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6<sup>0</sup>

# SHORT-WAVE MAGAZINE

Exclusively for the  
Short-Wave Listener,  
Experimenter and  
Transmitting Amateur

**MAY**  
**1939**

—  
VOLUME III  
NUMBER 3

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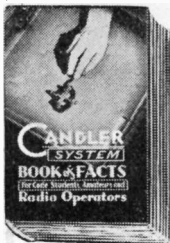
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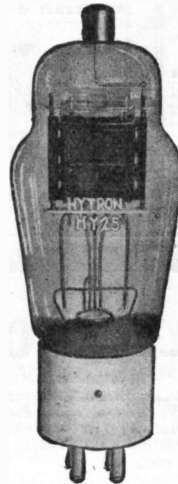
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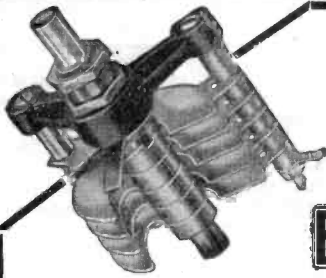
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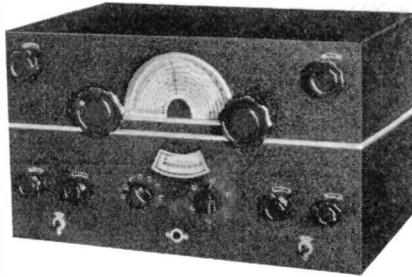
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The  
**Short-Wave Magazine**

No. 3, Vol. III.

MAY, 1939

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# This Summer

Editorial

To the real enthusiast and the active amateur transmitter who has held his licence for many years, the approach of summer means not a slackening of interest, but rather activity in directions different from those which in winter practically compel one to concentrate on indoor work. The most obvious of summer-time Amateur Radio possibilities is in connection with portable operation, and each year sees a larger following for it.

In these times, there is no doubt that transmitting amateurs really well equipped in both apparatus and experience for portable work under emergency conditions are potentially useful for various branches of National Service. In this issue we publish a thoughtful letter which gives point to the fact discussed in a previous comment on this page that the authorities have, in the general body of unattached Amateur Radio operators, a valuable nucleus on which to base an Emergency Communications System, though it is unfortunately true that so far representations to this effect have apparently made very little impression.

But this is always the way of the official mind and the curious thing is that some official person will sooner or later—and inevitably as a New Idea—suggest the enlisting of amateurs for A.R.P. radio and similar defence measures. At the moment there are, of course, all sorts of insuperable difficulties connected with policy and organisation and the treading on of Departmental toes which prevent the simple business of putting the drafting of a suitable scheme into the hands of a competent Home Office official who himself understands the situation and the manner in which best to meet it.

Local authorities who have already enlisted the aid of amateurs could help a great deal by exerting some pressure on the Air Raid Precautions Department, and amateurs so employed should themselves make quite sure of what their position would be with the Post Office should an emergency arise.

Let it be said as a footnote to these remarks that we are far from suggesting that every holder of an amateur transmitting licence is fit to be entrusted with responsible duties which would necessarily be conducted under conditions of extreme tension. Communications, being of the greatest importance, require the best and most level-headed personnel, and it is safe to say that only a comparatively small percentage of amateurs could do the work. But this does not alter the fact that in every centre of population there are several highly efficient citizens who, by reason of their experience as amateurs, could safely be left to handle practically any problem in emergency communication.

It is they who should be sought out and used.

*Austin Foster  
A.R.P.*

# 56 Mc News

By **A. J. Devon**      **New Inter-G Contacts—May Test Schedule — Some Station Details**

**W**ITHOUT doubt, those who were not operating on April 7 and over the Easter holiday—unfortunately, the writer was among them—missed one of the best 56 Mc periods yet experienced this year. But an enthusiastic group scattered over the country, ignoring the call of sea and sun, was rewarded by some very useful medium-DX working which once again shows the potentialities of this most fascinating band.

Good Friday apparently saw the peak of conditions, when an excellent contact G6CW-G5OX was obtained at 1625 GMT, the distance Nottingham-West Wickham being 120 miles, and G5OX persisted in Nottingham till 1730 or so with RST-569 reports. The curious thing is that at G8JV, only two miles from G6CW, the West Wickham signals were not audible, but G8JV's drooping spirits were revived later by a solid contact at 2200 with G5MQ, Woolston (114 miles) with S6-7 given both ways.

Further than this, the two Nottingham stations had reports from 2ADZ of Ewell (118 miles) saying they were consistently audible on April 7, 8, 9 and 12, at strengths varying from S5-S7.

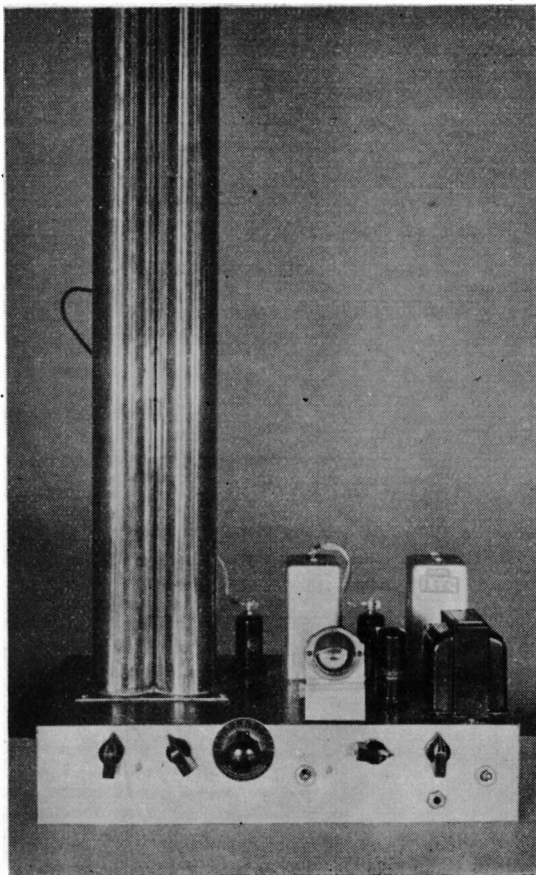
Over that same period, G2WS was listening portable at Shrewsbury and on an indoor aerial, heard G6CW and G8JV each day, on 'phone at S5, the distance being about 68 miles. On Good Friday evening another new contact was recorded by G6CW, with G2HQ (Sheffield, 32 miles), the point of this being that up to that time G2HQ had never been able to hear G6CW, who sometimes received G2HQ at S2 maximum; in their April 7 QSO, signals were up to S8 both ways, and G2HQ was also much stronger than usual at G8JV.

## ● Results South

G5BY (Croydon) who, though he missed the day periods, was also operating on Good Friday evening, worked G6QZ (Norwich, 105 miles) at 2200 with RST-449, and on the 8th had an abortive 'phone contact with G2ZV (Rustington, 44 miles). Quoting Hilton O'Heffernan, "I have now finished my receiver, 15 valves all told, R meter, 1600 kc IF, and instantaneous switching from 56 Mc to all-wave portion. 56 Mc signals are about 1½ to 2 R's up for the same background level; they ought to be, because the panel measures 30½-ins. by 9-ins, and the chassis is 18-ins. deep. The receiver is too heavy to lift single-handed!" On April 18 and 19, it brought in G6FO (Newport, 126 miles) once more, and contacts with S6 peak strengths either end were made around 2230 BST both nights.

G2ZV sends an interesting report of his activities over the period April 7-13. On the first day, G5BY was heard at RST-579\* after some months' silence, though listened for nearly every evening and known to be on; on the 8th he was S6 and a QSO followed which ended in QSB zero. G2ZV's signals on this occasion were also received by G6DH (Clacton, 98 miles) at RST-449, and a schedule arranged by wire for April 10 brought G6DH in at Rustington with a doubtful RST-329. G2ZV changed his aerial, and got G6DH at RST-339 certain on the 12th, time 2250. The G2ZV-G2OD contacts (42 miles) are "sure fire," and G2ZV also works G5TX (35 miles) and G8OS (16 miles) without difficulty.

G5TX/5TZ (Newport, I. of Wight) though new to these pages and only recently in regular operation on 56 Mc, has held a licence for some fourteen years.



General appearance of the concentric-tube 56 Mc 9-valve superhet developed by W9BNX of RADIO, giving high efficiency and stability at signal frequency. The line-up is 954-954-6SK7-6SK7-6R7-6F6, with 6SK7 BFO and 80-6J7 stabilised power supply.

**Mast supporting 56 Mc aerials at G6IH, Malvern. Practically all tests have been with vertical polarisation, and the signal has several times been received at G6FO, 45 miles S. S. W. with intervening country rising to nearly 1000-ft.**

He now has G5TX working CC CW on 56640 kc, with a quarter-kw transmitter feeding into an aerial 100-ft. high and 550-ft. a.s.l. G6FO (Newport, 96 miles) is often heard, being RST-578 on April 18 when working G5BY, who was RST-568 at 70 miles. On that same evening, G5TX received G2OD (56 miles, RST-579) and G5RD (80 miles, RST-569).

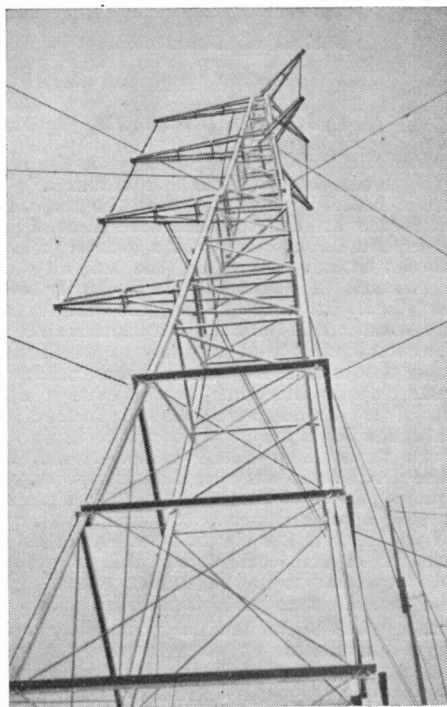
At G6FO, activity has been low, but the week April 16-22 brought the two contacts and report already mentioned, a good QSO with G2BI (Calne, 45 miles) and reception both ways at different times G6FO-G6IH, distance also 45 miles. The latter's 'phone is very consistent at Newport.

By close readers of these Notes, it will not have escaped observation that not only are all QRAs given obviously quite "blind" to one another but also that in most cases the intervening country rises much higher than the altitude a.s.l. of the stations concerned. This seems to dispose of the ground-wave theory, likewise any ideas about "creeping ground waves," and in view of the fact that QSB is nearly always evident, it seems certain that our medium-distance contacts are obtained by low-level bending (possibly due to changes of temperature, as suggested by G2ZV), assisted by scattering effects where an omni-directional aerial is used, particularly if the radiation is in both horizontal and vertical planes. To quote once more the case of G6FO and his 10  $\frac{1}{2}$ -wave bent end-on aerial, the reports noted above actually cover one particular period when reception of his signal was simultaneous at G6IH, 45 miles N.N.E.; G5BY, 126 miles due east; and G5TX, 96 miles S.E. It is also known that this aerial radiates very strongly to the south and south-west, and due west to local distances at least.

### ● May Test Schedule

All experienced UHF observers agree that this summer should see bursts of DX conditions, sometimes short and on other occasions persisting perhaps for two or three days. Regular activity, especially during the early evening hours from 1830 BST, should therefore be productive of results, while at the week-ends conditions can easily be checked by half-an-hour's work morning and afternoon. It is well worth keeping such regular watches, as only in this way can we break new ground. Just at present, most stations are not coming on till 2100 BST or later—when it may be too late. In this connection, G5MP draws attention to the fact that in previous years 56 Mc has opened in the mornings from 0700 to 1000 BST during May.

In order to encourage concerted operation at reasonable times, we repeat the Test Schedule for May announced last month: May 10-14 inclusive, 2000-2230 nightly, Saturday afternoon 1400-1600 and on Sunday, May 14, 1100-1300, 1430-1600 and 1830-1930, all times BST. It would also be useful if those who can do so were to come on at 1830 or 1900 on the week-day evenings.



What we particularly ask is that reports of results, even if negative, be forwarded as soon as possible after May 14, so that they can be incorporated in the June notes.

### ● Station Equipment

John Curnow, G6CW, uses 75 watts 'phone and about 135 watts CW to an EC-FD-FD-PA transmitter, the valve line-up being 89-6L6-6L6-35T, feeding into a horizontal rotatable beam consisting of six  $\frac{1}{2}$ -waves in phase; an alternative aerial system has two long-wires at right angles. His receiver is 1-v-1, using 954-954-6C5.

G2ZV now has a 4-element rotary beam, while G2BI is trying the 10  $\frac{1}{2}$ -wave end-on type; though his 0-v-1 receiver is particularly good, Colonel Palmer is having a lot of trouble with the T20 PA. G6IH also has an omni-directional aerial, and has rebuilt his station throughout for intensive 56 Mc work.

G5MP will shortly be in regular operation, using a 1-v-2 with optional quench, built round and on the valves that matter; the transmitter, starting off with a 28 Mc crystal, is to be 6E6-6L6-P/P T20.

For many months now, the transmitter at G6FO has been a four-stage arrangement, APP4g-APP4g-TV03/10-TY1/50, starting with 7 Mc crystals of various frequencies and running an input of 50 watts to the final on CW. The standard receiver is 0-v-1, but just recently a new Hallicrafters S-21 (5- and 10-metre superhet) has been on test.

G18TS, J. S. T. Ruddock, 6 Brookside, Cambridge, will be carrying out special 56 Mc tests from high ground in Co. Down (1755-ft.) on July 8, 1400-1900 BST, and asks for co-operation from listeners and transmitters.

# LETTERS TO THE EDITOR

## Crystal Operation

The use of a fuse bulb in series with the crystal is of the nature of a "snare and delusion." This opinion is based on the fact that the majority of crystal failures are due to *sudden* increases of power in the crystal circuit to a value greater than the crystal can stand. Of these, the majority occur at the instant of switching plate supply to the crystal stage. In these cases, the amplitude of crystal oscillations is built up to an intolerable value in about ten cycles; that is to say in a millionth of a second the crystal may be beyond recall. No fuse will blow in this time, whilst even if a hundredth of a second were allowed instead of a millionth, few fuses are good enough to blow at less than ten times their rated value. Again, apart from the products of our own British makers, of the best quality, most of the so-called 60 mA fuses will barely glow at this current, let alone blow rapidly. A fuse will blow if the circuit is slowly adjusted to increase the crystal current but this is not what destroys crystals; it is the sudden surges against which a fuse offers no protection at all.

Another point is the tendency of most people to run crystal oscillators at voltages vastly in excess of that required fully to excite the next stage. A recent example is that of using a 6V6g tritet to drive another 6V6g as neutralised PA at the same voltage of 350. Why? One is reluctant to believe that the average amateur is too ignorant to appreciate the fact that in this case 150 volts would have been ample. Many amateurs like to use the minimum number of RF stages in their transmitters . . . we like to do so at G2CR, but we suggest that crystals are too expensive to warrant "economy" by running them at their limit to save using another valve, costing about six shillings. The difference in current consumption between a high power tritet and a low-power crystal oscillator and buffer-doubler is negligible.

When using crystals it is well to remember that the calibration frequency given on the certificate is that produced when the crystal is used under the exact conditions specified and that changing from a '47 straight pentode to a 6L6 tritet, or running the crystal warm or with a holder different from that in which the crystal is tested, will tend to change the oscillatory frequency and these effects may be additive and sufficient to put the final frequency outside the band.

In this connection, it is worth while to consider possible retro-action of the final stage on the crystal oscillator, especially if the output frequency is the same as the fundamental of the crystal. It is wise, therefore, to have at least one stage of frequency doubling when using any of the higher frequency bands. This confers the additional benefit that crystals can be made to better accuracy and reliability for the two low-frequency bands than for the 7 or 14 Mc bands and the crystals are, invariably, more robust. Think, therefore, whether it might not be worth while to use another low-power doubler or low-power tritet and gain in stability, safety, and reliability, eliminating that slow steady creep which is so annoying to anyone using a

crystal-gate receiver on the higher frequencies.—pp. Radio Construction Service, S. O'HAGAN, G2CR, 293 Rothbury Terrace, Newcastle, 6.

## Plausible Explanation?

With regard to the term "73," I always thought that the figure 73 sent in abbreviation became BV for "Bon Voyage," i.e., the three dashes in each figure were run together. Would not the same explanation fit the use of "88," which would become DD? You could put your own meaning to these letters!—H. W. SIMPSON, B.Sc., G8DI, 50 Stoneycroft Crescent, Old Swan, Liverpool, 13.

[Well, thanks, but we think this correspondence had better cease, particularly as since the last letter appeared a reader has asked the Query Dept. who invented the Q Code.—Ed.]

## Duty

The statement in your April editorial ". . . it becomes the urgent duty of every citizen to consider in what capacity he can serve . . ." will no doubt meet with the approval of your readers and many will be anxious to take part in some form of National Service.

Already large numbers of amateur transmitters are serving in the Signal Auxiliaries of the Navy, Territorial Army or RAF. But is not there still room for a further organisation—to provide radio communication for the Civil Authorities? Increasing use is being made of radio by the Police Forces and for ARP alone there seems considerable scope for Amateur Radio communication facilities in connection with various mobile units—fire engines, ambulances, etc., the use of ultra-high frequencies being specially indicated.

Radio could also be used to supplement the telephone service. Telephone cables even in peace time are sometimes rendered inoperative owing to floods and storms. Certainly cables will not escape the effects of high explosive. This will mean the use of other telephone routes already overloaded by public and official telephone calls, and should an important telephone exchange be bombed communication over many miles may be affected.

In one or two districts amateur transmitters are already co-operating with the police authorities in ARP radio communication tests. Why not extend these experiments all over the country? Probably many readers have made up special portable transmitters or receivers, which might be invaluable in maintaining communication between ARP Wardens' Posts and their local Report Centres. Also, in the event of telephone lines being temporarily out of operation radio could be the means of linking up the ARP headquarters in each district with distant points such as electricity stations, hospitals, etc.

I suggest that efforts be made to obtain official sanction for an ARP radio scheme, for it is high time an organisation for ARP communication was initiated by the authorities. Amateur transmitters, listening stations and service engineers could all be enrolled.—N. A. L. TIMBERS, G5TR, 10 Parramatta Street, Rawtenstall, Rossendale, Lancs.

[Several letters on this subject are held over. Ed.]

