thanks to a contact with G3FMO (Chard, Som.). He has also had contacts with EI2W and several Dutch stations, but nothing has so far been heard from either Scotland or Northern Ireland.

Since September 20, G8VN (Rugby, Warks.), has worked G2FQP, 2HOP, 3HZF, 3IOO, 4MW, 5BD, 5DS, 5GX, 5YV, 6CW, 6NB, 6XX, and heard G2WA, 3A00, 3BLP, 3CJY, 3CUZ, 3EPW, 3FMI, 3GVF, 3IOB, 3WW, 4AU, 4SA, 5MA, 5UD, 8SC and GW2ADZ. All this with an indoor Yagi and modest power, facts which should encourage those who are deterred from coming on the band owing to the impossibility of erecting an outdoor aerial.

Since the middle of June, G3WP (Brightlingsea, Essex) has worked stations in 7 counties using only a rotary dipole and a maximum input of 20 watts to a TT15 final on 145.08 Mc/s. G5MA/P was contacted while operating in Rutland recently. G2ABD (Kenton, nr. Harrow), G3CKQ (Rugby) and G6OZ (Bristol) should all be active by now.

G6LI (Ludborough, Lincs.) found the 2 m band practically dead for 12 days in the early part of the period when pressure fell to 29.1 in. Following a rise to 30.55 in. on October 5 without much effect on conditions, the barometer fell to 30.15 in. on Sunday, October 10 when the band opened to France, Germany, Denmark and Sweden. This opening was in full swing at 1030 G.M.T. and continued until well after dark, bringing striking confirmation of G6LI's assertion last month that good conditions often occur in the mornings. It also makes yet another occasion for the record when the band opened after the peak of a "high" had passed. At 1025 G.M.T. OZ2FR was a loud and clear 'phone signal, SM6ANR was raised on a CQ call at 1030 and G5YV was heard calling SM7XU. F3LQ was heard at 1052 G.M.T. and PA0PAX worked at 1125. In the evening SM7AED (Malmo) was raised on the first call at 2005 G.M.T. and OZ8JB put in a brief appearance shortly afterwards but soon faded out. DL1LB, the only German station heard, was at "local" strength and was contacted at 2025 G.M.T., but by the time SM7BE appeared at 2117 the good conditions were on the wane and shortly afterwards the band closed for DX.

In the south the band remained open longer and just after midnight G2UJ worked DL1FF (Rendsburg, nr. Kiel) RST 579 both ways and later heard that station's 'phone at RS44. No other continental signals were heard, apart from DL3VJ, although G3AGA (Penryn, Cornwall), who was worked at great strength shortly afterwards, reported hearing and working a number of French and German stations while G5TZ/A (Isle of Wight) had worked OZ7FB and DL9MZ among many others. G3AUS (Torquay, Devon) and GW5MQ (Flint) worked OZ5AA and DL3VJ respectively.

It would be most informative to hear how a British opening builds up in, say, Sweden or Holland and reports are cordially invited from our

* 32 Earls Road, Tunbridge Wells, Kent.

friends on the continent with a view to presenting a complete account of some of the more spectacular aspects of good v.h.f. propagation.

G3HZK, formerly of Hayes, Middx., has moved to Wilmslow, Cheshire and hopes to be active again soon.

G2CZS (Chelmsford, Essex) is regularly active on 144.912 Mc/s from 1900 G.M.T., 'phone and c.w., and is looking for contacts in the West Country. He has an input of 14 watts to a TT15 p.a. and an array consisting of two *ZL Specials* stacked vertically with half-wave spacing 35 ft. above ground.

Last month we said **G5YH** is looking for 2 m contacts in the early mornings; this should have been **G5YK** (Bristol). **5YH** is, in fact, active but the little time he has available is devoted to the development of a novel 2 m aerial somewhat resembling a Christmas tree! Appropriately enough, this should be ready by the end of December and details will be available if the idea turns out as well in practice as it looks on paper.

In spite of the fact that **G5BD** (Mablethorpe, Lincs.) has been busy trying to prevent his 48 Mc/s tripler stage from interfering with Holme Moss (sound) on 48.25 Mc/s he still found time to push his Ladder score to 13-77-12, and has worked two new countries **GW3GWA** (Region 11) and **EI2W**. **G2HQ**, **IQ**, **4JJ**, **5BM**, **YV**, **6NB**, **VX** and **8VN** were all visited while **G5BD** was on a holiday trip.

Two Metre Report from Ireland

Although the band was quiet during the last fortnight in September **EI2W** succeeded in raising stations in Lincolnshire and London on the 27th and 28th. Conditions improved greatly from October 7 to 11 when stations in many parts of the British Isles were worked. The first **EI/PA** contact was made between **EI2W** and **PA0FC** on the 10th. On the same night, **ON4BZ** and **DL6EP** (Bonn) were worked twice and **DL3VJ** three times. For the past two months the latter has been operating as a fixed station and as a consequence has dropped his portable suffix. On this occasion his signals were received **RS57** by **EI6A** (Wicklow) at sea level at a distance of 650 miles.

GM6WL (Glasgow) is now a greatly improved signal in Dublin while **GM3DIQ** is normally **S9**. **EI2A** (Navan) has received both **G13FZQ** and **G15AJ** at good strength and is on 145.9 Mc/s nightly from 2200 to 2300 G.M.T. **EI6A** is getting out well and has already contacted London, Belfast, and Glasgow; he is active on 144.3 Mc/s from 2300 G.M.T.

Among those worked by **EI2W** between September 14 and October 11 are **G2AJ**, **FZN**, **HOP**, **3CCH**, **CHY**, **CUZ**, **DMU**, **EPW**, **FFD**, **FQP**, **FRY**, **FZU**, **GHO**, **GNC**, **GOP**, **GZM**, **WW**, **4RO**, **SA**, **5BM**, **MA/P**, **TZ/A**, **VN/A**, **YV**, **6MI**, **G13FZQ**, **5AJ**, **GM3DIQ**, **6WL**, **GW2ADZ**, **3ENY/P**, **EI2A**, **6A**, **G2AIW**, **HYH**, **3GHI**, **6XX**, **GM3FVX** and **ON4HC** were heard but not worked.

Two Metres in Kenya

VQ4EG (ex-M13TM) reports that **VQ4HSP**, **PYE** and **VL**—are active on 2 m.

Long Distance Two Metre Tests in the U.S.A.

From the October issue of *QST* it is learned that a daily test is being run by **W2UK** (New Jersey) transmitting to **W4HHK** (Tennessee) some 900 miles away. Something has been heard by the receiving station on every occasion but as the

signal is normally present only in very short bursts, somewhat akin to reflection from meteor trails, little more than station identifications can be passed at present. Some improvement in intelligibility has been obtained by employing auto keying at speeds up to 60 w.p.m. and playing back a recording at a slower speed. Other stations at comparable distances are taking part in this project and all have succeeded in identifying one another. **W2UK** uses an input of 1 kW and a 40-element array 85 ft. above ground while **W4HHK** receives on a 32-element job at a similar height.

Is there a Mountain in Your Way?

From the same issue of *QST* comes good news for those in "impossible" v.h.f. locations. It appears from experimental work carried out in the U.S.A. that very high ground in the direct path between stations may, in certain circumstances, be of assistance rather than an impenetrable barrier to v.h.f. signals. In Alaska, a 38 Mc/s link is maintained directly over Mt. Fairweather (8,775 ft.) midway between two stations each of which is only a few hundred feet above sea level. In this case diffraction from the mountain ridge reduces transmission loss over the 160 mile path by 73 db compared to what could be expected over a smooth-earth path of similar distance. Other instances of the benefits to be expected from suitably placed high ridges have been obtained in Hawaii, Japan and the Rocky Mountains. It would appear that in the ideal case the radiation pattern of the aerial should just graze the sharp ridge which is perpendicular to the path of the signal but large modifications of this condition can still show considerable "obstacle gain."

HAVE YOU BOUGHT YOUR TWO METRE ZONE MAP?

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From R.S.G.B. Headquarters.

The Seventy Centimetre Band

G2RD's activity report for the period ending October 21 is as follows: **G2DD**, **DDD**, **DTO**, **FKZ**, **QY**, **RD**, **WJ**, **XV**, **3ECA**, **EOH**, **FP**, **GDR**, **HBW**, **JMA**, **4RO**, **5CD**, **DF**, **DS**, **DT**, **HN**, **RD** **6NF**, **8SK**.

GW2ADZ heard **DL3FM** on 70 cm three times during September, even when conditions on 2 m were anything but good. This bears out some observations made by Ed. Tilton, **W1HDQ** in a recent letter to **ADZ** which stated that in a daily test between **W1HDQ** and **W2QED** over a distance of 210 miles the sked has only failed four times in 50 attempts and is about as reliable as a 2 m link. When conditions are good, however, 70 cm has shown up to 20 db advantage over the longer wavelength despite a power disadvantage of four times. Perhaps some long-term tests over an even greater distance would yield similar results to those on 2 m mentioned elsewhere in this article. It would appear that interest in 70 cm is awakening in the States and that receivers with noise factors of 6 db or less are becoming more common.

It is understood that on October 20, **G3BKQ** (Blaby, Leics.) and **G2DDD** (Littlehampton, Sx.) made contact on 70 cm, the latter receiving a report of **RST569**.

Feeder Problems

Referring to the paragraph in *Around the V.H.F.s* in July last concerning the best type of feeder to employ at 420 Mc/s, **GM6WL** found, during his portable tests recently described, that *Telcon* K35 tubular 300 ohm feeder was quite unaffected by heavy rain. It has been the practice of several of the Glasgow u.h.f. operators to make up feeder for 70 cm use from lengths of *Perlite* insulated aerial wire spaced $\frac{1}{8}$ in. by pieces of polythene taken from co-axial cable. Such a feeder has an impedance of about 350 ohms and has proved most successful during even the worst winter weather. **GM6WL** feels that losses due to radiation from such open wire feeder are less likely to prove troublesome than would be the case with dielectric loss in poor quality coaxial. He points out that only the best quality coaxial feeder should be employed at 420 Mc/s. While disagreeing to some extent with **B.R.S.19317** on the virtues of coaxial feeder **WL** congratulates him and his co-authors on their excellent article *Receiver Design for 70 cm* which appeared in the June issue.