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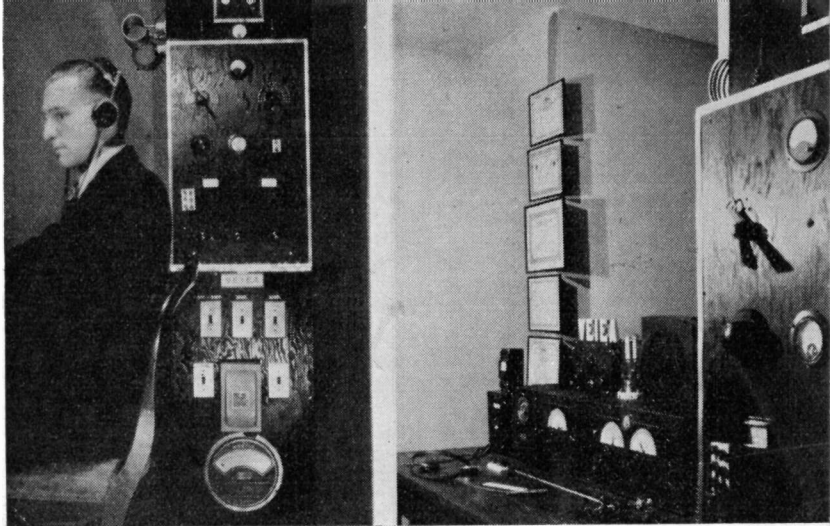
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# The Other Man's Station

VE1EA

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FOR a change, we go overseas for this month's station description and since 1.7 Mc DX is—or has been—in the news, VE1EA, Clarence E. Roach, King Street, Windsor, Hants Co., Nova Scotia, is a very fitting subject.

VE1EA has been known for many years as a DX operator active on all bands, but his 1.7 Mc record is worthy of special mention. Taking the period from January 8 to February 26 this year, he had a total of 33 contacts with twenty different European stations, completing 1.7 to 28 Mc five-band QSOs with G2PL, G6WY, G6XL and FA8BG, an outstanding effort being a five-band trans-oceanic contact (5BTOC) with G6WY in 8½ hours on Feb. 19; DX recently heard on 160 metres includes W6OAN.

The transmitter, in wooden frame-and-panel construction, is 59-59-T55-P/P HF100, running at in-

puts from 200 to 480 watts and feeding into a Zepp aerial with 133-ft. roof, while VE1EA's location is probably ideal for Trans-Atlantic working in that he is on the north-east slope of a hill, giving him an almost clear get-away across the water.

The receiver is an RME-69 with DB.20, and there is also a Peak pre-selector available. VE1EA further remarks *apropos* his receiving equipment "In anticipation of the time when (we hope!) 56 Mc will open for DX, I have an RME-510X Frequency Expander ready."

As a matter of interest, we might add that on January 8, G stations heard at VE1EA on 1.7 Mc were G2PU, G3AH, G5MY, G6GL and G6GM, these being additional to the nine which were actually worked on that morning.

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## Conditions — The Month's Survey

### Big Decrease in Solar Activity

THE period March 15 to April 15 was, on the whole, one of poor short-wave conditions, and nothing like what one expects at the equinox, when propagation is usually good. There was, however, a big decrease in solar activity, and on occasions hardly a sunspot was visible. This fact may, perhaps, account for the low day values of F<sup>2</sup> layer ionisation which have prevailed, and for the resultant poor propagation of the higher frequencies.

Until March 18 conditions were definitely poor, something like ionosphere storm conditions prevailing. This was probably connected with the CMP of a large sunspot on March 16. From March 19 to 25 things were more normal, especially during the evening hours. It was noted, however, that on several afternoons the 21 Mc American broadcasters were inaudible and the maximum usable frequency appeared to be in the region of 18 Mc. If solar activity becomes low this is a condition we must expect to occur frequently during the coming summer.

On March 26 and 27 slight magnetic storms were recorded and conditions deteriorated, while on March 28 a rather severe magnetic disturbance took place, and short-wave conditions became very poor. No sunspots could be connected with these dis-

turbances, in fact hardly any were visible. The part of the sun then on the central meridian was, however, very nearly the same as that which had given rise to an ionosphere storm on its previous rotation.

Due no doubt to the low solar activity, conditions were a long time in returning to normal and were still poor on April 3.

### ● An Improvement

Sunspot activity now began to increase and continued to do so till the end of the period under survey. Conditions improved also, being generally fair to good from April 4 to April 11. Incidentally the American broadcasters on 26 Mc again became audible on some afternoons during this period. By April 12 the improvement was well established, and on this day good short-wave conditions prevailed. This state of affairs continued until the end of the period.

A big sunspot now near the central meridian may give rise to another ionosphere storm in the near future. This is likely to occur within the first of the "probable" periods mentioned in last month's Survey, viz., April 15-18.

# Improving the Small Superheterodyne

## Useful Suggestions for Coupling and Matching Aerials

By O. J. Russell, B.Sc.

In many cases, the enthusiastic SWL is forced to do the bulk of his listening on a small superhet, often a commercial all-wave receiver. This type usually employs a frequency-changer stage, followed by a single IF amplifier before the second detector, with a pentode or tetrode output, and there is no provision for a beat oscillator. The selectivity is not as high as it should be for amateur work, but second channel interference is the greatest annoyance. This is worst on the 14 Mc amateur band, although the listener may be unaware that the powerful and persistent interfering CW signals are actually the images of commercial stations operating on channels far removed from amateur frequencies. Indeed, it is possible for the listener to be unaware that his failure to pull in real DX through the QRM may be due to such inherent defects in his receiver. In addition, the input impedance of a commercial all-wave set is totally unsuited for the use of a dipole or similar matched-feeder aerial systems.

With the design of such receivers based on so many compromises, it is unlikely to begin with that amateur band performance is all that it should be. Fortunately, it is possible in many cases to effect considerable improvement, even without going to the expense of a preselector stage, and in some sets the improvement can be amazing to those who had imagined previously that the receiver had been working at maximum efficiency.

### ● Aerial Tuning

The performance of a simple superhet of this type can first be improved by tuning the aerial system, and Fig. 1 shows how this may be done with a

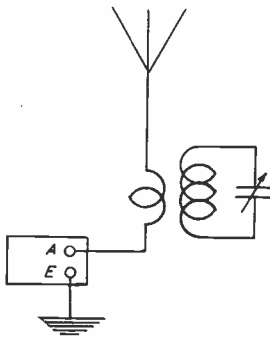


FIG. 1.

Simplest aerial tuning circuit. The coil-condenser values can be arranged to cover the desired band or bands.

receiver employing a single-wire aerial of no specific length, as in the case of a receiver that is used for general listening.

A tuned circuit is loosely coupled to the aerial system, this being effected by winding the insulated lead-in wire in a few turns round the coil comprising the tuned circuit; the latter can consist of almost any suitable condenser connected across

either a standard plug-in short-wave coil, or even a rough coil wound up hastily for experimental purposes. This circuit is of course arranged to tune to any frequency upon which reception is desired, and may either be achieved by experiment, or by using standard commercial coils tuning any specific band with the usual short-wave variable condenser of .00016 mF maximum capacity. An advantage of the scheme is that it does not interfere in any way with the normal BCL operation of the set.

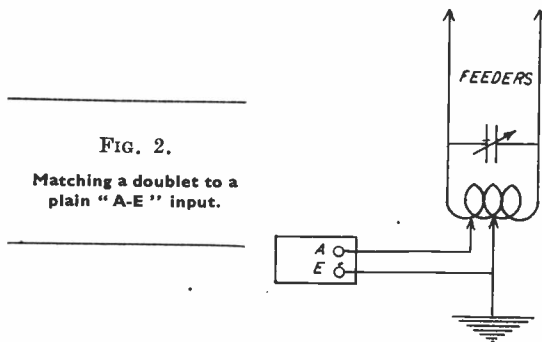


FIG. 2.

Matching a doublet to a plain "A-E" input.

Operation is simple. Tune in any desired short-wave station, and adjust the auxiliary tuned circuit to resonance, as indicated by a sharp change in the signal level of the station being received. Now, by careful adjustment about this point, it will be found possible to augment the volume of the signal. In the case of sets employing a pentagrid type of converter, the well-known "pulling effect" may necessitate slight readjustment on the main receiver. This is actually of considerable value, as it is possible to make up to some extent for the inevitable discrepancies in trimming of the commercial set. In addition the matching between the receiver and aerial is improved.

The most valuable effect, however, is the tuning to resonance of the aerial system as a whole, which will improve both the signal-to-noise ratio and lessen the second channel image interference. It is found in practice that the best position for the tuning of the auxiliary circuit is slightly above or below resonance. At resonance it will probably be noticed that there is a sharp point at which signal strength drops suddenly, rising steeply on either side of this point, and again falling, only more gradually, as the circuit is tuned further away from resonance.

This enables the use of the system as a wave trap, as it may be tuned to the frequency of a station causing second channel interference. At exact resonance the interference may be virtually eliminated, depending upon the efficiency of the tuned circuit, and to some extent the degree of coupling. It should be remembered that providing the set has

been adjusted correctly in the works, the interfering station will be higher in frequency than the station to which one is listening.

By experimenting with a simple arrangement such as that of Fig. 1 valuable experience will be obtained and this will be of assistance in the operation of more advanced matching circuits for tuning the aerial input system.

● **Twin Feeder Matching**

Fig. 2 gives an arrangement for coupling a dipole or balanced feeder system to a receiver having only the normal aerial and earth terminals.

The earth terminal is connected to the centre of the coil, while the aerial terminal is tapped a few turns up from the centre, with the feeders taken to the opposite ends of the coil. The system is tuned to resonance, and adjustments effected by altering the position of the tapping point of the aerial terminal connection. This tuner is rather more flexible than the first one, and correspondingly of more value. It may also be used with sets having balanced input terminals, when the impedance can be matched by adjustment of the tapping points. In this case, the centre of the coil may still be earthed, but the balanced input terminals are connected symmetrically on either side of the centre tap. In addition, it will sometimes be found an advantage to tap the aerial feeders down the coil as well. As a rough guide high impedance feeders should be connected across the whole coil, while low impedance feeders and twisted lines may be tapped across only a few turns on either side of the centre point.

● **Universal Matching**

The more general arrangement, with provision for coupling in this fashion, is shown in Fig. 3, which is actually a tuned matching transformer, enabling almost any feeder system and receiver to be properly coupled. The owner of a simple superhet will almost certainly find the use of some such tuned aerial matching system to be of assistance, and the cost of components need deter no one, as almost any variable condenser may be used for a trial, while the coil can be wound in a few minutes. The

best arrangement for the tapped coil system would be a self-supporting heavy gauge bare wire coil mounted on stand-offs, with crocodile clips for making adjustments.

All these suggestions should enable a keen experimenter to improve the signal-to-noise ratio and general efficiency of a simple receiver. They are also worthy of a trial for more elaborate sets, as the more one can "discriminate" in the input circuit, the better results will always be.

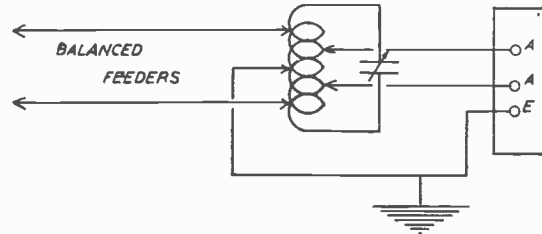


FIG. 3.

Where doublet terminals are provided on the receiver, this matching transformer will improve signal strength, selectivity and help to reduce image interference.

● **Regeneration**

While on the subject of small superhets, here is a tip which will in most cases serve to provide a measure of IF regeneration, with a consequent increase in sensitivity and selectivity. Connect an insulated wire to the grid cap of the IF valve, and push the insulated end of the wire through a hole in the top of the IF transformer coupling the valve to the second detector stage. Make sure of course that the wire cannot make metallic contact with anything inside the IF transformer. The capacitive feedback obtained in this way is sufficient to give a measure of regeneration, and if enough wire is poked through the top of the IF transformer, this stage will oscillate, and thus enable CW to be heard as though a beat oscillator were in use. This is a crude but simple means of effecting a great increase in sensitivity, although it is not to be recommended as a permanent arrangement!

**Useful Definitions**

(With acknowledgments to the Edgware Short-Wave Society).

- SPOUT—An imaginary tube leading from the shack out into the free ether.
- SOUP—The almost equally imaginary RF which is either "bunged" or "sucked" up the spout.
- BINGE—A delicate way of expressing large audio output.
- PACKET—A mysterious parcel which arrives with commendable alacrity on touching HT transformer secondary, the final anode or other verboten places.
- WALLOP—Applied indiscriminately to both audio and RF power, not to be confused with amber liquid consumed by Club President at 2010 or thereabouts on Wednesday evenings.

- SPITCH—A harsh gurgling sound that interferes with the reception of CW on Amateur bands.
- CW—A lousy chirping sound that spoils telephony reception on amateur bands. Dimly remembered by many amateurs as having been in some remote way connected with the obtaining of the licence.
- 10 WATTS—A magic figure arrived at by multiplying Final Plate Volts by Final Plate Current—but of course there are meters AND meters.
- PIRATE—An AA licence-holder who yields to temptation, in a weak moment, to use the "spout."

# The Cathode-Ray Tube—V.

## Amplifier Design

By *A. F. Hollins*

(Messrs. Mullard Wireless Service Co., Ltd.)

WHILST the cathode-ray tube offers an ideal means of recording visibly an extremely wide range of electrical phenomena, it presents a disadvantage in that it has a comparatively low deflection sensitivity. Dealing with tube type E.40-G3 for instance, in order to produce on the screen an image of 1-in. height it is necessary to apply an AC potential of about 45 volts RMS. For the examination of normal AC mains phenomena, such as phase measurement under various load conditions, etc., the low deflection sensitivity is of no importance, since the mains voltage itself is sufficiently high or can be readily stepped up.

When working with higher frequencies, however, an amplifier is often needed, and such an amplifier must comply with special requirements. It should be linear over the complete range of frequency it is desired to examine, that is to say, it should amplify equally at all frequencies within this range, its amplification must be sufficiently high, and its manipulation should be as simple as possible. For this purpose it is essential to employ resistance coupling, since it is not possible to construct a transformer capable of complying with the necessary standard of linearity. The question of power does not arise; what is needed is pure voltage amplification, the deflector circuit operating with negligible power consumption.

### ● Design Points

The chief cause of non-linearity in resistance-coupled amplifiers is the stray capacity existing between leads and the unwanted capacity shunted across the coupling resistance, formed by anode capacity, grid-cathode capacity of the next valve, etc.

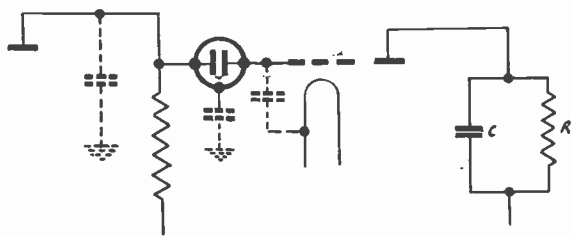


FIG. 21a.

FIG. 21b.

Fig. 21a shows the coupling elements with their capacity against earth. The various stray capacities may be considered as a total capacity *C* in parallel with coupling resistance *R* in Fig. 21b.

In order to examine the effect of this capacity in detail it will be assumed that *C* in Fig. 21b is 50 mmF and *R* is 50,000 ohms.

At 10 cycles the capacitive impedance is  $\frac{1}{\omega C}$   $3.2 \times 10^8$  ohms; at 1,000 cycles it is  $3.2 \times 10^6$  ohms, and at 10,000 cycles it is 320,000 ohms. Now an impedance of  $3.2 \times 10^8$  or  $3.2 \times 10^6$  shunted across 50,000 will make no appreciable difference to the effective load, but a capacitive impedance of 320,000 which is obtained at 10,000 cycles will, when shunted across a resistance of 50,000, give a resultant impedance of approximately 44,640 ohms which is about 11 per cent. less than at 10 cycles. Going still further, at a frequency of 100,000, the resultant impedance of  $\frac{1}{\omega C}$  shunted across the same 50,000 ohm resistance gives a resultant of approximately 26,315 ohms, which is approximately a 50 per cent. drop.

If several such stages were connected in series the difference between amplification at low and at high frequencies would be correspondingly greater.

Now, on the face of it, a frequency range of 10,000 cycles would appear to be a reasonable response for a number of purposes, but the following point must be borne in mind. It is frequently necessary to examine impulses of irregular or non-sinusoidal waveform, as for instance a saw tooth waveform, or a rectangular waveform, and it can be shown mathematically that such impulses can be considered as consisting of a fundamental sine wave and a number of harmonics.

### ● Achieving Linearity

If therefore such a voltage, at say a frequency of 10,000 cycles, is applied to the input side of the amplifier, the harmonics will be amplified less than the fundamental sine wave, and hence the original characteristic of the impulse will be distorted. Another consequence of the capacity shunted across the load resistance will be that the higher harmonics will have a different phase-shift from that of the fundamental and this again will entail further distortion.

From the above example the following conclusions can be drawn. In order to obtain as linear an amplification as possible, all stray capacities shown as *C* must be kept to an absolute minimum, and the value of *R* must not be made too high. Whilst with a smaller value for *R* the overall amplification will be less, there will, on the other hand be greater linearity, since with a smaller *R* the influence of *C* will be less. It follows therefore that to obtain the highest possible amplification with a low value of *R*, valves must be used having as high a mutual conductance as possible. As a matter of interest it might be mentioned here that the development of special amplifiers having stringent requirements in the direction of the frequency characteristic has led



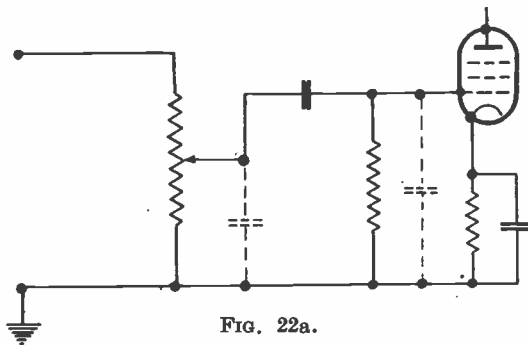


FIG. 22a.

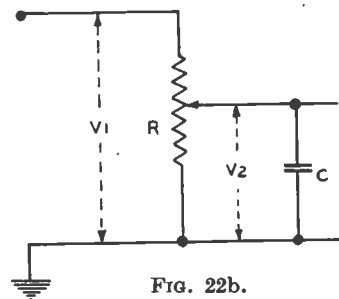


FIG. 22b.

to the use of secondary emission valves for this purpose, which valves have considerably higher mutual conductance than the normal type of valve.

Before leaving the subject of amplifier response at the higher frequencies a few words regarding the input impedance will not be amiss.