London U.H.F. Group

Forty-five amateurs attended the first anniversary meeting of this group on October 1, several coming from considerable distances. It was learnt, with regret, that owing to an appointment to *H.M.S. Eagle*, Commander A. J. R. Pegler, **R.N. G3ENI**, would be unable to attend meetings for some time and the best wishes of those present were accorded him in his new sphere of activity. He has been a keen supporter of the Group.

The annual dinner will be held at the Bedford Corner Hotel, Bayley Street, Tottenham Court

"VHF QSY"

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

Crystals Offered

By **G3PY**, 67 Shaw Lane, Glossop, Derbyshire. 8060 kc/s ($\frac{1}{8}$ in. spacing).

Crystals Wanted

By **G3PY**, as above, anything between 8011.5 and 8036 kc/s ($\frac{1}{8}$ in. and $\frac{3}{8}$ in. spacing).

Road on Thursday, January 7 when it is hoped that there will be a large gathering of v.h.f. enthusiasts.

Deadline

We are constantly being pressed by our printers for earlier **BULLETIN** copy which means that this feature must meet a deadline a day or two earlier than heretofore. We do not wish to make the closing date earlier than the present 21st or 22nd of the month as this gives readers time to comment upon points in the previous issue. If, however, we could get some of the reports in before this date as, indeed, we do occasionally it would ease the present hectic rush for **G2UJ** while still keeping the feature as up-to-date as possible.

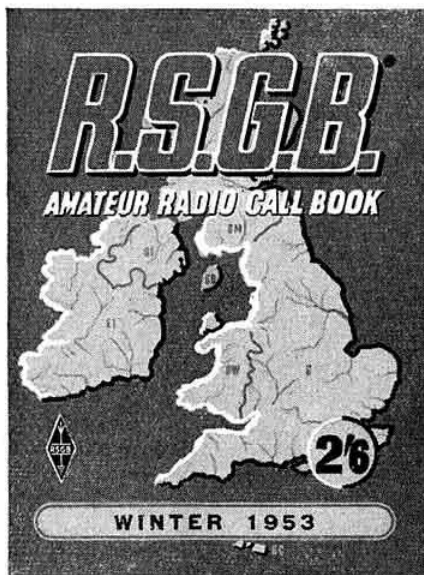
"Hands Full of Power"

AN informative Kodachrome film entitled "Hands Full of Power," may be borrowed by **R.S.G.B. Groups** from the Public Relations Officer, Wolf Electric Tools, Ltd., Pioneer Works, Hanger Lane, London, W.5.

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Society News

Council Ballot

NOTICE is given that at the Ordinary Meeting of the Society to be held at the Institution of Electrical Engineers on November 20, 1953, the members present will be asked to choose two or more scrutineers for the purposes of the Council Ballot.

Amateur Radio Exhibition Opening Ceremony

THE Council much regrets that, due to ill-health, Mr. René Klein, G8NK (Founder Member and Vice-President) will be unable to open the Seventh Amateur Radio Exhibition at 12 noon on Wednesday, November 25.

The opening ceremony will now be performed by Brigadier Eric Cole, C.B.E., Chief Signal Officer, Southern Command. Brigadier Cole has operated an amateur station under many calls and in many lands—his most famous call being SU1EC. It was under this call that he won the Senior B.E.R.U. Contest in 1935. He again won the Contest in 1939 as ZC6EC. Brigadier Cole now operates as G2EC.

Portable and Alternate Address Facilities

MEMBERS who hold a permit for portable or alternate address operation and who wish to operate from a location other than that specified in the permit are reminded that they are allowed to do so provided the G.P.O. has been previously notified of the proposed location by prepaid registered letter or telegram.

Registered letters should be addressed to O.T.D., Radio Branch, Headquarters' Building, G.P.O., London, E.C.1, and telegrams to AMATRADIO, CENT, LONDON.

The Calcutta Key

THE Council has been pleased to accept from Mr. W. A. Scarr, M.A., G2WS (Past President and Honorary Member) a new Trophy to be known as the Calcutta Key. The Key is made in solid hall-marked silver and is mounted on a wooden base with suitable inscription.

The Rules governing the award of the Calcutta Key are as follows:

1. The Key shall be presented annually at the discretion of the R.S.G.B. Council to the member who in the Council's opinion has, during the year, given the most outstanding service to the cause of International friendship through the medium of Amateur Radio.
2. Should no member be deemed to qualify for the award on the above terms, the Key shall be awarded to the member who, in the Council's opinion, has given, with no thought of personal reward, the most distinguished service to the cause of Amateur Radio or to the Radio Society of Great Britain during the year.
3. The Key shall not be awarded merely for technical skill or for achievement in any Radio Contest.
4. Non-transmitting members as well as licensed operators, shall be eligible for the award.
5. The Key shall remain the permanent possession of the Radio Society of Great Britain and no member shall be entitled to hold it for more than one year.

Society Trophies

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

Rotab: Mr. G. A. Massey, G6YQ, for outstanding and consistent long-distance work over a period of many years. (Mr. Massey has made 643 QSOs with VK3YP, and more than 200 each with KV4AA and W1KTG).

Wortley Talbot: Mr. A. E. Livesey, D.F.H., G6LI, for outstanding experimental work with Mixer Master Oscillators.

Courtenay Price: Mr. H. F. Knott, G3CU, for his work in connection with the single side-band system of transmissions.

Founder's: Mr. W. H. Allen, M.B.E., G2UJ, in recognition of his valuable services to the Society over a period of many years as contributor of the monthly article "Around the V.H.F.s."

Calcutta Key: Mr. A. O. Milne, G2MI, for outstanding service to the cause of International friendship through the medium of Amateur Radio.

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

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

B.E.R.U. Receiving Rose Bowl: Mr. A. R. Gilding (ex-G3GPZ).*

B.E.R.U. Senior Telephony Miniature: Mr. G. J. Dent, VQ4AQ.

Col. Thomas Rose Bowl: Mr. F. J. U. Ritson, G5RI.

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

N.F.D. Shield Replicas: East Molesey and Croydon Groups.

Scottish N.F.D. Trophy: Glasgow Group.

1930 Committee: Mr. I. S. Cashmore, G3BMY. Winner of Low Power Contest.

Somerset: Mr. D. E. Davies, GW3FSP. Winner of First 1953 Top Band Contest.

Desmond: To be awarded to the winner of Second 1953 Top Band Contest.

Houston-Fergus: Mr. J. J. Yeend, G3CGD. Winner of Low Power Field Day.

Mitchell-Milling: Mr. H. Beaumont, G5YV. Winner of Two-Metre Open Contest.

Watts: To be awarded in connection with 70 cm Tests.

1950 Council: Mr. A. E. Glozier, G3CRR. Winner of D/F Contest.

Edgware: Coventry Amateur Radio Society, and Stourbridge and District Amateur Radio Society. (Joint Holders.)

Braaten: Mr. F. J. U. Ritson, G5RI. Leading English Station in A.R.R.L. DX Telegraphy Contest.

Milne: Mr. J. Banner, GW3ZV. Leading U.K. Station, other than English, in A.R.R.L. DX Telegraphy Contest.

Thorogood: Mr. W. H. Hodgson, G3BW. Leading Station in Two-Metre Regional Ladder, 1952/3.

Miniatures: Northampton Short Wave Radio Club. Winners First and Second Two-Metre Field Days.

Trophies and Certificates will be presented at the Annual General Meeting on December 18, 1953.

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

Around the Regions

Manchester Hamfest

MORE than 150 Members were present at Belle Vue, Manchester, on Saturday, October 10, 1953, to welcome, as guests of Region 1, the President (Leslie Cooper, G5LC) and General Secretary (John Clarricoats, G6CL) of the R.S.G.B.

Following a brief speech of welcome by the Regional Representative (Basil O'Brien, G2AMV), the meeting was addressed by the President who made it clear that he and the Secretary would be glad to answer to the best of their ability any relevant question addressed to them by those present. Mr. Cooper dealt briefly with the proposal to increase subscription rates and explained why the Council were proposing a Corporate rate of 27s. 6d. for the current year.

The Secretary—without the aid of his little black book—spoke of Society traditions and recalled his first official visit to Manchester 25 years ago. He also referred to "intruders" in exclusively amateur bands and to the problem of TVI.

Discussion Period

Don Birch, G3AOO, T.R. for Stockport, opened the discussion by calling for more forceful action on the part of the Council in upholding the rights of amateurs and for a better system of representation. He criticised the slow handling of contest results, and complained that the BULLETIN is too technical. He contended that recent editorials were poor.

John Swinnerton, G2YS, wondered what would happen to the Society in its official negotiations if the number of licensed members fell to below 50 per cent. as the result of increased subscription rates. He also queried what would happen to advertising rates if the membership fell to some low figure. Mr. Swinnerton asked for information about the Emergency Scheme.

Norman Potter, G3GNC, referred to a personal case of TVI whilst Peter Cawson, G2ART, criticised the Financial Statement published in the September issue of the BULLETIN. A B.R.S.

member appealed for more articles for the non-transmitting reader.

C. Wrigley G5WR, paid a warm tribute to the long service which the General Secretary had given to the Society and recalled that he, alone of those present, was present 25 years ago when Mr. Clarricoats first came to Manchester on Society business to help solve what was then a very "sticky problem."

Norman Evans, G3FRT, suggested that it would be helpful if the Council could publish a Budget for the coming year when presenting the Annual Accounts.

The President or the Secretary, and in some cases both, dealt adequately with the questions.

After Proceedings

Having satisfied himself that no questions remained unanswered the R.R. announced that High Tea would be followed by a draw for more than 80 valuable prizes.

The meeting proper concluded with words of thanks to all who had been responsible for its organisation, special praise being accorded to the East Lancashire C.R. (Joe Simpson, G4JS), on whose able shoulders most of the hard work had devolved. A welcome was extended to Council member C. H. L. Edwards, G8TL, and Ilford T.R. Fred Ruth, G2BRH, who had driven from London.

The organisers wish to place on record their thanks to Denco (Clacton), Ltd., Wolf Electric Tools, Ltd., Panda Radio, Oxley Development Co., Ltd., Philpotts Metalworks, Ltd., and Panton & Co., Ltd., for providing a much appreciated display of their respective products. Thanks are also recorded to Mr. Stewart of Wolf Electric Tools, Ltd., for arranging at short notice, a technical film show.

The draw was in the capable hands of the R.R. who had the support of two charming young ladies, the Misses Devereux and Simpson.

The Proprietors and staff of Belle Vue (Manchester), Ltd., provided excellent accommodation and a first class service. I.D.A.



Region 12 O.R.M.—Aberdeen, October 18, 1953.
Front row (left to right): GM3ALZ, GM2FHH, G3AFL, G6CL, G5QA, GM2CAS, GM3DPK.

South Western Hamfest,

NEARLY fifty members and friends attended the Fourth Annual South Western Hamfest held on October 14, 1953, at the Trecarn and Oswald Hotel, Babbacombe, Torquay. The Guest of Honour was Council Member and Region 9 Representative Herb. Bartlett, G5QA. The chair was taken by the Torquay T. R. (Frank Wadman G2GK) who had the support of Walter Sydenham (G5SY) a Vice-President of the Society.

Following lunch, Mr. Sydenham proposed a toast to "The Society" to which Mr. Bartlett replied. "The Visitors and Ladies" were toasted by Tom Smith (G3EFY), C.R. for Devon. Messages of greetings were read from the President and General Secretary.

Among the many attractions were a film show, arranged by Donald Aldous, and displays of electrical instruments and amateur equipment. Nearly 40 prizes, donated by manufacturers, were given away in the draw, which took place after tea. The competition for the Bartlett Cup was won for the fourth time by the Torquay Group.

The arrangements were made by a committee consisting of G2GK, G2GM, G2CWR, G3EFY and G3JD.

GM2ACQ, from Ayr, and groups from Falkirk and Glasgow.

Giving a brief resume of past events, Mr. Douglas expressed the hope that the Region would steadily progress. If the raffle now being arranged to augment Regional funds was successful, a film and slide projector would be purchased to assist local groups to take advantage of the illustrated lectures on radio and allied subjects which are now available.

Mr. Bartlett, G5QA, then spoke on the scheme of Representation and on the work done by the Council in bringing the revised Articles of Association into final shape. Afternoon tea and a group photograph followed.

At the resumed business meeting the General Secretary gave a comprehensive account of the Society's affairs both from a National and an International point of view, stressing that only by continued well organised and strong representation could we hope to retain our present position and increase our facilities in the future.

The meeting was then thrown open for general discussion, numerous questions being asked and answered by the Council delegates to everyone's satisfaction.



South Western Hamfest—Torquay, October 14, 1953.

From left to right (front row): G3GOX, G3JD, Mrs. G2GK, G3EFY, G2GK, G5QA, G5SY, G2GM; extreme right Mrs. G5SY. [Photo by Torquay Times and Devonshire Press Ltd.]

Aberdeen Meeting

THE third post-war O.R.M. to be held in Region 12 took place at the Northern Hotel, Aberdeen, on Sunday, October 18, with some 50 members in attendance. The Headquarters' delegation consisted of Council Member Herb. Bartlett, G5QA, and the General Secretary, John Clarricoats, G6CL. The weather over the weekend was fine and dry.

On the Saturday the Council delegates together with the R.R., John Douglas, GM2CAS, much enjoyed a run up "Royal Deeside" as far as the Linn o' Dee, passing Aboyne, Balmoral and Braemar on the way. Whilst in Braemar, the party were entertained to High Tea by George Strachan, GM2CJR. Transport was provided by Charles Callanan, GM3HLQ of Glasgow, who although not a member of Region 12, spends a good deal of his time in that part of GM-land.

Assembling at 2 p.m. on the Sunday old acquaintances were renewed and new friendships made. Opening the business meeting the R.R. extended a warm welcome to all present. Visitors from other Regions included Walter Baker, G3AFL, Region 13 R.R., Hugh McConnell,

Before the meeting ended a vote of confidence in the present Council, with the promise of continued support for the future, was passed unanimously.

Dinner followed with the ladies present, after which came the raffle. Fortunately there were sufficient prizes available to allow everyone to win a prize—some even received two!

Due to heavy fog a few of the long-distance travellers experienced difficulty in getting home after the meeting, otherwise everything went according to plan.

Members in the Region look forward to their next O.R.M., and to quote the local Aberdeen-shire toast, "Happy to meet, sorry to part, happy to meet again."

Receiver R1471

MR. A. SOUNDY (Associate Member), 15 Magazine Place, Leatherhead, Surrey, offers to loan the diagrams for the R1471 to any member who requires them. Enquiries should be accompanied by a stamped addressed envelope.

Tests and Contests

Second Two-Metre Field Day, 1953

CONGRATULATIONS to the Northampton Short Wave Radio Club on achieving a notable "double" by winning both of the 1953 Two Metre Field Days! Operated this time by G2HCG, G3IAI and G3FAN, the Club station G3GWB/P scored a total of 8929 points from 103 contacts. Best DX was a 190-mile contact with F9CQ/P.

Congratulations are also due to G3BEX/P, operating single-handed, who has again taken second place, scoring 7331 points from 66 contacts. His best DX was a 235-mile contact with G6XM/P. In third place is G3ERD/P, operated by G8QZ and G3EMJ on behalf of the Derby and District Amateur Radio Society, with 7264 points scored from 71 contacts.

Thirty-four portable stations were active during the day, but only 25 logs were received. Conditions were generally reported as patchy, and the best DX was a 323-mile contact between G2BAT/P and G6XM/P. A number of French stations were contacted by competitors, notably F9CQ/P operating near Dieppe.

Most operators experienced poor weather, but enthusiasm for two-metre field days was not damped—a number of suggestions made concerning the length and timing of the operating period will be carefully considered before the next event.

Equipment Used By the Leading Stations

G3GWB/P.—C.O.-tripler-doubler-832 p.a. 4-stacked skeleton slots with reflectors. Crystal-controlled converter into AR88 or Eddystone 750.

G3BEX/P.—EL91-QQVO4/7-QQVO4/7-832 p.a. 12-element stack. Converter using 12AT7 p.p. r.f.—6J6 mixer—6J6 oscillator into HRO.

G3ERD/P.—Modified BC625A. 16-element stack. G2IQ-type converter with preamplifier into CR100.

Check Logs

The following are thanked for submitting useful check logs: G2AOL, 2DHV, 2YB, 3HBW, GW3GWA, F9CQ/P.

Result of Second Two Metre Field Day

Psn.	Station	Portable location	Points
1	G3GWB/P	11 m. N. Northampton	8,929
2	G3BEX/P	4 m. N.W. Brighton, Sussex	7,331
3	G3ERD/P	15 m. N. Derby	7,264
4	G3APY/P	4 m. N.E. Leek, Staffs.	7,038
5	G6AG/P	6 m. S. Bexley, Kent	6,778
6	G6XM/P	6 m. W. Helmsley, Yorks.	6,344
7	G2BAT/P	1 m. W. St. Agnes, Cornwall	5,631
8	G3AVF/P	4 m. W. Bovey Tracey, Devon	5,468
9	G4JJ/P	6 m. S. Barnsley, Yorks.	5,205
10	G3DIV/P	Nr. Eastbourne, Sussex	4,606
11	G3EUQ/P	9 m. N.E. Southampton	3,582
12	G3MA/P	5 m. E. Gloucester	3,573
13	G3HSD/P	2 m. S. Bristol	3,002
14	G3FD/P	2 m. S.W. Dunstable, Beds.	2,731
15	G3AGS/P	4 m. N.W. Rochdale, Lancs.	2,726
16	G3GXC/P	5 m. S.W. York	2,709
17	G3FKO/P	2 m. N.N.E. Wells, Soms.	2,182
18	G8QY/P	5 m. S. Birmingham	2,122
19	G5ML/P	5 m. N.W. Coventry	2,086
20	G4IB/P	2 m. N. Wrotham, Kent	1,851
21	G3GOP/P	10 m. W. Southampton	1,637
22	G4BP/P	2 m. S. Scarborough, Yorks.	1,080
23	G6MN/P	3 m. N.E. Matlock, Derbys.	905
24	G3ISA/P	2 m. N. Westerham, Kent	880
25	G5MP/P	20 m. S.W. Dover, Kent	642

* Disqualified—No declarations—Claimed scores listed.

Contests Diary

1954

January 30-31

B.E.R.U.*

June 12-13

National Field Day†

* For rules, see page 132, R.S.G.B. BULLETIN, September, 1953.

† For rules, see page 179, R.S.G.B. BULLETIN, October, 1953.

Low Power Field Day, 1953

THIS event produced a most disappointing entry. A dozen portable stations were active, but only eight sent in entries and one a check log. Nevertheless, if the numbers were small, the enthusiasm was immense and fortunately the weather was excellent.

In nearly every case, competitors asked the Contests Committee to "leave well alone" when considering the rules for next year's event. Several suggestions were made, including the use of the Top Band and the removal of frequency restrictions. Another idea was that the contest should continue through the night in the same way as N.F.D., although one entrant remarked it was "short and pleasant . . . a compact little contest."



The neat transmitter and receiver with which G3CGD/P made the leading score in the Low Power Field Day, 1953.

The winner was J. J. Yeend (G3CGD/P) of Cheltenham who scored 87 points with 35 contacts using a three stage transmitter with an input of 0.4/0.5 watt and a three valve receiver. Last year's winner, Fred Miles (G5ML/P) (second with 79 points from 43 contacts) employed a two valve transmitter and a converted surplus receiver. G3GHC/P (third, with 59 points) also used a two valve transmitter and an ambitious superhet receiver employing two i.f. stages.

The aerials were dipoles or long wires, one of which, used by G3HQQ/P, was supported by a kite until 1510 when the station closed down owing to "non-co-operation of the breeze."

Check Logs were received from G2AOL and G6AH/P.