The same considerations apply regarding stray capacities as in the case of inter-valve coupling and Fig. 22a shows the input circuit together with the possible stray capacity to earth whilst Fig. 22b shows the resultant circuit.

Now for the purpose of examining certain circuits the value of R must be high; for instance for I F circuit examination R should generally be not less than 1 megohm, and it will be assumed that C is 22 mmF.

If C were zero and R were wound linearly then the ratio of voltages V1 and V2 would remain constant irrespective of frequency, but the shunting effect of C varies with frequency so that at any position of the gain control, excepting at maximum gain where  $V2 = V1$ , the actual voltage applied to the first valve will decrease as the frequency increases, resulting in a falling characteristic.

Taking the values shown, for instance, and assuming that the slider of the potentiometer is in the mid-position, the voltage V2 across grid and cathode of the first valve would vary between .5 of V1 at 1,000 cycles to less than .02 V1 at 1 megacycle. It will therefore be seen that it is of the utmost importance to keep the stray wiring capacity

(Continued on next page).

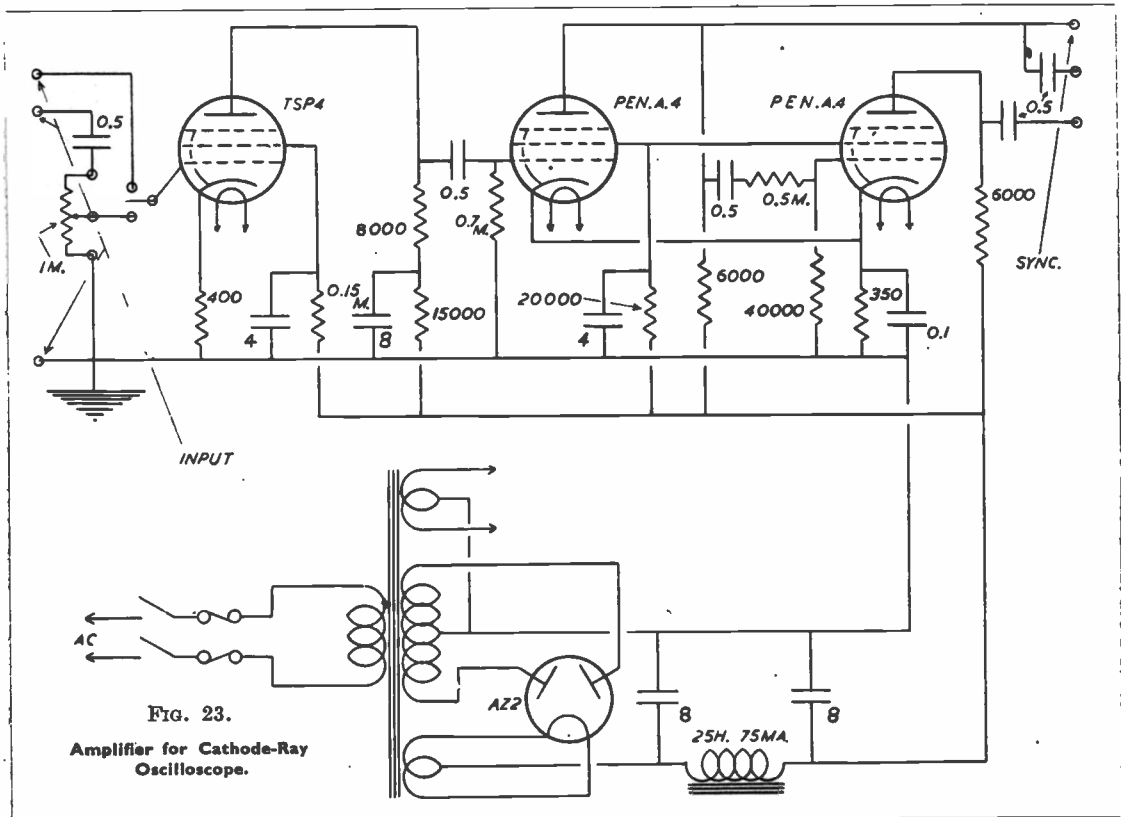


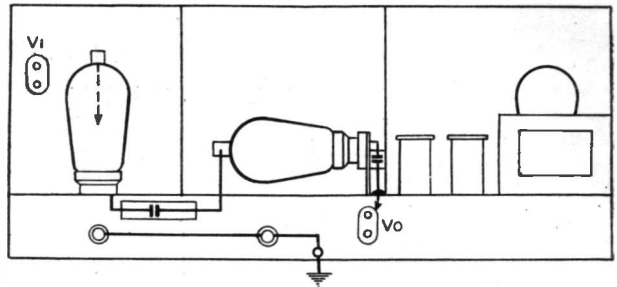
FIG. 23.

Amplifier for Cathode-Ray Oscilloscope.

## THE CATHODE-RAY TUBE

FIG. 24.

A sectional drawing of a commercial amplifier chassis showing screening of amplifier units and separate section for power supply,  $V_i$  being input and  $V_o$  the output.



of the input circuit down to the absolute minimum by short leads and careful layout.

Another point to remember is that in connecting the amplifier across a tuned radio frequency circuit, the input capacity may very seriously affect the circuit conditions by the addition of this capacity to the normal tuned circuit capacity.

In order to minimise this effect the coupling between the amplifier and the tuned circuit should consist of a capacity sufficiently small to have negligible effect on the external circuit, but in this respect a compromise must be made depending upon the available amplification, because too small a coupling will of course result in an image on the cathode-ray tube of inadequate dimensions.

### ● An Amplifier Circuit

With careful construction the amplifier circuit shown at Fig. 23 should give linear amplification up to radio frequency, and the gain, measured at 100 cycles, is about 1,200.

The input to the amplifier may be taken either on to the potentiometer or directly to the grid of the first valve by means of a change-over switch. As an input valve a high gain pentode type TSP4 is used which is coupled to two PENA4 valves in push-pull. It will be noted that whilst the first

PENA4 valve receives the full output from the previous valve, only part of the amplified voltage is passed on to the second PENA4.

The grid circuit of this valve consists of a potential divider arrangement in which the resistance values are such that both PENA4 valves deliver exactly the same output voltage which is symmetrical about earth.

When using the amplifier with the switch direct to the first valve it is of course essential that some form of grid-cathode return circuit be embodied, unless the circuit under examination forms such an arrangement.

### ● Synchronising

In order that the phenomena under observation may be visible as a steady image a synchronising voltage is taken from the anode of the first PENA4 valve, and should be fed via a small condenser to the grid of the gas triode in the time base.

The actual value of the synchronising coupling condenser will depend upon the frequency under examination, and it should be the minimum value necessary to produce positive synchronising.

For power supply a rectifier valve type AZ2 is used, which is required to deliver a voltage of 450 volts at a current of 75 milliamperes.

(To be continued.)

## Abridged Technical Index

We give below a list of technical and constructional articles of particular interest which appeared in the first volume of the MAGAZINE. These issues are available from the Back Number Dept., and the post free price is 1s. 1d. each.

- "Class-B One Valve Receiver," March, 1937.
- "A DX Aerial," March, 1937.
- "Short-Wave Converters," March, 1937.
- "Simple Oscilloscope Unit," April, 1937.
- "Modulation Simply Explained," April, 1937.
- "Neutralising Simply Explained," May, 1937.
- "Amateur Transmitter Construction," June, 1937.
- "Short-Wave Converter," July, 1937.
- "Energising the Aerial, I," July, 1937.
- "Energising the Aerial, II," August, 1937.
- "The Power Supply," August, 1937.
- "Calibrating a Frequency Meter," August, 1937.
- "A Multi-Purpose Amplifier," August, 1937.
- "A Field Strength Meter," September, 1937.

- "The Ideal Straight Receiver, incorporating monitor-BFO, continuous coverage and equal band-spread," September, 1937.
- "The Ideal Straight Receiver, II," October, 1937.
- "The Ideal Straight Receiver, III," November, 1937.
- "Using the Field Strength Meter," November, 1937.
- "The Simplest Transmitter," December, 1937.
- "A 3-Valve Amateur Superhet," December, 1937.
- "A Cathode-Ray Unit," January, 1938.
- "Amateur Band Wavemeter," January, 1938.
- "1.7-56 Mc Two-Stage Exciter," January, 1938.
- "Practical Aerial Systems, I," January, 1938.
- "Practical Aerial Systems, II," February, 1938.
- "Mains Ideal Receiver, I," February, 1938.
- "1.7 Mc Transmitter," February, 1938.

(A similar abridged Index to Vol. 2 will appear next month.)

*When writing the Trade, identify yourself with this Magazine*

# On The Amateur Bands

## Thoughts about "Five"

By Old Timer

**P**ORTABLES, field days and five metres should be well in mind by now, and it is evident that there will be greater occupancy of 56 Mc this summer than during any previous season. We propose, therefore, to discuss a few of the possible problems that must be overcome for successful work on this band.

### ● Frequency Stability

Most readers are aware that all W stations operating on 5 metres are now required to use crystal or other suitable forms of frequency control. This was brought about by the fact that the interference problem had become acute in such cities as New York and Chicago, where self-excited transmitters were largely used. As the art advanced, more and more amateurs constructed their own 56 Mc superhets, and these were quite incapable of receiving broad frequency modulated telephony transmissions owing to the fact that the IF amplifiers could not pass such band widths. This in its turn brought about the further necessity of using crystal controlled transmitters and thus the users of 56 Mc became split into two camps—the advanced people who radiated stabilised transmissions, and the beginners or lazy ones who used broad frequency modulated stuff and super-regenerative receivers.

We can draw a moral from this. It is unlikely that the interference situation in London will ever even approximate to that in New York or Chicago, but owing to the fact that it has long ago been discovered that the super-regenerative receiver does not give good reception of a weak signal (and even misses the very weak) the straight and superhet types are now established. How then is the "wobulation" signal going to survive? The answer is, quite frankly, that it won't, and it is even dead at this minute from a utility point of view.\*

### ● Studying Propagation

The experimenter or student of the 5-metre band will deplore some of the uses that have been made of this channel in the past. It has been widely advertised that "five" should be looked upon in the same way as "160," i.e., a purely local "rag chew" band. Although we freely admit that it is an ideal frequency for cross-town working, we feel that this is only part of its use, and that more serious thought should be given this summer to propagation effects. Time and time again, we have been irritated by hearing a telephony station with a carrier S3 or less, which would have been QSA5 if CW had been used—therefore, for the sake of progress, *please sign your call on CW* at the end of each and every transmission. Preferably, use CW exclusively.

\* [Except for short-range working with high field strengths, such as local Police Telephony systems.—Ed.]

### ● Sporadic "E" Effect

The advocates of 'phone will at once remind us of the voice QSO between England and Italy last year. We appreciate that no previous or subsequent contacts have been made with Italy on CW, but this does not alter the fact that many signals are heard on good receivers which are not recognisable because 'phone is used, though they would be quite readable on CW. During summer months, especially in May, the "E" layer produces patches of greatly increased intensity and, though these patches may only extend over a few square miles in area, owing to the greater ionisation refraction of 56 Mc signals becomes possible over varying distances dependent on the actual density at the time of refraction. Owing to the fact that the degree of ionisation is constantly varying, the signal may only last a few minutes, or even as long as an hour. During these periods, it is conceivable that telephony will be as useful as telegraphy, as the signal will probably be a strong one. However, since conditions such as obtained during the G/I contact are believed to be rare (although we have no actual proof of this), it is as well to be prepared for a short break-through by using CW, which will not be so much affected by frequency distortion or sudden fades.

### ● Thermic Effects

Summer evenings are times when it pays to be on the look out for extended CW contacts over distances up to, and possibly exceeding, 200 miles. This is caused by "hot air bending" a few hundred feet up. As evening approaches, the earth sends up a layer of warm air which is replaced by cold air, and this warm air will be of a density different from the cold. After a fairly warm day, the warm layer will refract five-metre signals back to earth for a brief period, and as it is gradually rising, so the skip will increase, giving short interval reception over limited areas. Again, CW will make those contacts, and 'phone but rarely.

### ● The 58.5 Mc Band

We understand that the authorities no longer describe our 5-metre channel as "the 56 Mc band." This is due to new licensees after January 1, 1939, receiving permission to operate only between 58510 and 59990 kc. Prior to this date, the permit covered 56010 to 59990 kc, so it will be necessary for all who are licensed for the whole range and who use or contemplate using crystal control to have available at least two crystals, as the band is virtually split into two sections. It is yet a little uncertain whether British stations will still be able to operate between 56 and 58.5 Mc after September next, and a statement from the GPO on this point will be welcome. Do not forget therefore, to search the HF end of the band if you call "Test" on the low-frequency portion.

# HAVE YOU HEARD . . . ?

**R**ECEPTION conditions proved extremely erratic during the four weeks covered by this article. At times the powerful North Americans faded out completely, although the majority of the better known South Americans retained their usual consistency, despite comparatively diminutive power.

I have not yet received comment on my "Heard All Continents" record claim—no, not even from those of the amateur-band fraternity! If you have news, comments, suggestions or criticisms, please address them to me c/o the MAGAZINE. All queries relating to BC reception will be welcomed and answered at the first opportunity.

## ● From the Americas

*Boston, U.S.A.* The World Wide Broadcasting Foundation announce that WIXAR, with 20 kW power, has been placed in service as a supplementary station to WIXAL so that many of their programmes can now be radiated over two frequencies simultaneously, giving much greater coverage than before. The May schedule has yet to reach me but during April WIXAR was on 19.8 m in the evenings and will use 25.6 m on occasions.

*W6XBE, Treasure Island.* The owners of this station state that the announcement, "This is the Golden Gate International Exposition, on Treasure Island in San Francisco Bay, broadcasting to you from General Electric's International broadcast station W6XBE" boomed through the loudspeaker of a listener in Glasgow, who was the first European to report. So far I have heard nothing of it, neither have I received a single report from any of the four hundred-odd listeners with whom I am in touch. The schedule, for those wishing to search for the station, is 1300-1600 on 15330 kc, and 0030-0400 on 9530 kc. If PST is advanced one hour in company with EST (to EDST) it is likely that the schedule will be changed. (EDST came into force on April 30 and it is interesting to note that the NBC advanced all schedules by one hour so that programmes are still heard at the same time as before the change was made.)

*VOFB, St. Johns, Newfoundland.* This station operates on 12.31 Mc 2230-0030, according to M. F. Williams (USA), the programmes being irregular.

## ● Straightening out the Colombians!

Intensive listening to these stations, coupled with the aid of two members of the BSWL, R. Gammons and Jas. E. Tomlinson, has resulted in the compilation of the following:—

- HJ6FAI (ex. 4ABC) Ibaguè—4775 (kc), "Ecos del Combeima."
- HJ1ABB Barranquilla—4785, "La Voz de Barranquilla."
- HJ6FAC (ex-6ABA) Pereira—4795, "La Voz de Pereira."
- HJ2BAC (ex-2ABC) Cucuta—4815, "La Voz de Cucuta."
- HJ7GAB Bucaramanga—4820, "Radio Santander."
- HJ5EAD (ex-5ABD) Cali—4830, "La Voz del Valle."
- HJ1ABE Cartagena—4835, "La Voz de los Laboratorios Fuentes."

- HJ3CAD (ex-3ABD) Bogota—4845, "Colombia Broadcasting."
- HJ3CAF (ex-HKF, 3ABF) Bogota—4855, "La Voz de Bogota."
- HJ2BAJ (ex-1ABJ, 2ABJ) Santa Marta—4865, "La Voz de Santa Marta."
- HJ6FAH (ex-4ABH, 6ABH) Armenia—4875, "La Voz de Armenia."
- HJ7GAD (ex-7ABD) Bucaramanga—4890, "Radio Bucaramanga."
- HJ4DAP (ex-4ABP) Medellin—4890, "Emisora Claridad."
- HJ3CAH (ex-3ABH) Bogota—4895, "La Voz de la Victor."
- HJ1ABG Barranquilla—4905, "Emisora Atlantico."

## Causerie of Short Wave Broadcast News

- HJ3CAX (ex-3ABX), Bogota—6010, "La Voz de Colombia."
- HJ4DAG (ex-1ABC) Quibdo—6065, "La Voz de Choco."
- HJ6FAB (ex-4ABB, 6ABB) Manizales—6110, "Radio Manizales."
- HJ4DAE (ex-4ABE) Medellin—6145, "La Voz de Antioquia."
- HJ4DAU (ex-4ABU) Medellin—8650, "Emisora Universidad Antioquia."
- HJ1ABP Cartagena—9612, "Radio Cartagena."

All have, at some time or other, been logged by the writer, all are old stations with new calls, the majority on new frequencies, with the exception of HJ7GAB and those in the first district, whose calls remain unchanged. It will be observed that in addition to being assigned a district number, each station is further identified by a distinguishing letter for that district: HJ1A—, HJ2B—, HJ3C—, HJ4D—, HJ5E—, HJ6F—, and HJ7G—. If these stations will only adhere to their present calls and wavelengths (their conduct has been most erratic during the past eight years, although only few such as 1ABB, 3CAF, etc., are really old) identification will be a simpler matter. We consider that the above list is the most up-to-date and accurate one now available in print. The addresses of any of the stations listed may be had from the editorial office and, perhaps, it will be as well to add that HJ3CAF has never verified reception and HJ1ABB is a very hard nut to crack, although the writer was fortunate enough to secure their QSL, which is very attractive.

## ● Other News from South and Central America

*Uruguay.* CXA2, Montevideo, has moved to 9570 kc. where it is well heard from 2230, announcing frequently as "Transmite Radio Continental

CXA2 en Montevideo." Originally near 50 m, where it was well received, this station confirms reception (to *lucky* people!) with an attractive card. CXA6, Montevideo, 9620 kc, heard around 2300 with religious and symphony orchestra recordings; the call being "Servicio Oficial de Difusion Radio Electrica, Estaciones CX6 y CXA6 en Montevideo." This was CXA4, 48.94 m.

*Haiti.* HH2S, Port-au-Prince, formerly on 50.38 m, has moved to 6067 kc approx. Heard around 0030.

*Peru.* OAX4J, relay of OAX4I, Lima, heard again on 32.15 m around 0040 with NBC type chimes and lady announcer. OAX4Z, Lima, heard near 6082 kc at 0110.

*Chile.* CB960, 9600 kc, announces as "Radio la Americana, Compania de Seguros de Vida," the QRA being P.O. Box 1-B, Santiago, and schedule 0200-0530. Reported by M. F. Williams (USA). Heard in Gt. Britain (see April edition).

*Venezuela.* YV4RQ, Puerto Cabello, 5021 kc, heard mentioning Maracaibo, giving call as "Radio Telefunken" and first few bars of a march at 0100. YVA, Caracas, heard near 5150 kc nightly 0030-0100, once with lady speaker and call "Radio Publicidad."

### ● From the Far East

*China.* XGOY, Chungking, formerly well heard on 31.58 m, moved to 25.21 m, 11905 kc, where it is

## for the Listener

By F. A. Beane

frequently a strong signal. The schedule appears to be unaltered. Also operates on 16.85 m, 17800 kc, 0300-0500 with the call XGOX. XGRV, Hankow, 11.4 Mc, operates 1400-1430 with war news in French and English. QRA "China Information Committee, P.O. Box 90, Hankow." Reported by M. F. Williams (USA). NZ16W (a short-wave listener in New Zealand) reports XMHA, "The Call of the Orient," Shanghai, on 12.2 Mc, broadcasting from 1100, the QRA being 445 Race Course Road, Shanghai.

*Macao.* NZ16W reports CRY9 on 6.1 Mc from 1400 with an English announcement at 1430, signals being distorted. The same listener adds that YDX, Medan, is heard on 8.09 Mc from 1300, and KZIB sends a letter-veri giving power as 1 kW on 9500 kc, but no definite schedule yet.

*Japan.* Present schedule (at the time of writing):—Europe: 2030-2200 over JLG3, 11705 kc, 25.63 m, and JLT2, 9645 kc, 31.10 m. South America: JZJ, 11800 kc, 25.42 m, JZL, 17785 kc, 16.87 m, 2230-2330. Eastern Districts N. America: JZL, 0200-0230. Pacific Coast: JZK, 15160 kc, 19.79 m, 0630-0730. China, South Seas: JZK, JZJ, 1400-1530. JLG3 provides best reception in Europe.

*Iraq.* HNF (or HMF), Baghdad, has moved to 30.96 m; heard 1600 to 2100, but sometimes closes at other times. No verification has been received in answer to a report sent many weeks ago. ZHP

on the same wavelength is heard no longer, apparently having been replaced by ZHO, 48.95 m, operating weekdays 1140-1640; Sundays 1225-1640.

*Australasia.* ZL4ZB, Dunedin, 4.3 Mc, operates weekends from Saturdays at 0300 to Sundays at 1300, according to M. F. Williams (USA).

VLR3, Melbourne, 25.25 m, is still audible in the evenings from 2130 to 0115 and 0300-0820; Sundays 0730-0900; also 0915-1430 on 31.32 m.

### ● From Europe

*Albania.* Nothing has been heard, up to the time of writing, of ZAA since the Italian occupation. Reports on this would be appreciated.

*Italy.* Official wavelengths are announced as follows:—2RO3 31.13 m, 9635 kc; 2RO4 25.40 m, 11810 kc; 2RO6 19.61 m, 15300 kc; 2RO8 16.83 m, 17820 kc; 2RO9 31.02 m, 9670 kc; 2RO12 19.87 m, 15100 kc; IRF 30.52 m, 9835 kc; IQY 25.70 m, 11673 kc; IQA 20.28 m, 14795 kc and ICA 47.20 m, 6355 kc. In addition 2RO1 is said to be on 41.55 m.

### ● New Calls and Wavelengths

CR6AA, Lobito, now shares 19.74 m with TAQ, but schedule unknown. The Japanese service has JLK on 48.54 m and VUD4, 19.62 m, is an alternative channel for the Delhi stations.

### ● Future Programmes

Elaborate arrangements have been completed for broadcasting outstanding events of the visit to Canada and the United States by the King and Queen, and so for the benefit of our readers we give a brief summary of the schedules published by the NBC, CBS and MBS. On May 13 and 14 descriptions of their arrival will be given from the Canadian cruiser "Saguenay" and taken by the broadcasting organisations. On May 15 a spectacular demonstration will take place, the "Empress of Australia" will arrive at Quebec, the Royal entourage will head a parade to the Government Buildings, while later His Majesty will speak at a formal luncheon in the Chateau Frontenac. A commentary on this will be broadcast by the CBS, their commentator having secured a vantage point on top of the St. Louis Gate.

On May 18 the Royal Party will be at Montreal where the King is to speak at the unveiling of a War Memorial, while on the same day Queen Elizabeth makes what will probably be her only public address on the occasion of the building of the corner-stone of the new Supreme Court building.

On the 22nd His Majesty is expected to make some brief remarks at the running of the "King's Plate," and will present the trophy to the owner of the winning horse.

The 24th, being "Empire Day," will probably be the climax of the tour. The King will be at Winnipeg and will respond to messages received from the Empire. His fourth formal address occurs on the 30th when radio listeners will hear the King as he talks to diners at a luncheon in Victoria.

The USA will be entered on June 7 and the party, accompanied by the Secretary of State, Mr. Cordell Hull, will proceed to President Roosevelt's residence in Hyde Park, New York. On the 12th they return to Canada and the King's farewell speech will be broadcast on the 15th at a luncheon in the Nova Scotian Hotel just before the party boards the liner at Halifax for their return home.

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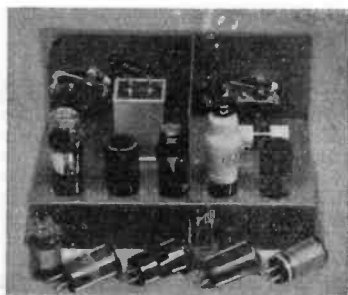
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3-watt AC Amplifier	40/-	£2 : 15 : 0	8-10-watt AC/DC Amplifier	£4 : 10 : 0	£5 : 5 : 0
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5 v., 3 "	" CT. ...	8/6
6 v., 2 "	" CT. ...	8/6
6.3 v., 3 "	" CT. ...	8/6
7.5 v., 3 "	" CT. ...	8/6
10 v., 3.4 "	" CT. ...	11/6
12 v., 4.5 "	" CT. ...	11/6
14 v., 4 "	" CT. ...	11/6
22 v., 1 "	" CT. ...	7/6

2.5 v., 3a+6.3 v., 3a	10/-
2.5 v., 3a2.+5 v., 8a	14/6

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2.5 v., 5a CT.	11/6
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**Premier U.S.A. Quartz Transmitting Crystals,** 7 mc. 10/- each. Enclosed holder and base, 3/-.

**Cardboard Electrolytic Condensers,** 4 mf. or 8 mf. 500 v., 1/6 each, 8+4 mf. 500 v., 2/3, 8+8 mf. 500 v., 2/6, 4+4+4 mf. 500 v., 2/6, 16+8 mf. 500 v. 3/6.

**Tubular Metal Can Electrolytics** by famous makers. 4 or 8 mf. dry, 500 v., 2/6 each. 8 mf. wet, 450 v., 2/3. 8 mf. 650 v., Peak dry, 4/-.

**Oil-Filled High Voltage Condensers.**

1,000 volts working: 1mf. 5/- 2mf. 7/- 4mf. 10/6  
2,000 volts working: 1mf. 8/- 2mf. 12/- 4mf. 14/-

**Bias Condensers,** 6 mf. 50 v., 6d.; 50 mf. 12 v., 1/-; 25 mf. 25 v., 1/-; 50 mf. 50 v., 1/9.

**Tubular Condensers,** all values from .0001 to .5 mf., 6d. each. **U.S.A. Valve Holders,** 4, 5, 6 and 7 pin., 6d. each. **Octals** 9d.

**Ceramic U.S.A. Valve Holders,** all fittings 1/- each. **Short-Wave Coils,** 4- and 6-pin types, 13-26, 22-47, 41-94, 78-170 metres, 1/9 each, with circuit. Special set of S.W. Coils, 14-150 metres, 4/- set, with circuit. Premier 3-band S.W. coil, 11-25, 19-43, 38-86 metres. Suitable any type circuit, 2/6.

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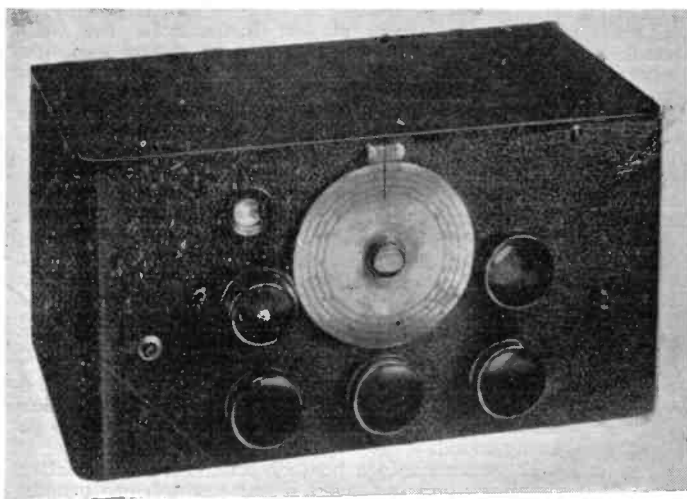
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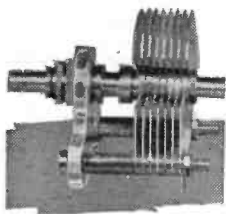
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250 m/A.	80 ohms,	2,000 v. Insul.,	15/-
500 m/A.	100 ohms,	4,000 v. Insul.,	18/-

# Some Collected Ideas

By "Tester"

IN glancing through the files recently, it was realised what an enormous amount of information of general interest is contained in our daily correspondence and; more particularly, in the answers prepared by the Query Department. While selecting the material for this article, it occurred to us that a regular page of similar notes each month would be helpful, so we hope to have the space to run this heading in the coming issues. While on the subject, it goes without saying that readers' own ideas will always be welcome.

## ● Detector Circuit

While not actually new, the circuit of Fig. 1 embodies a number of sound points which, taken together, make this a better detector arrangement than is normally used in standard 1-v-1 and 0-v-1 receivers. All values not marked are as ordinarily employed and of course band-spread can be added

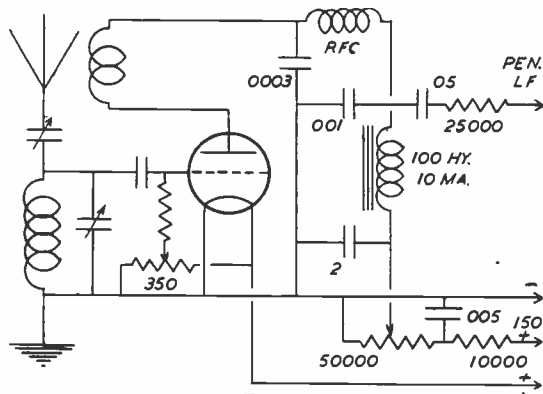


FIG. 1.

Detector circuit, specially effective on 28 and 56 Mc. Hand capacity effects are minimised, reaction is smooth, and good matching obtained into any LF pentode, while control of reaction by HT variation reduces frequency change on USW.

(Note that in this diagram all lines just above the 100-henry choke should join.)

in any of the several possible ways. The first thing to notice is that the reaction coupling is fixed, the degree of regeneration being controlled by a resistor in series with the HT lead to the plate of the valve. Though in a sense this is a retrograde step—since it can happen that with too tight a fixed reaction coupling the valve oscillates at a plate voltage too low for maximum sensitivity—this difficulty is easily overcome by arranging that oscillation occurs with 100-120 volts actual at the anode. With de-coupling and the drop in the reaction control resistor, the supply voltage should therefore be around 150v. The advantage of the arrangement is that on frequencies above 14 Mc stability is much improved and hand capacity effects reduced because it is not only possible to get a compact layout, but there is less tendency for RF to leak into the following

## Notes on Circuits for Five Different Applications

amplifier stage or stages; furthermore, the well-known "reaction tuning" nuisance, where variation of the reaction condenser alters grid tuning, is avoided and the RF choke, being on the "earthy" side of the reaction winding, is not as critical from the point of view of RF efficiency as it is in the commoner condenser-reaction circuit.

From this, it will be evident that while there may be no apparent improvement in detector efficiency on frequencies from, say, 10 Mc and down, the modification suggested will be of most value on 28 and 56 Mc; it is in fact for the latter frequency that this circuit is particularly suitable. It is absolutely essential, however, to have a quiet 50,000-ohm control resistor (the 2 mF condenser helps here) and the Varley type CP.159, dissipating 3 watts, can be recommended.

Note also that the grid leak should be returned to a 350-ohm potentiometer across the LT supply, which enables the best operating point for the grid to be easily found.

If working into a pentode on the LF side, better matching and improved signal strength are usually obtained with the coupling circuit shown, which is complete right up to the grid of the LF valve; the latter can have a .25 megohm resistor between its grid and the bias supply, or this can be a volume control arranged as a potentiometer in the usual way, i.e., slider to grid, one end of strip to bias and the other to the point marked "Pen LF" in the diagram.

Should there be a tendency for threshold howling, a 100,000-ohm resistor can be connected across the 100-henry coupling choke, but this will tend to reduce signal strength slightly.

## ● CW Without BFO

Fig. 2 is almost self-explanatory, and is an effective method of getting local oscillation for heterodyning CW signals in a superhet not fitted with a BFO. It means, of course, a certain amount of investigation underneath the chassis and the modification should not be attempted by anyone unable

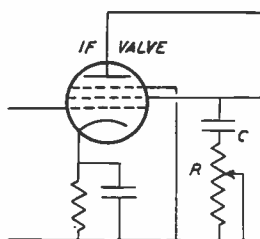


FIG. 2.

Simple method of obtaining BFO condition in an all-wave superhet. As the resistor R is brought in, so the effect of the normal screen by-pass condenser C is reduced and the IF valve tends to oscillate. Due to W. Jones, GW6OK.

to read his receiver circuit diagram or locate the IF valve's screen by-pass condenser in the maze of coloured wiring which can be so baffling even to the comparatively initiated. The value of R can be 50,000 ohms; C is already in circuit. Another method of getting IF oscillation is suggested in "Improving the Small Superhet" (page 13).



### ● Battery Transmitter

A very useful one-band battery rig which should give plenty of RF output on frequencies from 1.7 to 7 Mc is suggested by Fig. 3. A triode CO drives a twin-triode or Class-B valve as a push-pull neutralised amplifier, the PA input and output circuits being link-coupled.

Almost any valve in the power or small power category could be used in place of the P220A marked, while every manufacturer does a twin-triode of some kind which would be suitable for the

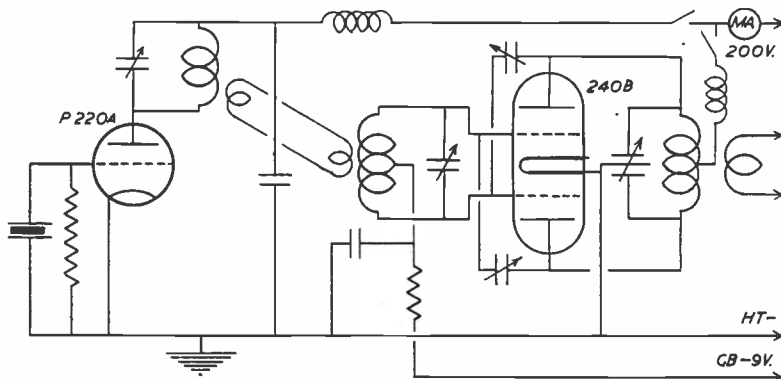


FIG. 3.

Two-stage battery transmitter suggested by L. Levitt, 2DOD. This arrangement produces good RF, but a disadvantage is one-band operation. Useful for field days and low-power portable work. Bias could be increased to two or three times the figure given.

PA. With such valves, the HT voltage should not exceed 250v, the circuit values—tuning and fixed condenser capacities, coils, chokes, etc.—being as recently given for the “Three-Stage Battery Transmitter” described in our March issue. If the outfit is to be used more or less exclusively on 1.7 Mc, the fixed capacities can be increased to .006 mF, and if on 7 Mc only, they should not be more than .002 mF.

A particular point to note about the circuit of Fig. 3 is that it is virtually one-band in the sense that no doubling is possible. Some slight second harmonic output is often obtainable from a triode CO, but not nearly enough to drive the PA on 14 Mc from a 40-metre crystal. A tuned circuit for 14 Mc (if the CO fundamental is on 7 Mc) could be inserted in series with the tank of the P220A, this 14 Mc tuned circuit being used to pick out the second harmonic of the crystal. The adjustment is simple. On 7 Mc, the 14 Mc side has its parallel condenser at minimum capacity, and the tank is tuned in the usual way. For 14 Mc operation, the 14 Mc condenser is adjusted till a flicker of the CO plate meter reading is noted; this is probably the second harmonic, or twice the 7 Mc crystal frequency. Output from the second harmonic tank circuit can then be used to drive the PA by transferring to it the link from the 7 Mc tank.

The amount of drive forthcoming from such an arrangement is not likely to be very high, but should be sufficient to excite the PA to about 40-50 per cent. of the input it takes on the fundamental. In any case, the suggestion makes an interesting experiment for anybody now using simple triode CO's, and is worth trying.

Reverting again to Fig. 3, note that the links should be presented to the centres of the grid and tank coils on the PA side, and the grid coil must be centre-tapped as accurately as possible. If this is not done, the circuit will become unbalanced, one side of the valve may get more grid drive than the

other, the load on both halves may not be the same, or the PA may be difficult to neutralise.

To those interested in portable work, which usually involves one-band operation with the simplest possible transmitter requiring the minimum of HT, we can recommend the CO-PA discussed here. Since frequencies between 7 and 1.7 Mc only can be involved, layout and construction will present no difficulties, a chassis-and-panel assembly of the kind used for the “Three-Stage Battery Transmitter” being very suitable.

### ● Change-over Switching

One of the first essentials in any amateur station, AA or otherwise, is a quick change-over from “send” to “receive.” That a large number of operators are not yet able to get over with a snap is evident by listening round any of the communication bands for a couple of hours or so. We have known stations where it has been necessary to make as many as nine switch movements to cover a change-over in QSO, and four or five are not uncommon. All this can be obviated, usually quite easily, by working out a switching system which brings all movements to one—or at most two—control points. The only exception to this general rule

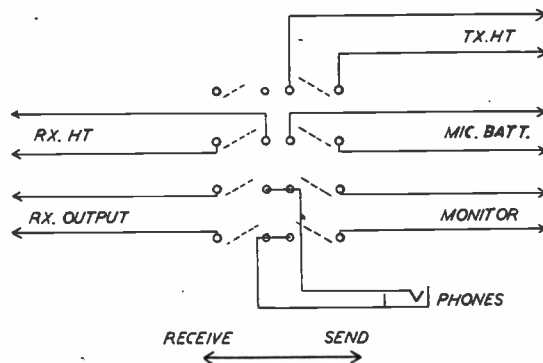


FIG. 4.