Result of Low Power Field Day

Posn.	Call Sign	Location	Points
1	G3CGD/P	near Cheltenham	87
2	G5ML/P	near Coventry	79
3	G3GHC/P	Kinver, Staffs.	59
4	G3HQQ/P	near Storrington	32
5	GW3GWA/P	near Wrexham	30
6	G3NA/P	near Hereford	20
7	G8KB/P	near Bradford	14
8	G3GDW/P	Newton Abbott	8

Council Proceedings

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Incorporated Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, September 8th, 1953, at 6 p.m.
Present.—The President (Mr. L. Cooper) in the Chair, Messrs. I. D. Auchterlonie, H. A. Bartlett, F. Charman, C. H. L. Edwards, D. A. Findlay, F. Hicks-Arnold, J. H. Hum, A. O. Milne, L. E. Newnham, R. Walker, P. W. Winsford, and John Clarricoats (General Secretary).

Apology for Absence.

An apology for absence was received from Mr. R. H. Hammons who was indisposed.

Membership.

Resolved:—

- (a) to elect 43 Corporate Members and 14 Associates;
- (b) to grant Corporate Membership to 7 Associates who had applied for transfer;
- (c) to grant Life Membership to Messrs. W. H. Borland, GM3EFS, W. R. Metcalfe, G3DQ, and D. Rhodes, G5UZ.

Application for Affiliation.

Resolved:—

- (a) to grant affiliation to the Lancaster and District Amateur Radio Society and Nottingham and District Short Wave Club;
- (b) to accept an application from the Brighton and District Radio Club for re-affiliation.

Amateur Radio Exhibition 1953.

Resolved:—

- (a) to fix the admission charge at 1/-;
- (b) to allocate one large and two medium size stands to the Amateur Constructors' Section.

Articles of Association.

Resolved:—

- (a) to authorise the General Secretary and the Society's legal advisers to settle the Articles of Association in final form for submission to the membership;
- (b) to make no change to Article 27.

London Region Meeting.

It was reported that the President, Acting Vice-President and General Secretary had met the representatives of Region 7 on September 4th, 1953. After hearing the views of the representatives of the Council, the following resolution was adopted by 13 votes to 3, with 1 abstainer:—

"This meeting records that the members have heard the representatives of the Council and is satisfied with the answers given."

National Field Day.

The Contests Committee sought the advice of the Council on certain matters which had come to light during the judging of N.F.D.

Resolved to approve the actions taken, or proposed, by the Contests Committee.

Proposed Convention.

The President suggested that consideration be given to the question of holding a Convention during 1954 in the West Country—preferably in Bristol. Mr. Bartlett agreed to discuss the matter with the Region 9 County Representatives. The 420-460 Mc/s Band.

The Secretary reported upon a circular issued by the Ministry of Civil Aviation relating to the 420-460 Mc/s band. He also tabled correspondence which he had exchanged with the Ministry. (A full account of this matter appeared in the October BULLETIN).

August Editorial.

A letter was read from the Editor of *The Short Wave Magazine* (Mr. Austin Forsyth) in which he stated that he had taken exception to certain comments made in the August BULLETIN editorial.

After discussion, it was agreed that Mr. Hum should write a personal letter of clarification to Mr. Forsyth and endeavour to allay any misunderstanding which might have arisen as a result of the editorial in question.

Cash Account.

Resolved to accept and adopt the Cash Account for August, 1953.

Nominations for Council 1954.

Letters were submitted from four groups of members recommending that Mr. Leslie Cooper be re-nominated for the office of President. The letters stressed the good work done by Mr. Cooper during his present term of office and the importance of him remaining President until such time as the new Articles of Association have been adopted and the Society has surmounted its present difficulties. After the letters had been read it was proposed and seconded that Mr. Leslie Cooper be nominated as President for the year 1954.

Mr. Cooper was asked if he was prepared to stand for another year. He stated he was willing, provided the Council wanted it so.

Several members having indicated that they wished to discuss the proposal, Mr. Cooper then withdrew from the meeting and the Chair was taken by the Immediate Past-President (Mr. F. Charman).

During the subsequent discussion certain Members expressed the opinion that the Council would be unwise to nominate Mr. Cooper as President for a second year, in view of the fact that the Council itself had already agreed to put

forward to the membership a new Article of Association to the effect that no one shall be President for two consecutive years. Having heard the discussion, the proposer of the motion, with the consent of the seconder, withdrew his nomination in favour of Mr. Cooper as President. No vote was taken.

At this point the President re-entered the meeting. The acting Chairman then conveyed the views of the Council to the President and stated that it was quite possible that Mr. Cooper might still be nominated by an outside group, to which Mr. Cooper intimated that, in the circumstances, he would not oppose Mr. Milne should he be nominated by the Council for the office of President.

Nominations were then made for the 1954 Council in accordance with the list which appeared in the October, 1953 issue of the BULLETIN.

Technical Committee.

Resolved to accept, and adopt as a Report, the Minutes of a Meeting of the Committee held on August 6th, 1953.

The Report dealt with *inter-alia*, v.h.f. technical panels, BULLETIN technical articles, the London lecture programme and the Amateur Radio Exhibition.

The Television Sub-Committee reported at length to the Technical Committee on a meeting between representatives of that body and the G.P.O. when certain aspects of the TVI problem were fully discussed.

Amateur Radio Exhibition.

Amateur Constructors' Section Committee.

Resolved:—

- (a) to accept, as a Report, the Minutes of a Meeting of the Committee held on August 25th, 1953;
- (b) not to accept a Recommendation of the Committee that the Council should agree to permit an Amateur Radio station to operate from the Exhibition.

The Report dealt at length with a number of other matters relating to the Exhibition.

The meeting terminated at 10.30 p.m.

Representation, 1954-55

A complete list of Corporate Members who have been nominated without opposition to serve as Regional or Town Representatives will appear in the December issue of the BULLETIN.

Ballots

It will be necessary to conduct a Ballot in Regions 2 and 14 where nominations have been made in opposition to the Council nominees. Ballots are also necessary in two parts of the London Region, viz., Chingford and Southgate.

The names of the nominees for the respective offices are set out below:

Regional Representatives

Region 2

W. Farrar (G3ESP).

*C. A. Sharp (G6KU).

Region 14

R. Bissett (B.R.S. 9399).

*D. Macadie (GM6MD).

*Nominated by the 1953 Council.

Town Representatives

Chingford

W. G. Hall (G8JM).

B. A. Lea (G3ICY).

Southgate

S. H. Iles (G3BWQ).

E. G. Styles (B.R.S. 15648).

Voting

Corporate Members resident in the Regions or Towns concerned are invited to record their vote in favour of one of the above candidates and to forward same on a *postcard* addressed to the General Secretary, R.S.G.B., New Ruskin House, Little Russell Street, London, W.C.1, to arrive not later than November 30, 1953.

Prescribed Form of Voting Card.

Election of Representatives, 1954/5.

I, being a fully paid-up Corporate Member of the Society, wish to record my vote in favour of Mr. as Representative for

Signed

Call Sign or B.R.S.

Address

VOTES FOR REGIONAL OR TOWN ELECTIONS MUST NOT BE INCLUDED IN COUNCIL BALLOT ENVELOPES. CLOSING DATE FOR VOTING CARDS IN CONNECTION WITH THE ELECTION OF REPRESENTATIVES IS MONDAY, NOVEMBER 30, 1953.

Forthcoming Events

REGION 1

- Blackpool (B. & F.A.R.S.).**—November 24, 7.30 p.m., 351 Whitgate Drive, Blackpool. No December meeting.
- Bury.**—December 10, 7.30 p.m., 52 The Drive, Seedfield Bury.
- Chester (C. & D.A.R.S.).**—Tuesdays, 7.30 p.m., Tarran Hut, Y.M.C.A., Chester.
- Crosby.**—Tuesdays, 8 p.m., over Gordon's Sweetshop, St. John's Road, Waterloo.
- Darwen & Blackburn.**—November 20, December 11, 7.30 p.m., Y.M.C.A., Limbrick, Blackburn.
- Isle of Man (I.O.M.A.R.S.).**—December 2, Broadway House, Douglas.
- Liverpool.**—Alternate Saturdays, 3 p.m., Larkhill Mansion House, West Derby, Liverpool.
- Manchester (M. & D.R.S.).**—December 7, 7.30 p.m., Brunswick Hotel, Piccadilly, Manchester.
- Rochdale (R.R.T.S.).**—Fridays, 7.45 p.m., 1 Law Street, Sudden.
- South Manchester (S.M.R.C.).**—Alternate Fridays, 7.30 p.m., Ladybarn House, Mauldeth Road, Manchester 14.
- Stockport (S.R.S.).**—November 25, December 9, 8 p.m., A.T.C. Headquarters, St. Petergate.
- Warrington (W. & D.A.R.S.).**—November 17, December 1, 7.30 p.m., King's Head Hotel, Winwick Street, Warrington.
- West Cumbria.**—December 3, 7 p.m., Kell's Community Centre, Whitehaven.
- Wirral.**—November 18, December 2, 16, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

DEADLINE

Contributors are asked to note that the closing date for copy intended for the December issue is November 25, 1953.

REGION 2

- Barnsley.**—November 27, December 11, 7.30 p.m., King George Hotel, Peel Street.
- Bradford.**—November 24, December 8, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
- Catterick.**—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.
- Darlington.**—Thursdays, 7.30 p.m., 129 Woodlands Road.
- Doncaster.**—December 9, 7.30 p.m., Black Bull, Market Place.
- Gateshead.**—Mondays, 7.30 p.m., Mechanics Institute, 7 Whitehall Road.
- Hull.**—November 24, December 8, 7.30 p.m., Rampant Horse, Paisley Street.
- Middlesbrough.**—Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Feversham Street.
- Newcastle-upon-Tyne (N.E.A.T.S.).**—December 1, 7.30 p.m., Barras Bridge Hotel, Sandford Road.
- Pontefract.**—November 26, December 10, 8 p.m., Fox Inn, Knottingley Road.
- Rotherham.**—Wednesdays, 7 p.m., Cutlers Arms, Westgate.
- Scarborough.**—Thursdays, 7.30 p.m., B.R. Rifle Club, West Parade Road.
- Sheffield.**—November 25, 8 p.m., "Dog and Partridge," Trippet Lane; December 9, 8 p.m., Albreda Works, Lydgate Lane.
- Slaithwaite.**—Fridays, 7.30 p.m., 3 Dartmouth Street.
- Spennorth.**—November 18, December 2, 7.30 p.m., Temperance Hall, Cleckheaton.
- York (Y.A.R.S.).**—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

- Birmingham (South).**—December 4, 7.15 p.m., Stirchley Institute (Room 7).
- Coventry.**—November 27, 7.30 p.m., Priory High School, Wheatley Street.
- Kenilworth.**—Wednesdays & Leamington.—November 19, 7.30 p.m., Dalchouse Lane.
- Malvern.**—December 7, 8 p.m., "Foley Arms."
- Stourbridge (S. & D.R.S.).**—December 1, 8 p.m., King Edward's School.
- Wrekin (W.A.R.S.).**—Mondays, 8 p.m., Wrekin Service Club, Roseway, Wellington.

REGION 4

- Alvaston.**—Tuesdays, Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, Nr. Derby.
- Chesterfield.**—Tuesdays, 7.30 p.m., Bradbury Hall, Chatsworth Road, Chesterfield.
- Derby (D. & D.A.R.S.).**—Wednesdays, 7.15 p.m., Derby College of Arts and Crafts, Sub-basement, Green Lane, Derby.
- Leicester (L.R.S.).**—November 23, December 14, 7.30 p.m., Holly Bush Hotel, Belgrave Gate, Leicester.

- Lincoln (L.S.W.C.).**—November 25, December 9, 7.30 p.m., Technical College, Cathedral Street, Lincoln.
- Loughborough.**—November 18, 7.30 p.m., Great Central Hotel.
- Mansfield (M. & D.A.R.S.).**—December 6, 3 p.m., Denman's Head Hotel, Market Place, Sutton-in-Ashfield.
- Newark.**—November 22, December 6, 7 p.m., Northgate House, Northgate, Newark.
- Northampton.**—Fridays, 7 p.m., December 4, 6 p.m., Club Room, 8 Duke Street, Northampton.
- Nottingham.**—November 20, December 18, 7.30 p.m., Sherwood Community Centre, opposite Woodthorpe Drive, Sherwood.
- Peterborough.**—December 2, 7.30 p.m., New Inn, New England, Peterborough.
- Retford.**—December 7, 7 p.m., Community Centre, Chapel Gate, Retford.

REGION 5

- Chelmsford.**—December 1, 7.30 p.m., Marconi College, Arbour Lane.
- Ipswich.**—November 25, December 9, 7.30 p.m., T.A. Drill Hall, Woodbridge Road, Ipswich.
- Lowestoft & Beccles (L. & B.A.R.C.).**—November 25, December 9, 7.30 p.m., Y.M.C.A., Lowestoft.

REGION 6

- Cheltenham.**—December 10, 8 p.m., 128 Prestbury Road.
- Gloucester (G.R.C.).**—Thursdays, 7.30 p.m., The Cedars, 83 Hucclecote Road, Gloucester.
- Oxford (O. & D.A.R.S.).**—November 25, December 9, 7.30 p.m., The Club Room, "Magdalen Arms," Ilfley Road.
- Portsmouth.**—Tuesdays, 7.30 p.m., Signals Club Room, Royal Marine Barracks, Eastney.
- Southampton.**—December 5, 7.30 p.m., 1 Prospect Place.
- Stroud.**—Wednesdays, 7.30 p.m., Subscription Rooms.

REGION 7

- Acton, Brentford & Chiswick.**—Tuesdays, 7.30 p.m., A.E.U. Rooms, 66-68 High Road, Chiswick, W.4.
- Barnes, Putney, Richmond.**—December 8, 7.30 p.m., 337 Upper Richmond Road, East Sheen.
- Barnet.**—December 11, 7.30 p.m., Elizabeth Allan School, Wood Street, "Microwave Technique" lecture-demonstration by G.E.C. (B.D.R.C.), Wednesdays, 8 p.m., "Hopedene," The Avenue.
- Beckley Heath (N.K.R.S.).**—November 26, December 10, 7.30 p.m., Congregational Hall, Chapel Road, Beckley Heath.
- Bromley (N.W.K.A.R.S.).**—December 4, 8 p.m., Shortlands Tavern, Station Road, Shortlands.
- Chingford.**—December 1, 15, 29, January 12, 8 p.m., A.T.C. Hall, Pretoria Road.
- Croydon (S.R.C.C.).**—December 8, 7.30 p.m., "The Blacksmiths Arms," South End, Croydon. "International Radio Conferences and the Radio Amateur," John Clarricoats (G6CL).
- Dorking.**—Tuesdays, 7.30 p.m., 5 London Road.
- Dulwich & New Cross.**—December 1, 7.45 p.m., "The Walmer Castle," Peckham Road, S.E.5.
- Ealing.**—Sundays, 11 a.m., A.B.C. Restaurant, Ealing Broadway.
- East Ham.**—December 1, 15, 29, 8 p.m., 57 Leigh Road.
- East London.**—November 29, 2.30 p.m., Lambourne Room, Town Hall, Ilford. "Disc and Tape Recording," H. A. M. Clark, B.Sc.(Eng.), M.I.E.E. (G6OT).
- East Molesey.**—December 2, 8 p.m., Carnarvon Castle Hotel, Hampton Court, TV Transmitter, E. Dedman.
- Enfield.**—November 15, December 20, 3 p.m., George Spicer School, Southbury Road.
- Finchley Park.**—December 17, 22, 7.30 p.m., 164 Albion Road, N.16.
- Guildford & Woking.**—November 22, 3 p.m., Royal Arms Hotel, North Street, Guildford. "Bridge Measurements," P. R. A. Dolphin, B.Sc.(Eng.), Grad.I.E.E. (G3ELH).
- Hayes & Uxbridge.**—November 23, December 14, 7.30 p.m., Hillingdon Primary School, Uxbridge Road.
- Hendon & Edgware (E.D.R.S.).**—Wednesdays, 8 p.m., 22 Goodwins Road, Mill Hill.
- Hoddesdon.**—December 3, 8 p.m., "Salisbury Arms."
- Ilford.**—Thursdays 8 p.m., G2BRH, 579 High Road, Ilford.
- Kingston (K. & D.A.R.S.).**—November 18, December 2, 16, 7.45 p.m., Penrhyn House, Penrhyn Road.
- Kensington & Shepherd's Bush.**—December 15, 8 p.m., 38 Royal Crescent, W.11.
- Lewisham (R.A.R.C.).**—Wednesdays, 8 p.m., Durham Hill School, Downham.
- Norwood.**—November 21, 7.30 p.m., Windermere House, Westow Road, Crystal Palace. Ann Cup and Trophy Competition.
- Slough.**—November 19, December 17.—7.45 p.m., Labour Hall, Chandos Street.
- Southgate & Finchley.**—December 10, 7.30 p.m., Arnos School, Wilmer Way.

(Continued on page 240)

Regional and Club News

BABCOCK & WILCOX STAFF ASSOCIATION (RADIO SECTION).—On December 4 at 7 p.m. in the Club Room, Cutler Street, Houndsditch, London, Frank Hicks-Arnold (G6MB) will give a talk on miniature components and wide-band couplers. All R.S.G.B. members are invited to attend. *Hon. Secretary:* A. J. Taylor, Babcock House, Farringdon Street, London, E.C.4.

BALDOCK & DISTRICT RADIO CLUB.—"TVI Suppression" was the title of a lecture given by Louis Varney (G5RV) at the September meeting attended also by members of the Sheffield & District and Royston clubs. *Hon. Secretary:* A. Fussell, 6 Clare Crescent, Baldock, Herts.

BRISTOL.—Nearly 60 members attended the October meeting when D. Turner (G3IHE) described his experiences as a Radio Officer with B.O.A.C. The election for the 1954 Committee will be held on November 20.

CHELLENHAM.—Local members spent a most enjoyable evening as guests of the Gloucester Group on October 8—the first of a series of such meetings arranged in conjunction with Gloucester and Stroud. It is hoped to hold a "Three Towns" Dinner during the winter.

DERBY & DISTRICT AMATEUR RADIO SOCIETY.—Recent activities have included a visit to the Sutton Coldfield TV station. A talk on and demonstration of the alignment of superhet receivers is arranged for November 25. An organised party will visit the R.S.G.B. Amateur Radio Exhibition on November 28. *Hon. Secretary:* F. C. Ward, 5 Uplands Avenue, Littleover, Derby.

ECCLES & DISTRICT RADIO SOCIETY.—Meetings are held on Mondays at 8 p.m. and the club station is active on Top Band and 144 Mc/s. *Hon. Secretary:* C. Richardson (G3IYO), 10 Stanley Avenue, Eccles, Manchester.

EDINBURGH AMATEUR RADIO CLUB.—Meetings at 16 Bothwell Street, (downstairs), Easter Road, are arranged for November 18 (R.S.G.B. Recorded Lecture), December 2 ("Audio Amplifiers") and December 16 ("TV Construction"). The club station, GM3HAM, is again active. *Hon. Secretary:* D. Black, 16 Edina Place, Edinburgh.

EXETER.—Douglas Chalmers (P.O. Engineering Dept.) spoke about "Tape Decks and Recording Amplifiers" at the October meeting. The lecture was illustrated with practical demonstrations of a home-built recording amplifier and a commercial tape deck.

GRAFTON RADIO SOCIETY.—More than forty members attended the lecture on "The History and Development of Amateur Radio" given by John Clarricoats, G6CL on October 9. During the month H. Hill also lectured on "Amplifier Design." *Hon. Secretary:* A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

HASTINGS & DISTRICT AMATEUR RADIO CLUB.—Those who worked the club station G6HH/A at the Hastings Hobbies Exhibition during the period July 4 to 11 are assured that all contacts will be acknowledged. Supplies of QSL cards are at present awaited from the body which undertook to provide them.