Change-over switching circuit, as used by J. E. Hunter, G6HU. The method of connection is self-explanatory, but note that a multi-way switch with a double set of centre contacts is required, such as the Ormond or old type Utility. A 5-way switch of ordinary pattern could be used by putting the receiver HT across the fifth pair.

## SOME COLLECTED IDEAS

is that the aerial should be switched separately in order to avoid losses and capacity effects.

Fig. 4 is a method which could be used at many low-power stations to effect the main change-over. Actually, switches with a double set of centre contacts, insulated from one another, are not easy to get nowadays, but the same idea can be adopted with five- or six-way switches having only one set of centre contacts. The actual connection plan will always depend on what apparatus is being used and how it is arranged electrically, no two cases being alike in this respect.

As another general rule, it is as well to connect all HT negative sides for transmitter, receiver and any other apparatus in use (except C.R. tube equipment, which is earthed positive), whether operated from separate power packs or not, to a common earthed point. Then, only the positive leads need be switched for changing over. Obviously, this does not complete the tale of the switching. There should be one station control, preferably near the door of the room, which cuts the power from *all* mains operated apparatus; in turn, each mains unit in the equipment should have its own on-off switch, the outputs being taken to the "send-receive" change-over, i.e., if there are, say, three power

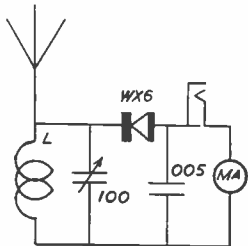


FIG. 5.

Simple field strength meter circuit, also effective as a 'phone monitor. The coil L is chosen to tune the required band, and the length of aerial adjusted till the required pick-up is obtained. For field work, the 0.1 mA milliammeter gives a reading of rectified RF current. Due to J. W. B. Evans, GW3GL.

packs, the main AC lead should be split such that there is an on-off switch for each primary (located within easy reach) the outputs of these packs then being taken *via* the station change-over to where they are to work.

It would be practically impossible to produce switching diagrams that would cover even a reasonable number of cases, but every operator should set himself to devise a scheme to suit his own individual requirements; again, personal safety should not be overlooked. One owes it to one's family, one's self and one's gear, in whatever order may be deemed most important! There ought to be at least a set of main fuses—1 amp. rating is ample for most stations—and the wise man will also fit tell-tales to all his power packs, to say nothing of suitable fuses to protect HT supply units from excessive loads on the output side, such as would be caused by an HT by-pass condenser going down.

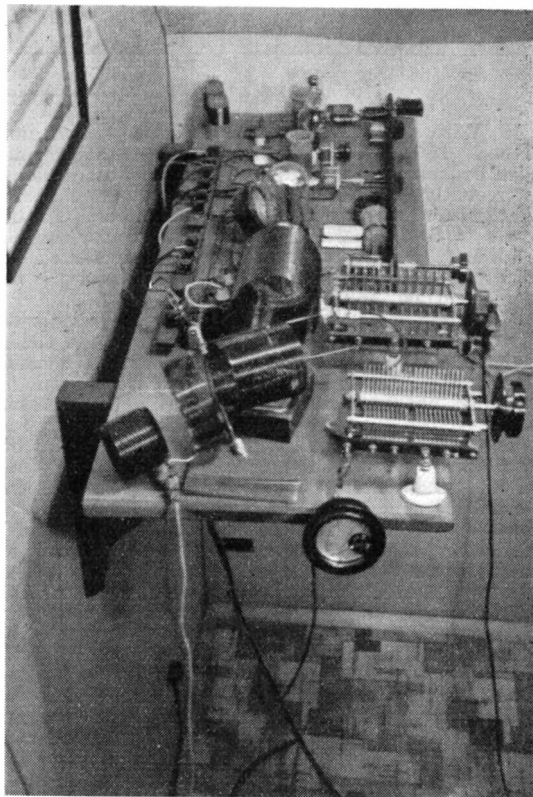
### ● Field Strength Meter

Fig. 5 shows the circuit of the simplest possible field meter, which does away with batteries or any local source of power. The rectifier element is a WX6 "Westector" and with an 0.1 mA moving-coil milliammeter, deflections should be obtainable

within 100 feet of an aerial fed from a 25-watt transmitter. Thus, some idea of the radiation pattern can be obtained, though it should be noted that this type of field meter is comparatively insensitive and also that results are often confusing due to body-capacity and the distortion of the local field by earthed structures near the aerial—GPO lines, galvanised iron roofs, steel fencing, and the like.

Hand capacity can be overcome by building the instrument into a small metal box fixed to a wooden handle, held always at the same level when taking readings. A stiff aerial 3-7 feet in length will give enough local pickup and can be adjusted to suit the conditions.

In the station, such an indicator has a wide variety of applications: As a 'phone monitor (telephones plugged to the jack); output checker (the meter deflection variations can be watched under different operating conditions with the instrument in one position); as a neutralising monitor in moderately high power rigs, where coupling fairly tightly to the tank coil of the output stage with the HT off and the previous stages driving will show a deflection if neutralising is not as it should be.



Close-up of W2CAY's 1.7/3.5 Mc transmitter, as used in the Magazine 1.7 Mc Tests in February last. The valve sequence is 42-807-203A, which put a nice signal as far east of New Jersey as SM7QY.

*Mention the Magazine when writing to Advertisers. It helps you, helps them and helps us*

## ... HERE AND THERE ...

### UHF LICENCES—OFFICIAL

While the few existing  $2\frac{1}{2}$ - and  $1\frac{1}{2}$ -metre licences are not being withdrawn, we are informed by the Post Office that it has been decided not to issue further amateur permits of any kind for frequencies above 56 Mc. Though this is most regrettable and means in effect that there can be no general experimental work by amateurs on interesting frequencies which would be new to them, it is permissible to say that the Services are developing the range 60-300 Mc for their own particular requirements.

### A BRITISH 807

The 807 as a type is a very useful valve for medium-power operation at inputs up to 40 or 50 watts and as a buffer-doubler in high power transmitters. We are therefore glad to be able to announce that Messrs. Mullards have once again anticipated the demand for a British equivalent by bringing out their type PVO6-20, which is similar to the American 807 except that it has a British 7-pin base. The heater rating is 6.3 volts, the anode dissipation 25 watts and the price 35s. Write the Transmitting Division, Messrs. Mullard Wireless Service Co., Ltd., 225 Tottenham Court Rd., London, W.1 for further particulars.



### INSIDE BACK COVER

This is where we print a full list of short-wave BC stations, with their wavelengths and frequencies. Owing to the number of stations which it is necessary to show for completeness, the list is given in two parts—the 14-32 metre stations appear one month, and the 32-63 metre transmitters the next. Starting with this issue, we are also showing the frequency limits of the six amateur bands and where they come in relation to the BC stations.

### LOOSE CABINETS

Those who like their apparatus to be totally enclosed and the units to look uniform will be interested to know that Messrs. Peto-Scott are making available the steel cabinet they use for housing the "Trophy 8" and similar receivers. Extremely well made, with a hinged lid, louvres for ventilation, and openings in back and bottom panels, these cabinets are finished black crackle, the overall dimensions being 11-ins. deep, 17-ins. long and  $9\frac{1}{2}$ -ins. high. Complete with undrilled loose front panel, they cost 21s., plus a small for-

warding charge. Obtainable from Messrs. Peto-Scott Electrical Instruments, Ltd., Pilot House, Stoke Newington Church Street, London, N.16.

### W9BNX IN ENGLAND

E. H. Conklin, W9BNX, Associate Editor of RADIO, is often mentioned in our 56 Mc feature. He and his wife, W9SLG, are Grand-Touring in the S.S. "Kungsholm" and from May 16-18 will be in Southampton and London, where they hope to meet some of the British UHF men between the schedules of their itinerary. Write the ship or Cook's.

### THE NEW CALL BOOK

The Spring Edition of the Call Book is now available from F. L. Postlethwaite, 41 Kinfauns Road, Goodmayes, Ilford, Essex, at 6s. post free. This is as important and indispensable a publication as it always has been, and must now give something like 75,000 amateur QRAs. A useful feature is the re-introduced list of commercial standard-frequency stations operating near the various amateur bands, intended for the calibration of home-constructed apparatus and also for finding one's way about generally. The usual prefix lists, time conversion chart, world map and reporting codes are included, and also the schedules of the stations which transmit press and weather on the short waves.

### 1.7 Mc LICENCES

Unless this band is specifically asked for in a full licence application, it is not now granted, though for some years it was the practice of the GPO to give facilities for 1.7, 7 and 14 Mc automatically in the standard 10-watt permit. 160 metres is still freely available for those who wish to use it, but it is essential to quote a crystal frequency which is fundamental for the band, and it may be necessary to give additional reasons for wanting it.

### ITEMS FROM WEBBS

Their new catalogue is now available. An extremely well produced 60 pp. publication, it lists with considerable detail the whole range of apparatus handled at both Soho Street and the branch in Birmingham. British and American parts, receivers, transmitters and aerial equipment do not take up all the space—there are comprehensive valve tables, pages covering odd items, meters, power supply components, oscillographs and the various manuals and handbooks of interest to the amateur. The catalogue is free, and can truly be described as essential, for it is practically a guide to the Amateur Radio market.

The other publication to mention is a little book called "The Globe and its Uses," price 1s. 6d. post free, the title being self-explanatory. Many interesting ways of using a globe are described, and the DX man will find it most useful.

Write Messrs. Webbs Radio, 14 Soho St., Oxford Street, London, W.1, or to 41 Carrs Lane, Birmingham, 5.

# Microphone Matching

## Throwing Light on How to Use Modern Instruments

**A** GOOD deal of misunderstanding exists with reference to the permissible length of microphone cables and microphone matching. A few fundamental principles properly understood will assist in the solution of the various problems encountered in this field.

### ● Length of Cable

The length of microphone cable that can be run on any installation depends mainly on the impedance of the line—not the output of the microphone. In low impedance instruments (500 ohms or less) the limiting factor is the DC resistance of the cable. With a high impedance microphone the limiting factor is the capacity between conductor and shield of the cable.

A 50-ohm line can be any length up to approximately 1,000 feet, the net loss being  $2\frac{1}{2}$  to 3 dB per mile. The lower the impedance of the line the less chance of picking up extraneous noises. It is for that reason that commercial stations sometimes use 50- or even 30-ohm lines. For most purposes 200-ohm lines can be used with very little chance of extraneous noise pickup.

A poor plug connection in low impedance lines can give as much loss as several thousand feet of cable. Even a fair plug will give a loss equivalent to several hundred feet of cable. Plug and plug connections are the first things to check when output drops.

### ● High Impedance Lines

In studying cable length, high impedance microphones can be divided into two classes:—

1. Capacity source instruments, which include condenser and crystal microphones.
2. Inductive source microphones, which include high impedance velocity and dynamic microphones.

A capacity source microphone is equivalent to a condenser, and the resistance of the cable is negligible; its capacity only need be considered. Adding cable to a capacity source microphone is therefore equivalent to shunting the capacity of the cable across it—or having two condensers in parallel. The result is a drop in output of the entire frequency range. How much the output will drop with a given cable depends upon the capacity of the microphone itself. With a better type crystal microphone where the capacity is small, the drop will be greater than with the large diaphragm type having higher capacity.

With microphones having inductive source, adding cable capacity is equivalent to putting a condenser across the inductive output of the microphone, i.e., the capacity resonator tunes the circuit. The result is attenuation of the frequencies higher than the resonant frequency. The amount of the attenuation depends on the secondary impedance of the transformer and the capacity of the cable. The higher the impedance of the microphone the more attenuation of the "highs" with a given cable length. It is

therefore desirable not to use a transformer with too high an impedance, and 2000 ohms is found a good value. Increasing the impedance above 2000 ohms will give higher output with a short cable, but the output and high frequencies will drop very quickly as the cable length increases. It is of course much cheaper to obtain high output by using a transformer with a high output impedance. Doubling the magnetic field requires approximately doubling the size of the magnets and only increases the output of the microphone 3 dB. Although this is an expensive way of doing it, it is the better way.

An easy way to determine if the output is obtained by an unusually high impedance transformer is to add 50 to 100 feet of cable to the microphone and note what happens to the highs and output.

With an output impedance of something like 200 ohms, line lengths of 75 to 100 feet can be used with ordinary microphone cable having a space between the wire and the shield of approximately  $3/32$ -ins. By using large diameter low capacity cable such as is usually employed for car aeri-als, cable lengths up to 150 to 200 feet can be used, though it is generally not desirable to run high impedance lines over 75 feet. A much better practice is to use a 200-ohm microphone with a cable type matching transformer. This combination will permit any cable length up to 5,000 feet without any loss of highs or output, and the chance of picking up extraneous noise is reduced to a minimum. And contrary to popular conception, 2 dB more output is obtained than with high impedance microphones feeding directly into the grid.

### ● Impedance Matching

The important principle to remember in impedance matching is never to feed a higher impedance into lower impedance. A lower impedance can be fed into higher impedance with very little loss in output and no loss in frequency response. For example, a 50-ohm microphone can be fed into 200-ohm line with a loss of approximately 1 dB over the entire frequency range. A 2000-ohm microphone can be fed into grid (25000 ohm up) of a tube.

But contrary to the general belief, better results will not be obtained by having the output of the microphone nearer the impedance of the grid. In other words by increasing the microphone output from 2000 to 6000 ohms, better results will not be obtained because of the cable attenuation of the higher frequencies.

The 2000 ohm impedance is often confused with the DC resistance of the transformer. The DC resistance of the transformer is always much less than its impedance—and is of course no indication of its impedance.

### ● Preamplifiers

The only time preamplifiers are necessary is when the main amplifier has not enough gain to operate the particular microphone. An amplifier having a gain of 115 dB or more will operate all types of high

fidelity microphones without any preamplification, and the 200-ohm velocity type does not require a preamplifier near the microphone, while the cable can be any length up to 5,000 feet. This in turn can be fed into an amplifier with low impedance input. If the amplifier has high impedance input the 5000-foot line can be fed through a cable type transformer which is placed 12-ins. from the amplifier.

A 200-ohm microphone and cable type transformer is the most flexible combination. It permits operating the microphone directly into 200 ohms cable or through the cable type transformer into high impedance line. In either case any cable length up to 5,000 feet can be run. It would be very hard to think of a set of conditions, amateur or otherwise, which this combination would not handle.

## Civilian Wireless Reserve, Royal Air Force

Group C of the C.W.R., the third to be started, is now in operation on 2990 kc and has been in training for some six weeks. The Group C areas cover, as far as possible, those parts of the country not hitherto taken into the working organisation; local members will by now have been informed as to the schedule of exercises, and badges will also be issued.

The times of watch of Groups A (2583 kc) and C (2990 kc) are now on alternate evenings between 1930-2100 BST, and since March 20 the automatic Morse transmissions from GFO (2727 kc) have been at speeds of 18 w.p.m. on Mondays and 8-10 w.p.m. on Wednesdays and Fridays.

## The British Short-Wave League

From time to time, and more frequently recently, we get requests for information regarding the B.S.W.L. This is a listener organisation which finds favour with many keen SWLs, as among the various services and advantages the League offers is a QSL Bureau and four-page monthly review published as a supplement to the SHORT-WAVE MAGAZINE, members receiving both publications by post direct each month, free of charge. The B.S.W.L. issues proficiency certificates to listeners, a distinctive number to identify members, and is well established as an organised SWL association known throughout the world. Many League members also hold amateur call-signs, and it is hoped shortly to be able to announce a closer *liaison* between this MAGAZINE and the B.S.W.L. in order to increase its scope still further. At present League membership costs 8s. per annum, inclusive of a monthly copy of the MAGAZINE, and full particulars can be obtained from the Secretary, British Short-Wave League, Ridgewell, Halstead, Essex.

## Current Trade Items

**"The Bulgin Bulletin."** Listing a number of new lines such as adaptors, resistors in various ratings, mains plugs, and describing loud-speaker extension circuits, the new Bulgin unit for lining-up and their  $\frac{1}{2}$ -wave television aerial, this is the Spring Edition of the catalogue supplement. Messrs. A. F. Bulgin's literature is always useful—they now offer a Radio Service Manual at 1s.—and copies of the "Bulletin" can be obtained post free from Abbey Road, Barkings, Essex.

**"GM.3155 at Work."** An interesting leaflet for the experimenter and service man describing Messrs. Mullard's latest oscillograph unit, obtainable from the Publicity Dept., Mullard House, 225 Tottenham Court Road, London, W.1.

**Hamrad Crystals.** The Eidson "T9" X-cut crystals, available for almost any frequency in the 7 Mc band, are extremely good and very certain oscillators, giving a high output. They cost 10s. 6d. each, and a suitable holder—also large enough to take almost any other make of crystal—is 7s. 6d. Available from Hamrad Agents.

**"Clix Accessories."** This is title of an extremely well produced radio-electrical catalogue from Messrs. British Mechanical Productions, Ltd., 79a, Rochester Row, London, S.W.1. It describes, illustrates and prices the whole extensive range of products marketed under the trade-name of "Clix."

**A.C.S. Racks.** Some excellent steel-work is now available from Messrs. A.C.S., 16 Grays Inn Road, London, W.C.1. A two-unit rack 21-ins. high costs 15s. and in the three-unit size, 31 $\frac{1}{2}$ -ins. high, 17s. 6d. They are very solid jobs, welded construction, complete with panels, and are finished to customers' requirements. Also in the A.C.S. list is the new Rex neutralising condenser, capacity range 1-21 mmF, price 4s. 6d. Trolitul insulated, a screwed plunger works into a cylindrical base member, giving close adjustment and positive setting. The component is for baseboard mounting, safe to neutralise stages working at 750 volts DC, and the overall dimensions are 4-ins. high with a base 1 $\frac{1}{2}$ -ins. by  $\frac{3}{4}$ -ins.

It has come to our notice that certain interested parties are claiming a measure of control regarding the insertion of advertising in "The Short-Wave Magazine." We must therefore make it clear that the whole of the business of this Magazine has always been and still is conducted from our Offices at 84-86, Tabernacle Street, E.C.2; that the only persons empowered to act for the Magazine are those whose names appear in the Contents page as executives; and that we shall take proceedings against any person or firm purporting to have control or part control of our advertising space or advertising policy.

The "Short-Wave Magazine" covers every Amateur interest

# DX

## Commentary on Calls Heard, Worked and QSL'd

By The DX Scribe

THE warmer weather and the spring equinox have improved conditions on 14 Mc, and the mail certainly bears this out. Our listeners' activities are obviously increasing judging by the large number of letters and logs received; and while talking about logs, it would be as well to mention again that all lists of Calls Heard should be written on one side of separate sheets of paper, and each sheet should carry the sender's name, call and address, together with receiver and aerial details.