LOTHIANS RADIO SOCIETY.—There will be a "Sale and Exchange" period at the meeting on November 19, and a talk on "Multi-channel Television" on December 3. December 17 will be "Beginners' Night." All meetings are held at 25 Charlotte Square, Edinburgh, commencing at 7.30 p.m. *Hon. Secretary:* L. Stuart, 38 Caledonian Crescent, Edinburgh.

MERSEYSIDE RADIO SOCIETY.—The Society's newsletter, *QRZ*, has become the joint organ of the Merseyside and West Lancs. Radio Societies, an arrangement which, it is hoped, will prove of mutual advantage. *Hon. Secretary:* J. B. Trueman (G3GJG), 141 Ince Avenue, Anfield.

NORWOOD & DISTRICT.—Thirty-two members attended the October meeting at which E. Yeoman (G3IIR), and D. Smith described a home-built communications receiver. The annual competition for the "Ann" Cup and Trophy will be held on November 21. All local members are invited to attend.

SOUTHEAST & DISTRICT RADIO SOCIETY.—More classes are held on Mondays and Theory classes on Thursdays at 8 p.m. at 27 Park Road, Southend. The instructor is K. F. Crispin. *Hon. Secretary:* J. H. Barrance, M.B.E. (G3BUJ), 49 Swanage Road, Southend-on-Sea.

SOUTH MANCHESTER RADIO CLUB.—At the A.G.M. the following officers were elected: *Chairman:* N. Potter (G3GNC); *Vice-Chairman:* M. Denny (G6DN); *Hon. Secretary:* M. Barnsley (G3HZM), 17 Cross Street, Bradford, Manchester 11; *Hon. Treasurer:* N. Ashton (G3DQU); *Committee Members:* J. R. Knight (G3JRK), G. Kenyon (G3HMF), F. Cooknell (G3IPH) and J. R. Pownall. Meetings at Ladybarn House, Mauldeth Road, Fallowfield 14, are on November 20 ("Valve Voltmeters," G3IPH) and December 4 ("Model Aerials on 70 cm," G3A00). The club station is now active on 3.5 Mc/s using a transmitter loaned by G3ESK.

STOCKPORT RADIO SOCIETY.—G3EJZ and G3FYE are the instructors at the classes for the R.A.E. held on Thursday evenings. Other lectures are arranged for November

ber 25 and December 9 at the A.T.C. Headquarters, St. Petersgate. *Hon. Secretary:* G. R. Phillips (G3FYE), 7 Germans Buildings, Buxton Road, Stockport.

SURREY RADIO CONTACT CLUB.—The General Secretary of the R.S.G.B. (John Clarricoats, G6CL) will speak on "International Radio Conferences and how they affect the Radio Amateur" at the meeting to be held at The Blacksmith's Arms, 1 South End, Croydon (Coombe Road Corner) on Tuesday, December 8, at 7.30 p.m. In view of the importance of the subject the Committee extend a warm welcome to all R.S.G.B. members living in and near to Croydon to attend this particular meeting.

TORBAY AMATEUR RADIO SOCIETY.—A talk on electrical instruments will be given on November 21. The December meeting will be devoted to aerial systems. *Hon. Secretary:* L. H. Webber (G3GDW), 43 Lime Tree Walk, Newton Abbot.

WEST KENT AMATEUR RADIO SOCIETY.—Louis Varney (G5RV) described methods of TVI prevention at a recent meeting. G4FB and G4IB will demonstrate their 2 m transceivers on December 9. The Society's Annual "Get-together" will be held at "The Red Lion," St. John's on December 16, commencing at 7.30 p.m. *Hon. Secretary:* B. Freeman, 18 Queens Road, Tunbridge Wells.

WORTHING & DISTRICT RADIO CLUB.—Meetings are held at the Adult Education Centre, Worthing, at 8 p.m. on the second Monday in each month. J. F. Wells (B.R.S. 6852), 37 Salvington Gardens, Worthing, was elected *Hon. Secretary* at the recent A.G.M.

C.R. Vacancies

Vacancies exist in the following counties for the office of County Representative:

Region	County
2	Yorkshire East.
5	Beds., Herts. (outside London); Suffolk.
6	Berks., Bucks. (outside London); Oxfordshire; Wiltshire.
10	Brecknock; Glamorgan; Monmouth; Radnor.
11	Merioneth; Montgomery.
12	Angus & Perth; Northern Counties.
13	Fife & Kinross.
14	Argyll & Dumbartonshire; City of Glasgow, Lanarks & Renfrew.
15	Armagh; Fermanagh; Londonderry & Tyrone.

Nominations

Members in these counties are invited to submit nominations via their respective Regional Representatives for the C.R. vacancies.

Vacancy

Mr. Arthur Goode (G2DTQ) has resigned as Representative for the County of Nottinghamshire. Nominations for his successor should be made in the prescribed form and sent to reach the General Secretary by not later than December 31, 1953.

Can You Help?

• W. G. Hall (G8JM), 48 Hawkdene, North Chingford, London, E.4., who requires information on the following transformers: Reference 10KB 194 KA2908/2, which has 11 terminals, and Reference KA 2905/2, which has 7 terminals.

• Cpl. A. J. Russell, 2479316, 72 Signals Unit, c/o R.A.F. Wahn, B.A.O.R. 19, who urgently requires the circuit and any other information on the B2 Minor (Type A Mk III transmitter-receiver).

• K. T. Humphrey (B.R.S. 18908), 53 West Street, Banbury, Oxon., who requires details of the U.S. Signal Corps Transmitter-Receiver type BC1267-A, the frequency range of which is 154-186 Mc/s.

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, at 12.30 p.m. on November 20.

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

New Books

RADIO DESIGNER'S HANDBOOK (4th Edition). Edited by F. Langford-Smith, B.Sc. 1,474 pages. Page size 8½ in. x 5½ in. Published by Iliffe & Sons Ltd. Price 42/-.

This edition is more than four times as large as the previous edition and is the work of 10 authors and 23 collaborating engineers, under the editorship of F. Langford-Smith. The work deals in detail with basic principles and the practical design of all types of modern radio receivers, audio amplifiers and record-reproducing equipment. The enormous amount of data it contains has been made readily accessible by means of a fully-detailed list of contents and a very complete index. The book is a self-contained source of information but exhaustive bibliographies are provided.

The main subjects are: valves and valve testing; general theory and components; audio frequencies; radio frequencies; power supplies; design of complete a.m. and f.m. receivers; and reference information.

TELEVISION ENGINEERING, Principles and Practice (Volume I): Fundamentals, Camera Tubes, Television Optics, Electron Optics. By S. W. Amos B.Sc.(Hons.), A.M.I.E.E., and D. C. Birkinshaw, M.B.E., M.A., M.I.E.E., in collaboration with J. L. Bliss, A.M.I.E.E. Over 300 pages, 188 illustrations. Page size 8½ in. x 5½ in. Published by arrangement with the B.B.C. for "Wireless World" by Iliffe & Sons Ltd. Price 30/-.

This is the first volume of a textbook on television engineering written by members of the B.B.C. Engineering Training Department, primarily for the instruction of the Corporation's own operating and maintenance staff. The work is intended to provide a comprehensive survey of modern television principles and practice, on both the transmitting and receiving sides.

This volume discusses in detail the vision waveform derived from synchronising and picture signals. Types of camera tubes in use by the B.B.C. and lenses are then described, and the final chapters are devoted to electron optics, involving a study of electric and magnetic lenses.

The second volume, now in course of preparation, will cover vision-frequency amplifiers and waveform generation, and later volumes will deal with the remaining aspects of the subject.

The technical level of the work has been devised to satisfy the student grade; mathematical argument has been excluded from the text, but appendices are included where special treatment of particular subjects has seemed desirable.

TELEVISION RECEIVER DESIGN (Vol. I, I.F. Stages). By A. G. W. Uijtenz. 188 pages, 123 illustrations. Page size 9 in. x 6 in. Published by Philips, Eindhoven, Netherlands. English distributors Cleaver-Hume Press, Ltd., London, W.1. Price 21/-.

This monograph, the first of a specialised series on television, deals with the application of the pentode valve in the i.f. stages of a superhet receiver and r.f. amplification in a t.r.f. receiver.

The book is part of the Philips Technical Library and is numbered 8a.

The next book will deal with Flywheel Synchronisation of Saw-Tooth Generators.

PRINCIPLES OF ELECTRONICS. By H. Buckingham, Ph.D., M.Sc., and E. M. Prince, M.Sc. 335 pages, 74 in. x 4½ in., 266 illustrations. Published by Cleaver-Hume Press, Ltd., London, W.1. Price 15/-.

The applications of electronics in industry and engineering are now so varied that the first essential need of the student is a sound basic knowledge of their general theory. The first five chapters of this book are devoted to this purpose. The next six describe the principal electronic devices in current use and how they operate. The remaining chapters deal with some of the applications of these devices to the widely varying problems in industry and engineering.

No better book could be recommended to the electrical engineer approaching for the first time this interesting and expanding section of his profession.

A FIRST COURSE IN WIRELESS (Third Edition). By "Decibel." 231 pages. Page size 7½ in. x 4½ in., 93 illustrations. Published by Sir Isaac Pitman & Sons, Ltd. Price 12/6.

This well-known book has been completely revised and brought up-to-date in the light of recent developments in radio communication, radar and television. The minimum amount of mathematics has been employed, resulting in a book which is free from complications.

Those studying for the Radio Amateurs' Examination will find it extremely useful.

WIRELESS & ELECTRICAL TRADER YEAR BOOK: Radio, Television and Electrical Appliances, 1953 (24th Edition). 264 pages. Page size 8½ in. x 5½ in. Published at 10/6 by Trader Publishing Co. Ltd.

Since this year book was first published in 1925 it has become firmly established as the retailers' invaluable reference book to the radio and electrical industries.

In the 1953 edition, data of practical use to dealers in the new television areas and general reference and technical information have been carefully selected. Features include condensed specifications of current commercial television receivers (with details of valves used, i.f. values, etc.) and information on valve and cathode-ray tube base connections, with over 200 valve base diagrams.