### ● Palestine

It would appear that our remark about up-to-date information on Palestine activity is already out of date. Only two months ago we were told on unimpeachable authority that no stations were licensed in ZC6, and we were also supplied with a complete list of all known calls. This list now seems to have been added to considerably, but it is still uncertain whether any of these stations hold an official Government licence, and great care should be taken in sending reports to a ZC6 operator, unless he gives his full QTH over the air. GM3TR in the Orkneys kindly informs us that ZC6AP was not a misread call for ZC6EC, but was actually worked by him on 'phone for over half-an-hour, during which period GM3TR endeavoured to help the ZC6 clear up his poor quality modulation. The QTH given was c/o GPO, Tel Aviv. We suspect that the letter published on page 32 of the March issue of the MAGAZINE might throw some light on this station; another which has been very active recently is ZC6HS, queried by E. Harris, 53 Wolsey Road, Ashford, Middx., and heard by F. E. Milsum, 30 Southern Road, Camberley, Surrey, who kindly supplies the address—P.O. Box 163, Haifa. G5LP is appealing for information on yet another, ZC6CB, whom he worked on 7170 kc and when challenged gave his QTH as follows:—Box 28, Acre. When QSL'ing these stations, it is advisable to make no mention of the call or the word "radio" on the envelope at all. Other known genuine ZC6's include ZC6AA, 6RL, 6RP and 6XX. 6AQ and 6EC have both left the country.

### ● Tangier International Zone

Another change of prefix. CN1 becomes EK. Many have noted the reappearance of EK1AA (CW only) and EK1AF ('phone only) after a short period when they were inactive owing to being requested to cease operation pending the issue of official licences.

The mystery of VQ4ECJ, if such it can be called, is at last cleared up. It appears that this is the new call of our old friend VQ4KTB; at least, R. H. Garland, "Crowndale," Hainault Road, Chigwell, Essex has heard that this is so; it is not surprising therefore that he is so well received.

### ● Portable Calls

J. J. Burchell, 4 Kangley Bridge Road, Lower Sydenham, London, S.E.26, is under the impression that the British licensing authorities have exhausted two letter calls, as he heard G3ZJP. British stations use the suffix "P" when operating portable, i.e., elsewhere but their home address. The position is somewhat similar in USA, though "portable" is scarcely the right word to use. An American amateur may move temporarily from one radio district to another, and instead of taking out a new call with the correct district numerical assignation, he will use the oblique stroke followed by the district number, e.g., W1ABC/2, and on 'phone, will announce himself as "W1ABC operating portable in the second district." He may have a "cool kilowatt" but still call himself a portable! This method even obtains if a New York Station visits the Hawaiian Islands; then, his call would be W2ABC/K6. Strictly speaking, this lengthy designation should be sent every time, but one does not usually hear it being done and as a result wrongly reported calls appear frequently in logs. One well-known case was of a K6 operating on 7 Mc in the first USA district—great excitement was caused among G's because the K6 rarely used the "/W1"! This will answer B. Cage, Royal Hospital School, Holbrook, Ipswich.

Swiss stations use HB1 instead of HB9 to indicate portability, but here, they really are portable stations, as they arrange special field days in the Alps and all equipment has to be carried by hand. If you hear HB1 calls, you may be sure that the input used does not exceed a few watts. The Russians of course use the prefix UX while some other European countries put an X before the usual sign. To-day, however, an X before the prefix generally indicates a mobile station, i.e., a ship.

### ● Readers Near Deal

Harold Thompson, BSWL931, 69 Celtic Road, Mill Hill, Deal, Kent, is anxious to arrange a "get together" of interested listeners in or near Deal. He knows there is at least one other enthusiast in Deal, as the local bookstall has a standing order for the MAGAZINE delivered to an address unknown to Harold. As soon as there is a sufficient indication of enthusiasm, he proposes that a local SW Club should be formed.

### ● Records and Such

T. C. Chambers, 9 Highfield Lodge, Highfield Lane, Southampton heard all continents in one minute dead on April 13. It so happened that CNSMI, VS7RA, SM6WE, VE1AR, VK3IG and PY2BH were all operating within a few kc of each other, with the exception of the VK. Mr. Cham-

bers is now up to 91 countries heard, presumably all on 'phone. K. Sly (2FAU), 16 Buckland Av., Slough, Bucks succeeded in hearing 52 countries in 24 hours—actually just over five hours listening time—Europe, CT, D, EI, F, G, GI, GM, HA, I, LA, LY, LZ, OH, ON, OZ, PA, SM, SP, SV, TF, U3; Asia, U9, VS7, VU2, XU; Oceania, KA, PK4, VK, ZL; Africa, CN8, CR7, FA, FT, SU, VQ2, VQ4, ZE, ZS; N. America, CO, K5, VE, VO, VP6, VP7, W, XE; S. America, CE, CX, HK, LU, PY, YV—52, on April 15. The day before he heard 49 countries and all continents on 'phone in 8 minutes between 2110 and 2118. 2FAU records 43 countries on 28 Mc in all continents and 51 on 7 Mc. Martin Bourke (2AOU) of Samares, Jersey, C.I., has now reached the high figure of 163 countries heard with 79 on 28 Mc and 17 on 1.7 Mc. This huge total includes 5 "doubtfuls," and we hope he will obtain some proof of them! Some of the more unusual QSLs he has received include ZD8A (Ascension I.), ZB2A, K(C)6TE, VK9VG and DM, VK4KC (Papua), VP1AA, 1BA, 1DM, VP3THE, VP5IS, VP7NC, VP9X, F18AC, VS6AB. 6AH, VR2FF (Fiji), VR4AD (Br. Solomons) and VR6AY; he mentions FF8MQ, but this station is not rare as he was actually operating in Fr. Morocco, and therefore cannot count as FF8!

● Channel Islands Activity

We are indebted to Martin for information on Channel Is. activity. G3XN in Alderney, G8OK, G8MF, 8DO in Guernsey, G3GS and G5OU in Jersey all appear to be keeping their country on the map, and it is suggested that they should take the prefix GC. We think that this would be a most useful step and feel that they should seek the necessary authority. Martin considers that this section of the MAGAZINE should be reserved for DX news only—we do not agree. The purpose of this feature is to impart readers' news of primary interest to SWLs, whether it is DX, or hints for better reception, or the design of aerials.

● 'Phones v. LS

D. G. Martin, 50 Raneliffe Road, London, E.6 again raises this question by asking if we think better results would be obtained by using an 0-v-1 with 'phones instead of an all-wave 4-valve superhet with very small band spread. We feel sure that he would obtain easier reception on an 0-v-1 with properly arranged band spread, as all-wave sets are not intended to be used as communication receivers. Our personal opinion is that reception on 'phones gives a much greater degree of accuracy

than on LS, especially where fading and interference are present on a telephony station. CW reception on speaker is much more difficult with weak signals than when 'phones are stuck "well into the ears." It is probable that most supers will be more sensitive than a good straight receiver for telephony reception, but some all-wave sets we have heard have been the reverse.

Charles Ekberg, BRS3521, 109 Abbey Road, Grimsby, received a station signing SM5KP "near the North Pole" on March 3. All SM5 calls begin with SM5M according to the Call Book, so this call must either be a pirate, or more likely an expedition station with a specially allotted call. The mystery YM4R was also heard! Another reader to log YM4R on December 22 was Mr. A. Tyson Boak, M.A. of Hazel Grove, Nr. Stockport, but this YM and TA1AA represent the mysteries of the air at present! Bob Everard is still hearing the best that 14 Mc and other bands can produce on 'phone. XU7HV and J2MI were brought in, and he tells us that he gets up every morning at 4 or 5 and is surprised that others find it difficult to do the same. Comments appear superfluous! Cards have now been received by him from several W's for 160-metre reception—W1CPI used 500 watts, W4BPD in S. Car. used 1 kw, W4FSS 245 watts; and from W5BB for 3.9 Mc 'phone. CR7AK, heard on 28 Mc, informed Bob that his was the first report received using 25 watts, while W5DAD (N. Mex.), 6DZX (Utah), 9WZH (S. Dak.), PK1VM and ZS6CS were other 28 Mc confirmations obtained. Incidentally, Bob has verified HAS three times over, the Nevada 'phones being 6FUI, 6BIC and 6HCE, and, answering G. J. Rawlinson, he tells us that North Carolina cards from 4OC, 4BYA, 4TJ and 4BQZ have come in safely—all continents have also been logged on 28 Mc 'phone, which is not a common feat.

● News from Sweden

Lars Rooth, 40 Sibyllegatan, Stockholm 5, is one of our Swedish readers and is welcome to this page. He lives in the middle of Stockholm with an aerial between two lift-shafts! In spite of these difficulties he has succeeded in receiving 45 countries on 'phone since the beginning of the year, and some of the "English" accents used by Continental amateurs must present difficulties to a Swedish ear on occasion!

It appears that we were wrong when we stated that no known Czecho-Slovakian activity had taken place since September last. Apparently OK1SZ has been using 'phone quite a lot, announcing himself

Here are some Sheffield Short-Wave Club members mentioned in last month's Notes. Left to right: G3VY, Secretary D. H. Tomlin, and 2DPJ



**DX — Calls Heard, Worked and QSL'd**

as in Bohemia. Frank Jones, 6 Sutherland Street, Fenton, Stoke-on-Trent, not only heard the above, but records an OE (Austria) on March 15 at 0822 GMT using CW. Frank has added a good "bag" to his list in March—CR4HT (definitely genuine), FM, K7, OA, OE, U8, VK7, VP1, VS6, XU, CT3 on CW and YN on 'phone. We wonder if it is possible that the OE heard was in reality "UE" sent badly? J. B. Roscoe, 2FJM, 59 Croham Road, South Croydon, Surrey, had a shot at the "50 countries in a day racket," but failed with 33, and is now up to 86 countries in less than a year's listening. He asks for a CE; well, we heard CE2AG on 14370 kc a few weeks ago on CW, while 4AD and 3EE are also sometimes there. 2FJM does not listen for 'phone as he only uses an 0-v-1.

**● QSLs Received**

No paragraph appeared under this heading last month owing to space limitations, but it appears that it is a popular feature, judging by readers' remarks! K. Holyland, Swincliffe Side, Hampsthwaite, Harrogate, from ZS2N, ZS6H, VE4BF, PY1GR, VE9AT and TG9BA. Harold Owen, 2 Campion Av., Bashford Park, Newcastle, Staffs, from VQ8AF, and (1.7 Mc) FASBG, W1BB. John Greenwell, 7 Sondes Drive, Dorking, Surrey from VU2FQ; incidentally, John heard a YM 'phone with a two-letter call, listed in the Call Book, in March.

Charles Lesser, 7 Clippesby Close, Chessington, Surrey from KA2OV (QRA—D. J. Douglas, Long Beach, La Union, P.I.), ZD4AA (14166), rarely heard Gold Coast station. Charles wants to know if VU2CQ QSLs—yes, he does. Norman Stevens (BSWL1039), 59 College Rd., Kensal Rise, London, N.W.10, from VP2AT, 2LC (7 Mc) and Y1BA, ZS1CJ, 6BZ, VK3WA, 6MU, ZD4AB, PK4JD, ZB1R (14 Mc). Leslie Morgan, 45 Parkwood Rd., Bournemouth, from YL2AA, VS7RA, W7EAI, CE2BX. Leslie wishes us to let it be known that ZL should have appeared last month in his list of new countries received on CW. It was unfortunately omitted. Other unusual calls heard include YN1IP, a newcomer to 14 Mc 'phone, PK4KS, VP2AT, U9MF and G3GS (C.I.).

**DX FORECAST FOR MAY, 1939**

<b>North America.</b> (All times GMT)	14 Mc.
Eastern States of U.S.A., VE1, 2, 3, VO, K4 and West Indies	2100-0200 0500-0800 1800-1900
Western States of U.S.A., K7, VE4, 5, XE	0500-0800 1800-1900
<b>South America.</b>	
All	2200-0200 0400-0700
<b>Africa.</b>	
ZS, CR7, VQ8, FR	1730-1930
VQ2, 3, 4, 5, OQ, ZE, ZD, FB	1700-2100
FA, FT, CN, SU, ST, etc.	0800-2200
<b>Asia.</b>	
J, XU, MX, VS1, 2, 3, 6, 7, FI, etc.	1400-1800
Y1, ZC6, VU (North), U8, 9	1300-2000
<b>Oceania.</b>	
VK2, 3, 4, 5, 7	0600-0900 2000-2100
VK6, 9, VK4 (Papua)	0700-0800 1500-1700
ZL, VR, and Pacific Is.	0400-0800
PK, KA, KB6, etc.	0700-0900 1500-1800

Note.—Signals may sometimes be heard between 0200 and 0400 depending on the degree of ionisation of the F layer.

**● Some More "50 Countries in a Day"**

Leslie Morgan tried on April 9 and succeeded with CE, CO, CN8, CT1, CX, D, EI, EK, ES, F, FA, FN, FT, G, GI, GM, GW, HA, HH, I, K4, KA, LA, LU, LY, OA, OH, ON, OZ, PA, PY, SM, SP, SU, SV, UE3, U5, U9, VE, VK, VO; VP3, VP6, VU, W, YL, YR, YU, YV and ZS, just 50 in 10 hours 55 minutes listening time. Martin Bourke succeeded on April 8, one day earlier, with—CE, CM, CN, CT, CX, D, ES, F, FA, FT, G, GM, GW, HA, HB, HC, HH, HK, I, J, KA, LA, LU, LY, OH, ON, OZ, PA, PK1, PY, SM, SP, SU, TI, U2, U3, U5, U8, VE, VK, VP2, VU, W, YL, YR, YU, YV, ZB1, ZS and ZL, 50 in 2 hours 20 minutes—a personal record! It is interesting to compare these two lists and notice the large number of different countries represented, showing that it should be possible to receive about 75 in a day, with favourable conditions. We don't know whether it would be possible to receive 50 countries on 'phone in a day—perhaps Bob Everard will let us know!

**● More 28 Mc Co-operation Needed**

You will remember that Martin Bourke appealed for co-operation from serious-minded SWLs for 28 Mc reception reports during the summer months. He now asks those who are willing to help in his investigations to listen between May 2 and 14 inclusive and send him note of all rare DX heard. We have a feeling that this summer will produce some unusual results on ten metres, and it is worth recording that April 16 was quite definitely an extraordinary day, with DX from North and South America, Africa and Asia "piling through."

Robert Hall, Sidros, Station Av., New Waltham, Grimsby, informs us that VP3LF is the new call of VP3AA and VP3CO continues to be active. He really has heard some worthwhile 'phone DX, including VS2AL at 1450, VS6AK 1530, 6BE, VP2AD 0030, XU8NR (Shanghai), KA7HB 1420, KA3KK, and XE2DH (an American operating on board a ship 1,000 miles from Tokyo, in QSO with J2MI). Robert logged 49 countries in 5½ hours during the DX Contest on 'phone; these were—CE, CO, CT1, CT2, CX, EI, EK, ES, F, FA, G, GI, GM, GW, HA, HB, HK, HR, I, KA, LA, LU, LY, OA, OH, ON, OZ, PA, PK1, PK4, PY, SM, SP, SU, SV, VE, VK, VO, VP9, VS6, VU, W, XZ, YL, YR, YU, YV, ZB1, U3, all on March 20 between 0000 and 2400. What a pity he couldn't just find the fiftieth.

L. A. White, 3 Green Walk, Timperley, Ches., overheard friend TA1AA in QSO with ES5B and copied this address:—Karl Kallemaa, Lakveite, St. Seminari, 3. This QRA bears no resemblance to the one normally given by TA1AA and we are wondering if what he really heard was the QRA of ES5B being repeated back. Unfortunately, the new call book does not list ES5B, but the name Karl Kallemaa has a distinctly Nordic sound!

**● 28 Mc Contest DX**

K. Bunston, Gable Cottage, Broad Hinton, Nr. Swindon, Wilts, has been concentrating on 28 Mc and listened both for 'phone and CW. We often hear complaints of the lack of CW stations on this frequency, but a glance at his log will prove what can be received; (CW) CM7AC, FMBAD, HI7GW, LU9BV, PK1VM, 1VY, VQ3HJP, 3TOM, VU2AN, VU7BR (Bahrein), ZS and W5 and 6. ('Phone) CO2WW, 2WM, HC1PZ, K4DTH, LU5AN, 9BV,



PK1VY, 1VM, 2WL, PY2AK, VP6YB, 9R, ZS5T, 5AW, XE1A. It only shows what DX contests will bring forth. Mr. Bunston has produced quite a bag of K6's—6BNR, 6CNC, 6FAZ, 6OQV, 6NYB, 6OQE. K6PMP in Guam was a good catch, although he should be signing KB6 by now. This latter station was on CW on 14300 kc. Eric Otty, Burghwallis Road, Sutton, Doncaster, Yorks, heard 175 telephony stations in 35 countries during the contest and confirms the QRA of ZC6HS—Box 163, Haifa. G2QY tells us that he actually has a card from W4FT, whom we said never QSLs, but it was sent in 1932. The DX Scribe posted him a card in 1927 but—nothing doing! Norman Stevens heard KA1LB calling X8GM, but this does not prove that the KA really heard the call correctly; it would appear as more likely to be XU8GM. Norman has heard a rumour that NX2L in Greenland is operating around 14300 and would like some information. A South African correspondent of Norman's informs him that ZS's 2AZ, 5T, 6DM, 6DL and 6DW do not QSL, but we have cards from 6DM and 6DL!

### ● Signals via the North Pole

Hugh Huxley, 83 Temple Road, Prenton, Birkenhead, asks why VE5 and W7 should be considered better DX than W4. There are two reasons. The most obvious one is that more land area has to be covered although there is not a lot of difference in distance. The second and most important reason

is that the signals have to pass relatively near the North Pole where the density of the F layer (which reflects DX signals) is much greater than at the equator. The result is that complete absorption frequently takes place due to the greater ionisation of this layer. Similarly ZL1 is not an easy part of the world to hear. Hugh is somewhat puzzled by the call VE9AT. This station is quite genuine and is operated by the Government Radio Inspector at Chatham, Ontario. VE9's are listed as experimental stations as opposed to amateur stations. They can be licensed over the whole of Canada without regard to district.

### ● Set Listening Periods—May

- SLP 1. May 6 1.7 Mc 2230—2400 BST.
- SLP 2. May 14 14 Mc 1600—1800 BST.
- SLP 3. May 21 28 Mc 1800—2000 BST.

Logs of 56 Mc stations heard for any period will be particularly welcome. Code experts will obtain most benefit during the 28 Mc period, as we are anxious to follow the behaviour of this band during the summer months.

Chris, D. Hammett, 37 Torrington Rd., Greenford, Middx., wants to co-operate with anybody to exchange views on amateur band conditions.