A new feature, reintroduced, is the Mains Voltage Directory which covers all the principal towns in Great Britain. The comprehensive list of the i.f. values of commercial radio receivers which have been marketed during the past five years has been revised and extended.

INTRODUCTION TO VALVES. By R. W. Hallows, M.A.(Cantab), M.I.E.E., and H. K. Milward, B.Sc.(Lond.), A.M.I.E.E. 152 pages, 107 line illustrations and a frontispiece. Page size 8½ in. x 5½ in. Published for "Wireless World" by Iliffe & Sons Ltd. Price 8/6.

This book describes the principles of operation of the radio valve and its uses in circuits of various types. Following an explanation of the fundamental thermionic valve, the book deals with diodes, as rectifiers and detectors; triodes and their various applications; tetrodes and pentodes; multiple-grid valves for frequency-changing; power-output valves; and valves for v.h.f. and e.h.f. operation. Other chapters discuss special-purpose types and the construction of modern miniature and sub-miniature valves.

The system of letter symbols for valves introduced by the British Standards Institution in 1947 is used throughout, and a full explanation of this system is given. The text is supplemented by more than 100 diagrams and graphs, including many typical circuits.

While the book—as its title indicates—does not attempt to provide more than a general introduction to this large and complex subject, the reader is given an excellent grounding in a clear and concise form. The technical level is sufficiently advanced to make the work useful to the more knowledgeable radio student as well as to the novice.

FORTHCOMING EVENTS.—(Continued from page 238)

REGION 7.—(Continued)

Sutton & Cheam (S. & C.R.S.).—November 17, December 15, "The Harrow," Cheam Village.
Uxbridge.—December 4, 7.30 p.m., "The Vine," Hillingdon.
Watford (W.A.R.S.).—November 17, December 1, 15, 7.30 p.m., "Cookery Nook, The Parade."
Welwyn Garden City.—December 1, 8 p.m., 38 Elmwood. Discussion: "How the Future of Amateur Radio Looks to Me."

REGION 8

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

REGION 9

Bristol.—November 20, December 18, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol 1.
Exeter.—December 4, 7 p.m., Y.M.C.A., St. David's Hill.
North Devon.—December 3, 7.30 p.m., Rose of Torridge Cafe, The Quay, Bideford.
Penzance.—December 3, Railway Hotel.
Plymouth.—November 21, December 19, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Jude's.
Torquay.—November 21, December 19, 7.30 p.m., Y.M.C.A., Castle Road.
West Cornwall (W.C.R.C.).—November 19, December 3, "Fifteen Balls," Penryn, near Falmouth.
Weston-super-Mare.—December 1, 7.30 p.m., Y.M.C.A.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 10

Cardiff.—December 14, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff.

REGION 13

Dunfermline.—Mondays and Thursdays, 7.30 p.m., behind 34 Viewfield Terrace, Dunfermline.
Edinburgh.—November 26, 7.30 p.m., 25 Charlotte Square, Edinburgh. Special Business Meeting. (L.R.S.).—November 19, December 3, 14, 7.30 p.m., 25 Charlotte Square, Edinburgh.

REGION 14

Falkirk.—November 27, December 11, 7.30 p.m., The Temperance Cafe, High Street, Falkirk.



"TVI-Proof"

DEAR SIR,—I am prompted to write a few lines on the above nomenclature as applied to amateur transmitters since I have reason to believe that there is some misunderstanding of what it is meant to imply.

A minority of amateurs appear to think that a transmitter so designed should be capable (by some magic!) of rectifying the inherent failings of certain TV receivers—I refer to unsuitable choice of i.f., second channel pick-up, poor "front-end" selectivity, etc.—in addition to the suppression of harmonic and other spurious radiations.

The design of such a transmitter being clearly impossible, it might perhaps be better to qualify the term by the addition of the word "harmonic" before it.

What is equally required, of course, are TVI-proof television receivers; and then we should indeed be happy!

My very good friend G6LB will, I am sure, forgive me for mentioning that, since the publication of his letter in the September issue, attention to a number of fundamentally important TVI-proofing measures (heretofore overlooked) in his own installation, has resulted in a most marked improvement in what he had come to regard as a hopeless situation. So much so, that I have no hesitation in saying that, when he has completed the work now in hand, he will be "TVI-proof" on most, if not all, of the bands from 1.8 to 28 Mc/s.

Per ardua ad bonum visum!

LOUIS VARNEY, A.M.I.E.E. (G5RV).

Chelmsford, Essex.

V.H.F. Band Planning

DEAR SIR,—At a time when the occupancy of every kilocycle is vital, why have British amateurs been asked to surrender voluntarily their right to operate in some 90 per cent. of the 2-metre band?

After protracted negotiations the Society obtained permission for the use of frequency modulation on this band. Why, then, is it now proposed that this facility should be confined to those resident in Zones E, G, H and J?

If the Society has agreed to sponsor this Plan, why are we advised in a later Editorial to ignore the proposed allocations under certain conditions?

Recent criticisms of the conduct of the Society have suggested that Council is out of touch with the membership. Why, then, did not the Society open the columns of the BULLETIN for discussion on the pros and cons of this plan before approving it, or at least invite comments via the usual Representation channels?

Finally, if a Plan is needed, why sponsor an old idea which many 2-metre operators have considered carefully and rejected?

Yours faithfully,

L. G. STODDLEY (G8DM).

Faringdon, Berks.

V.H.F. Converters

DEAR SIR,—I should be interested to know whether any of your readers have experimented with a converter which uses both a crystal oscillator and a tuneable oscillator.

Opinions seem to be divided as to the superiority or otherwise of the crystal controlled converter compared with a tuneable converter; with the former variety one is likely to get trouble with break-through and spurious signals, whereas the latter type can never quite achieve the complete stability of the crystal, no matter how good the design and workmanship, but it has the great advantage of being suited for a calibrated dial of its own.

But if one were to use a two metre converter with a crystal oscillator giving a first i.f. of (say) 24 to 26 Mc/s, followed by a Clapp oscillator tuning from say 4 to 6 Mc/s (with the main receiver tuned to 20 Mc/s), it seems to me that one could achieve the maximum stability at v.h.f., of which the main receiver itself is capable of sustaining at 20 Mc/s. The chief theoretical objection is that one might be troubled with harmonics from the Clapp, but with proper design and screening this may not be an insurmountable difficulty.

As regards the Clapp oscillator, there should be no difficulty, I think, in tuning this over so wide a range as 4 to 6 Mc/s, using a coil of about 18 μ H tuned with a

75 μ F variable condenser, across which is a 50 μ F trimmer adjusted to about 30 μ F.

The two 1,000 μ F condensers, normally used in the Clapp, would of course be retained.

Yours faithfully,

V. G. P. WILLIAMS (G3FYY).

London, N.W.2.

Technical Comment

The idea put forward by Mr. Williams is a good one but the suggested method has certain disadvantages, chief of which, perhaps, is the possibility of interfering signals being received in the band covered by the flatly tuned first i.f. amplifier.

The same effect could be produced by the use of a Mixer Master Oscillator type of variable frequency source followed by a frequency multiplier. The variable oscillator could well be in the 4 Mc/s range but would only have to cover a comparatively narrow band as subsequent multiplication would give the required 2 Mc/s sweep. As a suggestion a triode-hexode could be employed as the frequency source; the triode section as an overtone oscillator and the remaining electrodes as v.f.o. and output.

W.H.A.

De-Humidifier Not Wanted

DEAR SIR,—This is not exactly my line of country but I think I can help G3CGH and any others over the de-humidifier. It is not working exactly as Mr. Thorpe thinks. I suggest that it is condensing some of the moisture produced by the heater, and that it is not extracting moisture from the surrounding air. Personally I would never have a paraffin heater anywhere near my radio gear in a confined space, any more than I would use a blow lamp or methylated spirit heater, because these things produce molecular water which is the most violent and active form of that great disintegrator and solvent.

The chemistry is simple: these fuels are composed solely of carbon and hydrogen—a little more than twice as much H as C; a significant point. Combustion is the combination of oxygen with these elements: carbon forms CO (the poisonous gas) and/or CO₂, whilst two hydrogen atoms combine with one oxygen atom. Thus in complete combustion one liberates CO₂ and H₂O, as molecules, and no large amount of thinking is necessary to imagine where such a small thing as a molecule of water can penetrate—it's fatal to steel instruments.

The uncomfortable feeling in a combustion-heated room is not due to dryness, but to excess moisture in the atmosphere.

Go all electric—I've not had any trouble with engineering gear in years, yet it has been installed out of doors in a breeze block building.

Yours faithfully,

W. H. MATTHEWS (G2CD).

Seven Kings, Essex.

N.F.D.: Question of Date

DEAR SIR,—For many years, N.F.D. has been recognised as the most popular of events in the R.S.G.B. calendar. As well as providing an outlet for the lethargical, it provides technical interest and, most important of all, one of the few chances for younger operators to gain essential experience.

It has been the practice to hold field day at the end of the first week in June but, as many will realise, this coincides with examinations at universities, technical colleges and schools in most parts of the country. The writer, both as a student and an ardent "ham," feels that, whereas many fellow students would benefit from the postponement of N.F.D. for only three weeks, no person would lose thereby.

The reasons are obvious: the point is put and it is hoped that even the most apathetic "old-timer" will concede this and so encourage younger members to be good operators.

Yours faithfully,

D. RICKERS (GW3HEU).

Wrexham, N. Wales.

Code Proficiency Runs

DEAR SIR,—May I add my plea to that of G2HKU in the October BULLETIN and ask other amateurs to keep 3505 kc/s clear for just a few minutes on one Sunday in each month so that we poor unfortunate learners of Morse can try to copy the excellent proficiency runs from PA0AA.

There would appear to be one or two old hands who are such good operators that they think they cannot profit by listening to V.E.R.O.N. and who are so inconsiderate of others that they proceed to call CQ almost on top of his frequency. Really, chaps, is this the Ham Spirit we used to hear so much about before we managed to get a licence?

Yours faithfully,

P. LUMB (G3IRM).

Knaresborough, W. Yorks.