Finally, to all those who have not been mentioned by name, we offer our thanks for their views, which have been very largely woven into the text.



## TRANSMITTERS' SECTION

G5ML writes to say he is using a new 500 watt outfit on 28 and 56 Mc and is actively chasing DX on 14 Mc with the result that his country total has now reached 146 worked, but confirmations are sadly lacking. G6DT, another 14 Mc 'phone man, is maintaining a regular schedule with VP3LF and offers to send a card for a contact with this station as soon as the necessary confirmation is given by radio. If you work VP3LF, the new call of VP3AA, write to G6DT for your verification, as he holds a stock of signed cards for this purpose.

### ● A 7 Mc Suggestion

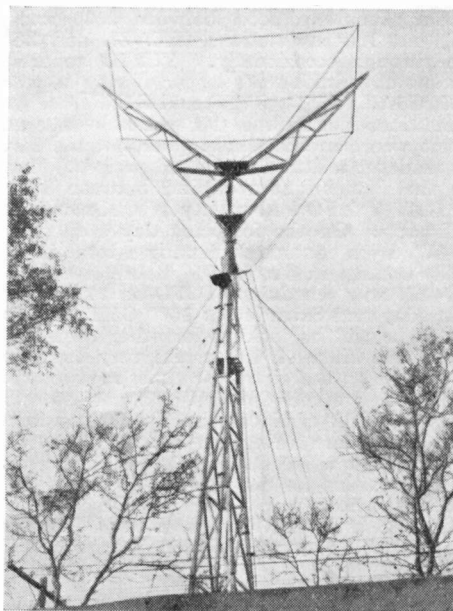
G2SO is anxious for the MAGAZINE to sponsor a real QRP contest on 7 Mc. He suggests a 120-volt maximum power supply, and if he sends us further particulars, we should be very glad to give publicity to this idea and to make a few rules. We are agreeable to judge, but prefer that G2SO outlines his thoughts more fully for the approval of readers; in the meantime, we should appreciate comments by interested amateurs.

G2WD informs us that ZC6RL is genuine. In a contact with SU1DM he learnt that the ZC will be on 'phone on 14070 shortly, while G4AJ tells us that he has actually received a card from ZC6RL for his 7 Mc QSO on January 9.

### ● A Suitable DX Aerial

You will remember G6HU's request for a suitable aerial to work USA. Certain suggestions have now arrived, showing the diversity of opinion existing on such a subject. G8WC recommends an AOG (i.e., an aerial of any length), 60-ft. long, 6-ft. high at NW end, 18-ft. high at SE end, fed at the top.

This aerial has not produced W QSOs on 7 Mc, but has worked well in that direction on 14 and 28 Mc. G2AT never worked USA using an end-fed Hertz,



This 28 Mc rotating beam is used by W6QCI of Los Angeles, and is turned by a  $\frac{1}{4}$  HP motor. The actual radiator is 58 feet high and 300 watts are pushed into it on 28900 kc.

## DX — Calls Heard, Worked and QSL'd

but suggests an unusual form of Windom running E-W with the feeder tapped one-third the way along the 67-ft. top, the length of feeder being exactly 33 feet; but here again, this system has only been used on 14 and 28 Mc.

It is of course well-known that the actual location and the effects of nearby objects, such as trees, gutters, walls, etc., play the biggest part in determining our actual radiation pattern. We have frequently heard of aeriels erected specifically to work a given part of the world, but which worked in an entirely different direction.

G5MV was faced with a real problem. His space available for an aerial was 28-ft. x 16-ft. After trying various bright ideas which didn't work, he went next door, "with cap in hand," and obtained permission to run over their plot. He is now using an 85-ft. wire tuned by a Collins coupler (anticipating the article in our February issue) with which he has WAC and WBE on 14, worked all USA districts on 28 Mc 'phone, and obtained excellent results on 7 and 3.5 Mc. He could, further, use this aerial on 1.7 with the same coupling method,

or even tune it as a Marconi—a truly all-band arrangement.

G6CW had a burst of DX activity from January 1 till February 10 for the Zone Marathon. He managed to knock off 65 countries in 32 zones on CW and 24 countries in 14 zones on 'phone, in an operating period of 33 days.

### ● Some DX News

A listener in USA, M. F. Williams, 119 S. Eight St., Newark, N.J. furnishes us with notes from his side. K7FST has reported hearing UKA000, 14070 on a small island off the Siberian coast. W6ITH, the well-known Californian 'phone, reports a contact with KF6DHW, 14378 on Canton Island, Phoenix Group. W6HRX will be in charge of the radio equipment of the Andean Anthropological Expedition to the tribal territory of the Jivaro Indians in Ecuador and Peru, and a 100-watt transmitter will be installed at the base camp to maintain contact with the various field parties, as well as to make contacts with USA amateurs. VP2D is a newcomer in Fiji and maintains regular 'phone schedules with VR6AY on 14248.

We welcome news and suggestions for this section from amateur transmitters throughout the world.



## NOTES AND NEWS FROM THE EAST

March appears to be the turning point from winter to summer conditions. During the winter months they have been excellent for the East, VK, ZL and ZS in particular, while European stations were seldom heard. At the time of writing, conditions for Europeans are good between 1530 and 1830 GMT, but Eastern stations, VK, ZL and ZS only come through occasionally. VU2FO reports that the most outstanding G's logged during March were G3BS, G5AN, G5SR, G5UD and G5UG.

Conditions during the CW period of the ARRL Contest were, on the whole, poor but the last two days made up a little for the bad periods. March 11 gave the first bright spot and between 1150 and 1335 GMT VU2FO had twenty W QSOs and worked all districts. On the following day a further thirteen W's were contacted, making a total of 57 during the Contest in ten W/VE districts.

AC4YN now schedules VU2FO on 14292 kc every Wednesday and Saturday at 1600 GMT, and following this he will be looking for other contacts. He reports that his work keeps him very busy and he will only be on the air at the times mentioned here. VU2FO has worked GW6OK and at last qualified for the BERTA certificate but is waiting for eight cards before forwarding his claim. Both VU2EU and VU2FO now have the WBE certificate and the former is waiting for his WAC.

VU2FQ (who is now a member of the BSWL) has built a SSS as his TRF receiver could not compete with the local 'phone QRM from Bombay. VU2EU

has returned to the North-West Frontier and is working with VU2HU who is on the air on 14302 kc. Both 'phone and CW are used and a Johnson "Q" aerial is being testd; SWL reports are *very welcome* and will all be acknowledged, either by air mail if an IRC is enclosed, or by sea mail if minus the coupon. VU2EU will be active on 56 Mc during May with a rotating beam.

### ● New Stations

A new station of interest heard by VU2FO during March was KA7TT, Box 350, Iloilo City, Panay Island, P.I. (Panay is about 365 miles south of Manila). This station uses a pair of RK20's in push-pull into a beam aerial and the frequency is approximately 14285 kc. During March, a number of VU stations, which appeared to be pirates, made an appearance, most of them with very bad notes, but the majority have since disappeared. VU2MA is temporarily silent due to pressure of work, but he hopes to be active again later in the year. Two VU-SWL's are applying for radiating tickets and they both hope to be active very shortly; one is in Jamalpur and the other in Lahore.

28 Mc has been rather poor of late, except on Sundays between 1000 and 1400 GMT, when a number of European and African stations come over. There are also many PKs in this band—most of them using 'phone.

—Wm. H. G. Metcalfe, VU2EU.

Read "The Short-Wave Magazine" regularly

# CALLS HEARD SECTION

**SET LISTENING PERIOD 1, 1.7 Mc**  
March 5, 2200-2300 GMT.

**EDWIN KESTIN**, G3ZL, The Palms, Connaught Road, Rodwell, Weymouth.  
Phone—GW2BG. G5ZQ, 6SQ.  
CW—G2SU, 3PJ, XR, 4CW, 5HS, KT, PX, RI, UY, 6KR, ZK, 8ML. GM8TT. GW5FI.

**CECIL T. H. MARTIN**, "Lynton," Pound Road, Bursledon, Southampton. 1(regen)-v-1; End-on NE-SW.  
Phone—G3ZL, 6SQ, UJ.  
CW—G2VY, 3BR, GH, JO, PJ, YB, ZL, 4CW, 5GT, HS, KT, PX, RI, UQ, UY, 6KR, TR. CW5FI.

**W. A. GRANT**, 16, Oak Street, Gosport, Hants. 0-v-2 battery; 33-ft. E-W.  
CW—G3MI, XR, YB, ZL, 4AW, CW, 5HS, PZ, RI, UQ, 6KR, TG, VD, 8J, VN. G18LF. CW5FI. HB9U.

**T. C. BRYANT**, G3SB, Beaconwood Hotel, Minehead, Som. Super Sky Rider; 60-ft. and C'pse. 33-ft. doublet.  
G2SU, YY, 3JO, XR\*, YB, YH\*, 5KT\*, RI, 6GO, SQ, UJ, VD, ZR, 8DX\*, GG, SG. \* indicates QSO.

**SET LISTENING PERIOD 2, 7 Mc**  
March 12 2000-2200 GMT.

**H. OWEN**, 2, Campion Avenue, BASFORD Park, Newcastle, Staffs. "All-World Two"; 33-ft. ENE-WSW.  
Phone—CT10Y, QN, F3JK, KX, 8EZ, G3FQ, NZ, 8UR. GM3KC. CW3KY. GM3TR. G15UW. HB9CU, DE. SM5WU.  
CW—CT1AH, QJ, D4DTB. E19M. FA3XA, 8GT. G3QH. GM3VM. CW3WY, 4CX, G4GG, 5RA, 8FC, WM. HA2L. HB9CL. LA8Y. LY1AT. OZ2FY. SM6YZ. SP1AT, WF. U4AM. VO1W. YR5JM, VV.

**N. J. RUTTER**, 23, Bouverie Avenue, Swindon, Wilts. 0-v-2(2 pens.). All on L.S.  
Phone—CT1JC, OE, QN, QS, SC, F3XX, 8EZ, G3NZ, 6JB, 8UR. G15UW. GM3KC, NK, 4AN. CW3KY. HB9CO. H1SL. LY1AJ. SM5WU. SP1AT. YR5VV.

**SET LISTENING PERIOD 3, 14 Mc**  
March 19, 0600-0800 GMT (American 'phone contest)

**I. C. HARVEY**, "St. Margarets," Oak Hill Park, London, N.W.3. 6v. superhet; 1/2-wave doublet, N-S, 50-ft. high.  
K4EMG. HC1CZ, PZ, JW, 2CP. CO2LM, AG. OA4AW, AI. PY2LA, AC, AN, LN. CE3AT. LU2AL, 9BV. CX2CO, 3BL. HK3CC. VK2AJ, OQ, NS, IQ, HB, DH, HP, VA, BG, MF, AA, 3LA, IG, DD, DH, HG, EH, XS, FG, GP, AD, GG, 4HG, JP, JU, KS, 5OR, 8AN. ZL1IQ, 4GY. LZ1ID. YR5IH. CN8MI. HR5C. E55C. SM5SI. OH2NS, OI. ZB1E. LY1HB, MB. HA3G, 2C, HQ. W4ABG, BPD, AGD, ECT. SUIMP.

**N. J. RUTTER**, (see SLP2).  
CN8MI. CX2CO, 3BL. E55C. HA2C. HC1PZ. HR5C. K4EMG. LU9BV. LY1HB. OA4AI, AW. OH2OI. PY2AC, LM, LN. SUIRO. VE4EX. VK2OQ, TR, VA, 3DD, DG, GG, GP, HG, 4KS, MF. W4AGB, BPD, 8DST.

**SET LISTENING PERIOD 4, 28 Mc**  
March 26, 1600-1800 GMT (American 'phone contest)

**I. DODD**, Grimeford Farm, Anderton, near Chorley, Lancs. 1 valve converter; 20-ft. high outdoor.  
Phone—SV1CA. VE3AEB, 2CA. K4FAY. CN8MI, BA. SU1GA. VP6YB. Z55T, 4H, 6W. LU5AN. W1 (11). 2 (21), 3 (27), 4 (34), 5FTA, ASG, CQJ, 3AYX, NLS, PDB, QGI, AM, IKQ, QLN, GRL, ITW, MZD, OCH, ITH, 8 (23), 9YHO, EAG, CTT, MLI, UUN, YRK, HWE, WAL, YQN, QIB, VAV, UEV, QZA, QI, 2NA, UIJ.

**1.7 Mc GENERAL**

**C. MARTIN** (see SLP1).  
10-3-39 to 5-4-39  
Phone and CW—SM1PD. XOH2ZG. OZ5W, 8V, 2PX. F3DI, MD, HD. G18LF. GM2NO, 3ND, UC, 6LN, 6JJ, 8CN, TT. E18S. GW2BG, 3AJ, G1, 4FW, 5FI, TC, 8WU. G2CF, GG, GZ, 4FW, 5FI, 5TC, 8WU. G2CF, GG, GZ, HU, DQ, IT, JL, KC, MN, OU, PL, QM, SC, US, UJ, VZ, XQ, XS, XG, YW, JU, JO, OB, OJ, OA, PL, SI, TL, UB, ZJ, ZL, ZY 4AK, AU, BY, CI, CW, GJ, 5CU, GT, HS, DY, JL, KT, LO, OB, OO, PX, QY, QI, RI, RD, MM, TN, ZQ, 6AB, BO, CI, GM, II, LL, MK, NB, NM, GO, PA, SN, TR, UT, VC, ZR, 8AX, AF, DM, GN, GG, GF, IJ, IC, JM, MU, ML, MW, NL, PM, PR, PX, LO, SK, VN, VP, UO.

**BOB EVERARD**, "Belle Vue," Nelson Park Street, St. Margarets-at-Cliffe, near Dover, Kent. "Sky Champion" 8.3.39/8.4.39.

Phone—W1CPI, BES, JXV, IVV, ITX, 2JKB, 4FSS, ERH. BAH, 8LDR (Port., 3).

**C. V. HAYLOCK**, 2DHV. Mains 0-v-1; 33-ft. inverted "L."  
G2XP, 3AD, BR, CO, XX, 4AU, BZ, DD, FN, 5IL, 6HB, HG, NG. 8DS, NR.

**3.5 Mc GENERAL**

**BOB EVERARD** (as 1.7 Mc General).  
Phone—WIPZ, FOF, AAH, KGT, AW, IFD, DQA, AKR, GC, 2JDP, IRC, AVG, AST, DMU, KPC, FLX, HWZ, LO, JOI, IJG, FOG, PP, HCV, DBY, 3AHS, ACQ, EBK, CEI, UO, OU, CRO, BUF, BFZ, FTU, HFD, EZL, AWU, CGM, JC, AVL, ZY, EFS, BIN, COL, GSV, EGU, BOS, GAG, 4US, CL, BPG, BWN, DKG, EQK, JW, ASR, AZT, CYN, 5DNV, 8DMF, CXU, MIS, DVT, FTT, JOE, DK, KDX, GBS, KF, BOZ, GWH, LIQ, 9AAI, MM. VE1GR, ICN, LR, CR, 2HM, LP, 3AGS.

**7 Mc GENERAL**

**M. G. BOURKE**, 2AOU, Jersey, C.I.  
CW. During March.  
K6CGK. LU9BV. NY1AD. VK2AD. ALQ, 3XD, 7CM. VOIT. W5SDY. ZL2MM, 4GN.

**14 Mc GENERAL**

**N. J. RUTTER**, 23, Bouverie Avenue, Swindon, Wilts. 12-3-39 to 11-4-39. 0-v-2(2pens.), all L.S.; 50-ft. in roof.  
CE1AH, 2BX, 3AA, AT, BK, EE, 4AI. CO2AL, CO, GY, JJ, JV, LA, LY,

RD, RC, RR, WM, XX, 6OM, 7CX, 8V, 8BC. CX1AA, CO, CW, FA, 2AU, AW, CO, 3BL. F88AH. FN1C. HC1FC, PZ. HH2B. H12K, 3N, 5X. HK5EE. HR5C. J2NQ. K4EMG, FAX, PKC, FSP, SA, 5AF, 6FAZ, LKN, NYD, PLZ. KALAP, CS, FG, LB, ME, YL, 2OV, 7EF. LUJJC, LB, QA, 2AF, BG, CA, EC, 3AJ, AT, HA, 4AW, CZ, DE, PB, 5AG, AN, CK, FL, 7AG, BK, DS, 8MC, 9BV, FN. OA4AI, AW, PKIEG, RI, 2AY, 3WI, 4HW, JD, KS. PY1DI, EA, ED, FN, FX, GR, GU, HJ, IM, UJ, 2AC, AG, AK, BA, BH, DA, DI, ET, FF, GC, HV, IT, JC, KQ, KR, LM, LN, MI, NO, 3CT, DZ, 4BI, CB, CP, CT, EJ, EM, FI, 5AG AJ, 6AB, 7AG, AI, 8AG, CA. TG9BA. T1AF. VE3ADB, AGT, AHN, AHV, AKT, BJ, BK, FB, GK, HI, HJ, HR, HX, HY, IX, KL, LL, MP, OB, QP, QR, WV, XQ, 4ACP, ADV, AEX, BA, DU, FH, GA, IF, NI, PK, SR, SS, VD, ZK, 5VP, 9AT. VK2ADC, ADU, AEM, AGU, AJP, AKR, BK, DG, HP, NO, NS, OB, OJ, OO, TO, TR, VA, YO, 3BM, BZ, CZ, DD, DG, ED, EK, GG, GP, HG, KX, QK, US, WA, XP, ZU, ZX, 4CJ, CW, EL, HG, KS, MF, 5BF, RN. VP1BA, 3AA, CO, LF, 4TK, 6FO, MR, MY, YB, 9G, L, R. VQ2CM, HC, WP, 4ECI. VS2AL, 7RA. VU2CA, DR, FQ, LK. W5APW, AKZ, AXU, BDB, BEE, CXH, FHJ, VU, ZS, 6AH, AM, BRD, DTB, EJC, FPU, GCT, GRI, IKQ, ITH, MLG, MVK, OCH, OI, PXH, 7BVO, BXO, CHT, DX, EOI, ESK, FP, GAE, MF. XZ2DX, JB, PB. YN1IP. YV1AO, 4AA, ABC, AE, AL, AN, 5ABA, ABC, ABF, ABO, ACC, AK, 6AM, 8AA. ZC6HS. ZE1JA. ZS1AX, CO, T, 2AV, AZ, BB, J, N, X, 4H, 5Q, 6AJ, DK, DL, DY.