Proposed Year Book

DEAR SIR,—May I second the suggestion, made by G3VA and reported under Council Proceedings in the October BULLETIN, that the Society publish a Year Book?

As the present Call Book seems to be a success please don't sacrifice it for the new project. Instead, it could be expanded and renamed.

I suggest the Year Book might include a list of Old-Old-Timers (pre-1914 amateurs), YLs and the blind amateurs in our ranks.

Don't tax the financial resources of the Society too much by making the Year Book a free issue to members, but rather put it on sale in the same manner as the Call Book.

Yours faithfully,

F. ALLAN HERRIDGE (G3IDG).
(Life Member)

London, S.W.12.

"Miniature Top Band Transmitter" Under Attack

DEAR SIR,—In the article "A Miniature Top Band Transmitter" (October issue),

(a) An unbiased clamp valve is employed as a screen modulator, with a large value of grid stopper (39,000 ohms). Since the control grid will conduct on its positive excursions, this will form an effective "squarer" stage. The distortion introduced by this stage will consist largely of harmonics of the modulating frequencies which will cause a large increase in the bandwidth of the radiated signal due to the additional sidebands they produce as they modulate the carrier.

(b) The operation of the valve without bias is not permissible owing to the inevitable distortion it would introduce. The stage must be operated strictly class A (i.e., biased to the centre of the linear portion of the Ia/Vg curve) and no attempt must be made to obtain 100 per cent. modulation even on instantaneous peaks.

(c) It is stated on page 158 that "the clamp valve produces a form of suppressed carrier." This is not true. The positive shift of the carrier during modulation produced by this circuit is a by-product of the non-linear distortion the circuit introduces, and indicates incorrect operation. If distortion were completely absent the p.a. milliammeter would remain rock-steady during modulation.

For a true description of what a "suppressed carrier" really is, see the *Admiralty Handbook, Vol. II Section N 18*.

It is desirable that when telephony equipment is designed and constructed, the basic concepts of non-linear distortion and its effect be not only understood, but observed, or the result will not comply with the stated policy of the R.S.G.B., or with the I.A.R.U. bandwidth recommendations. Low power and/or simplicity is no excuse. It is either correct or it is not.

Yours faithfully,

G. C. BAGLEY (G3FHL).

Ironbridge, Salop.

DEAR SIR,—I see from the October BULLETIN that once again an article has been published describing a transmitter employing a non-linear method of modulation. Perhaps the technical editor and author of the article are not familiar with the fact that to push audio frequencies into a virtual squarer will distort those audio frequencies and produce harmonics thereof, and, if that stage be a modulator, those distortion products will also modulate the modulated valve. I refer you to page 275 of the current *A.R.R.L. Handbook* which describes the correct application of a clamp-valve as a modulator.

The stated policy of the R.S.G.B. Technical Committee has been that we should encourage systems which restrict the channel bandwidth occupied by a signal. I cannot see how such articles as "Miniature Top Band Transmitter" are consistent with that policy.

Yours faithfully,

G. N. MYATT (G3FRN).

Broseley, Salop.

DEAR SIR,—I feel compelled to protest at the modulator circuit of the "Miniature Top Band Transmitter" published in the October issue.

The "clamp modulator" is well known as a notoriously non-linear system, but apparently not sufficiently so for G3CVO for he runs a class A stage without any negative bias whatever! In fact the "suppressed carrier" effect mentioned is due entirely to the suppression of the negative half cycles of modulation, resulting in severe harmonic distortion with attendant splatter on adjacent channels.

The use of a true class A modulator correctly transformer-matched to the p.a. screen will produce a vastly superior signal in all respects to that from the circuit shown.

Those of us who take great care to occupy as little bandwidth as possible in our crowded 'phone bands are assured that we have the full support of the R.S.G.B. However, the publication of such an article with a glowing commendation from the Editor at the top does not seem consistent with this policy. Are we wasting our time?

Let us have more articles of the high technical standard set by G5RV and G3BGL to mention just two recent authors.

Yours faithfully,

E. C. LARK (G3CWC).

Norwich, Norfolk.

The Author Replies

DEAR SIR,—Comment has been caused by the modulator circuit of the Miniature Top Band Transmitter given in last month's BULLETIN. Critics have appeared to overlook the fact that the circuit works perfectly—the main thing, surely—and have drawn some erroneous conclusions based on inaccurate facts to prove their non-existent theories! A full explanation of this particular clamp circuit is given in the *Short Wave Magazine* for September, 1952, where it is

used in a 2 m rig designed by G3MY. However, one or two pitfalls that indignant writers have fallen into can be quickly dealt with. The clamp valve is not unbiased except when there is no speech input. As soon as a signal arrives, grid current flows in the clamp valve, charging the coupling condenser (long time constant coupling network) and biasing the clamp valve back almost to class A. Only the very peaks of positive half-cycles are clipped. If the input swing is greater than the grid base of the 6SN7 (about 12 volts), then negative peak clipping occurs, due to cut-off, and we have normal speech compression action. Since the bias disappears when one stops speaking, the clamp valve current goes up, so reducing the p.a. screen volts and hence reducing the standing carrier.

The transmitter works, and satisfactorily. It gives no abnormal harmonic spread, TVI nor BCI, and the quality is little inferior to that obtained from a carbon microphone anyway. I use plate and screen modulation myself in the interests of microphone sensitivity, and keep the clamp modulator for portable and emergency use.

Yours faithfully,

M. BARLOW (G3CVO).

"High Angle Propagation" Out of Place

DEAR SIR,—The article "High Angle Propagation" in the October issue takes up five pages (62.5 per cent. of the space allotted to technical articles). This is beyond all reason! However good Mr. Sollom's treatise may be, it is completely out of place in a publication which is "devoted to the science and advancement of Amateur Radio." I guess that not more than 1 per cent. of the membership at large can understand it (leaving 99 per cent. fuming), and even if this 1 per cent. does revel in this highly theoretical document, where does it get them (as regards Amateur Radio?).

Let us have articles of general Amateur Radio interest. Other publications are available for the mathematical theorists. We pay our subscriptions and I for one have voted for the proposed increase. In doing that I imply that I want Amateur Radio service, which I am not getting from articles such as the one in question.

Yours faithfully,

W. FARRAR, B.Sc. (G3ESP)

Ackworth, Pontefract, Yorks.

Silent Keys

It is with regret that we record the death on October 3, 1953, after a very long illness, of T. T. (Tom) Parker, G8FL, of "Four Winds," Mundesley Road, North Walsham, Norfolk. Tom was a real old-timer and was consistently active until his last illness laid him low. In the first World War he served with the Royal Engineers in France and Russia and was Mentioned in Despatches; during the last war he was engaged in voluntary radio work and was head of the local Invasion Committee. Tom was very active in local affairs and was Chairman of the local Council for two years. He leaves a widow and a son, to whom our sincere sympathy is extended. G3GY.

It is with deep regret that we record the death, suddenly on October 4, of George Frederick Heath, G2CPT, at the early age of 41 years. Mr. Heath was keenly interested in Top Band, 80 and 2 metre work, and his cheery disposition in the shack and over the air endeared him to all who knew him. He was active in his shack up to within three hours of his death. First licensed in the early 1930's, he saw service with the Royal Corps of Signals during the war.

To his wife and two small children we offer our heartfelt sympathies. G6XX.

It is our sad duty to record the death, in Halton R.A.F. Hospital on November 2 after a brief illness, of Squadron Leader George Howard Williams, O.B.E., G3BI, of Seer Green, Bucks. S/Ldr. Williams joined the Royal Air Force through the Volunteer Reserve at the outbreak of the last war and had only recently extended his service. He was an active member of the R.S.G.B. and of the R.A.F.A.R.S. To his widow and other relatives we extend our heartfelt sympathy. G8WI.

Radio amateurs everywhere will be sorry to learn of the death of Charles Rieder (ZS1T), of Capetown. He was especially well known to devotees of 28 Mc/s on which band his signals were always outstanding. One of the pioneers of the Amateur Radio movement in South Africa, Charles Rieder will be sadly missed. In the United Kingdom, we shall all be conscious of something lacking when the 28 Mc/s band opens up once again, for there will be no "ZS One Tommy" to greet us.

To his brother (ZS1P) and other members of his family we offer our sincere condolences. G2MI.

Clydesdale Prices slashed

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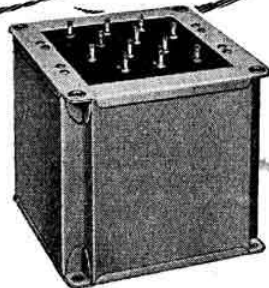
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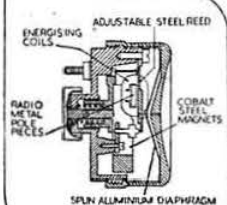
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(Continued on page 248.)

EXCHANGE & MART SECTION

(Continued from page 247)

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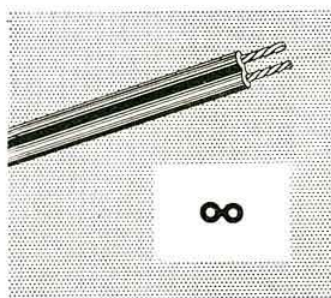
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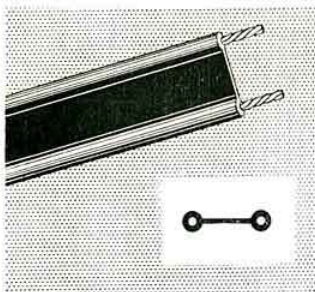
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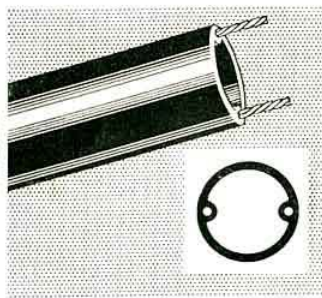
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Return to:—
 R.S.G.B., NEW RUSKIN HOUSE,
 LITTLE RUSSELL STREET, W.C.1.

IF UNDELIVERED

Return to:—
 R.S.G.B., NEW RUSKIN HOUSE,
 LITTLE RUSSELL STREET, W.C.1.