**28 Mc GENERAL**

**BOB EVERARD** (see above).  
VP1BA, 2LB, 3LF, AA, 6VB, 6MR, 9R, L. CO2CR, WM, 7VP. H17G. HC1PZ. LUIDA, DJ, 5AN, MAG, BK, 9BV. K4EZR, FAY, PDC. DSD. PK1VM, 2WL. ZS1AX, IT, 2JAS, 4H, 5T, 6W, 6DW, CS, CT, DY, SEG, T, EF, Z. PY2AK, MI. CE1AH. ZE1JZ. VE1HI, 2OG, EE, CA, 3AVB, QI, FB, OO, ADV, AXW, KE. SU1RD, DM, CH, MW, GP. CN8BA, AJ, AV. TG9BA. W5EEL, GGX, EKX, HDU, DVK, GTC, HDK, FPD, ASG, DNV, EB, 6ITW, ULS, OCH, AK, Neb, Col., N. and S. Dak., 9ZNA, ZIX, WOA.

**BRITISH CALLS HEARD OVERSEAS**

**M. F. WILLIAMS**, 119, S. Eighth Street, Newark, New Jersey, U.S.A.  
G2XN, 5ML, 6WZ, 8KX, UB. GM6WD, SR, 8WN. G18UW. G2AC, MF, MS, 5BY, LU, 6GX, WT, 8SA, 8SH. CW5KJ.

**ACKNOWLEDGMENT**

J. D. Baker, Gt Yarmouth; F. J. Beckinsale, London, W.2; R. T. Blackmore, Exeter; K. Bunston, Broad Hinton; J. J. Burchell, London, S.E.26; C. H. Butt, Oxford; H. Chadwick, Burslem; T. C. Chambers, Southampton; S. C. Ekberg, Grimsby; R. H. Garland, Chigwell; J. Greenwell, Dorking; R. Hall, Grimsby; C. D. Hammett, Greenford; A. Hart, Derby; D. C. Holland, Aylesbury; K. Holyland, Harrogate; F. Jones, Stoke-on-Trent; L. J. Miller, Billingshurst; F. G. Price, Leicester; P. Sawyer, Croydon; K. Sly 2FAU, Slough; C. G. Tilly, Bristol.

# The Month's Club News

**T**HE holidays will soon be with us and many readers will visit seaside places mentioned from time to time in these pages. Why not drop a note to the secretary in advance and ask to meet the locals one evening; they would be pleased to hear how your club is conducted, while you will bring back ideas and also find out about those often hidden amenities that will make the holiday even more attractive.

## ● Seaside Clubs

First in alphabetical order we have BRIGHTON; here G3YY has lectured on low-power transmitting and during his second talk Mr. Fairchild described in detail the transmitter he now operates, using 6L6 valves in the RF portion as well as a pair in push-pull for modulation, all run from DC mains. The AAs are maintaining progress.

The two exhibitors at a recent EASTBOURNE meeting failed to receive the support deserved, for such a demonstration was worthy of a much larger attendance than gathered to see first Mr. S. M. Thorpe's collection of early valves and crystal detectors, followed by the Secretary's equally historic pieces. It is not often that there is an opportunity to inspect such items as a Rounds valve, electrolytic detector, a Cambridge 50 microammeter (built to the best standard), the first AC valves, a three-filament valve, and listen to a 1928 Pye receiver using ten-year-old components!

We are waiting to hear that SHEPPEY have been granted a full Club call, and at the rate the members are working at headquarters, when it does arrive there will be no delay in getting on the air. G3GW and 2AXZ have given lectures on transmitting, which have no doubt helped many towards that coveted call sign. 2CVM is likely to be the next "G." Despite all this activity most of the members have shown keenness for National Service and are enrolled in one or other of the forces. Slow Morse is available on Sundays (1500) and Tuesdays (2000) from G3GW on 1.7 Mc. An appeal is made for commercial lecturers, while the invitation to all local amateurs is of course just as sincere as ever.

New members are increasing SOUTHPORT'S roll, the latest being G4CF and 2CIP. G5ZI has changed his address and as soon as he settles in the new QRA 56 Mc co-operation will be invited. Radiators have been improved as a result of the series of lectures on "The Directive Properties of Aerials."

G2ZY tells us that the SUSSEX Club have much on hand, from talks on the cathode-ray tube to 7 Mc field-day arrangements for Bury Hill on June 3-4. Individual reports are good; 2FCY has passed the Morse test; 2DDD is concentrating on receiver improvements and is fitting an RF (1852) stage to his 60 Mc superhet and also has a rotary half-wave dipole; G2ZV is trying out a 35T PA for 56 Mc field work.

After deliberation WEYMOUTH decided to build a superhet for club use and construction is in hand. CW listeners are on the increase here, after they had realised what has been missed in the past. Open-air tests are being considered, though last year's effort in bad weather is in mind! G8WQ is in regular operation and 2CBZ hopes soon to be likewise. G3ZL is still busy with 1.7 Mc.

## ● Club Magazines

There are about six of these now appearing with regularity, and their purely local interest tends to create similarity—each are foolscap size and after being typewritten the original is duplicated by hectograph and usually enclosed in a double sheet and stitched. Much hard work is generally left to one member, who soon learns that although each issue is enthusiastically received and avidly devoured he must often regard this as the limit of support. So next time you read a tip or smile at a joke in the "local rag" spare a thought for the producer and offer a helping hand—it will be appreciated.

EDGWARE now present their news quarterly, and in the latest bulletin an appeal is made for articles, it being pointed out that of the 47 members there must be many more than three who would blossom out as writers. Perhaps a reason for the slow response is the very high standard set by Messrs. Anderson, Harris and Todd in the first two copies. G4FZ and G4GB are new to the Society; the latter has already lectured upon aircraft direction finding, while the other April events have been a Guest Night and field-day discussion, while on the 26th members planned an exhibit of unusual QSL cards and the May 3 meeting is reserved for a sale of members' unwanted gear.

ROMFORD have taken a plunge and risen with an eight-page magazine, which contains the following headings (besides sundry odd paragraphs): Field Days and DF, Activities, Ham-band Scratchings, Modulation Tests (four methods), Test Gear, and a Frequency Register, complete with margin notes as to what may happen if one uses a crystal that doubles off the mark. The club is co-operating with four neighbours in outside work, and as membership is increasing thoughts have wandered along the lines that Romford probably has one of the largest followings around London. We are not going to be drawn out on this point! Afterthought: Read Golders Green notes, and book the Albert Hall!

## ● The Other Londoners

A change in secretaryship is reported from CROYDON, where the Surrey Radio Contact Club gather at 79 George Street on the first Tuesday of each month. G5XH, assisted by two clerks, saw that members' superfluous apparatus was effectively disposed of one way or another! Riddlesdown is to be the scene for 1.7 Mc field day next month, when much gear will be taken 600 feet up.

GOLDERS GREEN and HENDON Society, one of the leading clubs in the country, are staging an open 7 Mc Direction-Finding competition for the 21st of this month, when the St. Albans, Berkhamstead, Dunstable and Stevenage area will be used. All groups will commence at a central spot for the first part of the contest. On May 7 a trial will take place, which will assist the less experienced to gain data for the main event, when prizes will be given. The Regal Cinema, Finchley Road, was used for the last meeting, during which Mr. Maurice Child discussed his latest 40-metre DF apparatus. During June, July and September 56 Mc meetings have been fixed, and here again valuable prizes are offered.

After last month's "DX Corner" note for PECKHAM it might be assumed that mention of ether-searching is *verboten* here; such is not the case however, for members have sworn to get even with Sheffield by erecting vertical aerials where it is not possible to use the horizontal, owing to back garden difficulties. G3ZF and 2FKZ continue with their assistance to members, who have recently added two more to their number. A bug key was tried by some, and afterwards G3ZF demonstrated how it could be used for sending readable dots and dashes!

At least five years ago we recollect that G2DP interested THORNTON HEATH amateurs with many original presentations of tiny receivers, making practically every part himself. Now, since he has become an experienced transmitter, his flair is finding scope in the construction of a very compact crystal-controlled four-band transmitter. The club's G8GY is back on the air with 'phone and CW much improved. Meetings every Tuesday except the first in each month.

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**The recently-formed Tufnell Park Radio Club, meeting at 33, Pemberton Terrace, N.19, on Tuesdays and Fridays at 8 p.m., welcomes prospective members.**

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WILLESDEN, who have had a very lean time, have come through in determined style; there is much optimism and now that regular advance meetings have been arranged there is no reason why they should not go from strength to strength. G2TU has explained the transmitter he uses; 2HAW is another call-holder; G3XL puts out slow Morse for members; and 2ATV is building a PA. On June 18 portables are to be ready for the field day. The next two meetings are May 10 and 18.

### ● News from North, East and West

On the 2nd of last month DONCASTER celebrated with an annual dinner; raffle prizes were won by SWLs, and later G3NX, by naming the prefix for Andorra (which country he has never worked)\* won the competition. New headquarters are required where members can set up apparatus and have a door-key each. G3WI has suggested modification of the W3EDP aerial and during the first week raised W1, 2, 3 and 4; G6DV worked W1 and 2 and Cuba on 'phone with a similar aerial; G3PM records his first 'phone QSO with CN but is unable to contact W1-4, which was easy with the orthodox W3EDP!

The new headquarters of BRADFORD SW Club are 1 Ferniehurst Buildings, Baildon Road, Baildon, where the gear may now be left connected in the smaller room, which is laid out as a shack. A larger hall is reserved for meetings.

At the last meeting of CANNOCK amateurs G3HB, who recently received an R6 report from VK on his 10-watt 7 Mc CW, lectured on crystal oscillators. Further talks are to be "Measuring Instruments" and "Power Amplifiers." G4CP and G4CN were AAs last month, and other notes concern G6SW's R7 'phone report from Chile.

In recent weeks the DONCASTER and District Amateur Radio Society have been kept interested by very useful talks and demonstrations. First, 2CKR gave a demonstration of wave form by means

of a magnet energised from the mains and acting upon a weighted string, so giving a visible demonstration of what happens when an aerial is radiating. This was followed by 2CLK's demonstration of a Sky Champion receiver. Membership continues to increase and now stands at 23, which includes two full calls, the last being G4DP. G3DA of Manchester has given a talk on 56 Mc work and station equipment, and G8DI is coming from Liverpool to visit the Society. G5GJ of Thorne, who is a Hamrad representative, sent along samples of gear for examination.

KILMARNOCK are now thirty strong and after fitting up a 25-ft. bench in one room and furnishing the other for lectures are settling down to regular efforts. On the 6th of last month GM3HY, GM4BK, 2BUD and 2DCY visited the club; the two former respectively interested the members by a demonstration of the UX10 portable transmitter and a lecture on club procedure.

LINCOLN now meet on Thursdays at 7.15 p.m. G5XL, G3CZ, G4BU and G4GI are all very active and the latter two members would welcome listener reports. An invitation from Grimsby for a get together meeting has been accepted.

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**The new Redditch Transmitting Society, as the name implies, is prepared to receive full or AA licence holders into membership. Meetings are to be held at 81, Bromfield Road, and G3WD, 90, Other Road, Redditch, is the secretary.**

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SHEFFIELD are pleased with themselves at winning the Challenge Contest, as reported in last month's "DX Corner." This is the first time they (or any other Sheffield radio club) have had success in such way. Five members have applied for their AA. This club starts the Wednesday meetings at 6.15 and, commencing with Morse, general discussion proceeds until 9.30; then follows the lecture and from 10.30 onwards discussion ensues on it.

TAMWORTH Radio Experimental Society hold fortnightly meetings at the Town Hall Vaults and owing to rather poor attendance the Chairman had requested members to offer their views as to whether or not the Society should be continued. It was decided by a large majority to carry on. Mr. Tongue has given a very interesting talk on "Acoustics and methods of obtaining high quality from BC receivers." The Society has amongst its members five active licensed stations and three AA members.

### ● The South

A visitor from Southend (Mr. Peck) has further enlightened members of the BRENTWOOD Society about DF. With twenty of their number using crystals the plan of compiling a frequency register has done much to ease local QRM. There is a network of 1.7 Mc workers who get through much experiment as a result of the close co-operation that is possible. The society's own station is on 1.7 Mc daily and it is hoped that before long 7 and 14 Mc 'phone/CW will be heard from G8HV.

The three last meetings reported from EXETER have been of unusual interest, the first being a lecture by the Exeter radiologist, Dr. C. Wroth, who used some splendid slides to illustrate the X- and Gamma-ray; on March 27 the Society's amplifier was satisfactorily demonstrated after reconstruction;

\* [Who has!—ED.]

## CLUB NEWS

at the April 3 meeting Mr. D. R. Barber, B.Sc., F.R.A.S., spoke on "Atmospheric Electricity." The lecturer showed data to prove a difference in ionisation over sea and land, and after dealing with the calculation regarding the theory that the Heavside Layer is 300,000 volts above earth potential, went on to say that Cosmic radiation is not well understood and that the origin of these rays is still uncertain.

GRAVESEND and District Amateur Radio Society hold their meetings every Monday evening and they are going to participate in a field day in June. Amongst the present members are G2IZ, G3GF, G3LW, G4FN, G5IL, G5SI, G5SU, G5UZ, G6VC, G6BQ, G6PG, G8HK, 2BDL, 2BIH, 2DHV, 2FUN.

West Herts Amateur Radio Society call-signs are yet again the main theme of notes from KINGS LANGLEY. Since last month we have news of one member's graduation to 2HAB, and of the call VS6DG which has been allotted to a late member of the Society, Mr. D. Gill, ex-G3QT, who is operating in Hong Kong. His licence permits him to start up on 7, 14 and 28 Mc, with an aerial power of 50 watts! G3PV now attaches another P to his call and commenced portable activities in a big way over the Easter holidays.

G3HX has lectured extensively to the SLOUGH club on microphones and amplifiers, winding up with the history of the former. Following this meeting Mr. F. J. Tuckfield outlined the theory of all stages of both straight and superhet receivers and went on to illustrate his own I-v-2. The club receiver is rapidly approaching finality under 2BWV's supervision.

A very successful meeting of the WATFORD and District Society was held on April 15, when there was a discussion on receivers for communication purposes. The next meeting will be held on May 18 at the Carlton Tea Rooms, 77a, Queens Road, Watford, commencing at 8 p.m., during which there will be a "Junk Sale."

## NEW AMATEUR CALLS

We are glad to publish all new two-letter G calls and the QRAs of overseas readers.

- E17P—J. G. White, 18, St. Davids Terrace, North Circular Road, Dublin, I.F.S.  
 G4BT—E. G. Martin, 229, Countess Road, Walthamstow, London, E.17.  
 G4FH—E. G. Walsh, 21, Old Bath Road, Cheltenham, Glos.  
 G4GD—Nigel G. Anslow, 35, Gilpin Avenue, East Sheen, London, S.W.14.  
 G4GC—C. D. S. Wintle, The Knoll, Ashlyn's Road, Berkhamsted, Herts.  
 G4HH—J. Woodhouse, 22, Darbshire Road, Fleetwood, Lancs.  
 G4HV—E. Spencer, 16, Keswick Gardens, Ruislip, Middx.

## CARBON PAPER TAPE

for the Morse Recorder described in our August, 1938, issue is obtainable from Messrs. The Carbon Paper Supply Co., Ltd., 16 Oxford Street, Man-

chester, 1. It comes in 300-yd. rolls,  $\frac{1}{2}$ -in. wide, at 1/8, plus postage. Plain white paper tape, also required for the Recorder, can be had from Messrs. Creed and Co., Ltd., Telegraph House, Croydon, who supply it in 380-yd.,  $\frac{1}{2}$ -in. coils, price 7½d. The code ABARM should be used to identify this particular type when ordering.

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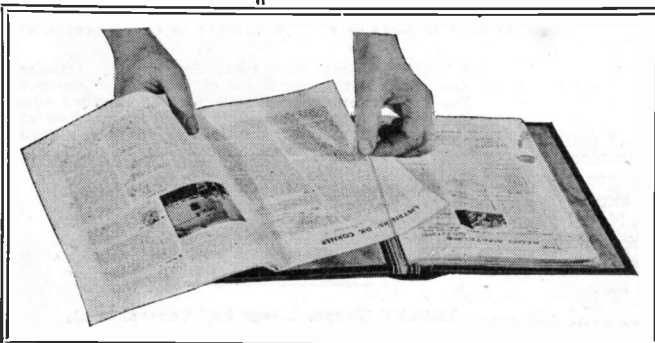
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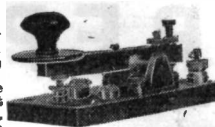
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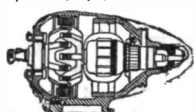
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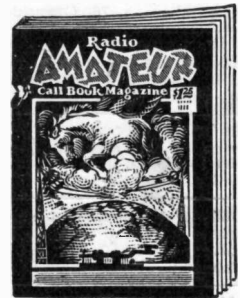
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- 1 Advertisements must be accompanied by 6d. in stamps or P.O. made payable to "The Short-Wave Magazine, Ltd." and crossed.
- 2 A maximum of four lines only will be allowed, including name and address.
- 3 Trade and Box Number advertisements cannot be accepted.
- 4 We reserve the right to refuse any advertisement.
- 5 We cannot act as an intermediary for an advertiser in this section.
- 6 Advertisements must reach this office not later than the 15th of the month preceding the month of issue.

THREE UX250 tubes, P/B for PA or modulators, 3s. each or 7s. 6d. the lot.—G3LK, 28a, Brunswick Square, Hove, Sussex.

SALE.—Bulgin C56 coils, switch and locator, etc.; transformers, chokes, etc.; 1½d. for list.—Hiscock, "Hawthorn-dale," Bracknell, Berks.

UNIVERSAL DC/AC battery eliminator, 120v, 20mA, cost 37s. 6d.; bargain 7s. 6d.; valves cheap, list 1½d.—G2YN, 51, Woodhall La, Welwyn Gdn. City.

VALVES, 5 (1 SG), 8 holders, 2 LF trans, 4 var. cons, 6 SW HF chokes, 10s. lot or ex. for 0-1 mA meter, or.—N. Wightman, 76, Grange Road, Alloa.

HALLICRAFTERS Sky Champion, 7 months' use, perfect, £11 11s. or nearest; Fall 1938 Callbook, 3s. 6d.—G75, 33, Warrander Park Road, Edinburgh.

TROPHY 3 for sale, AC, 4 coils, £3 5s.; Farrer SW converter, 2-valve, AC/DC, 11.5 to 100 m, 30s.—McInlove, 41, Whitehall Lane, Grays.

CHEAP SW gear for sale; Stentorian speaker; B.T.S. coil unit; ST800 RX, valves; stamp for list.—2DZZ, Fivhead, Taunton, Som.

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TROPHY 8-valve communication receiver, hardly used, as new, still has 6 months' guarantee, valves incl.; sell for £10.—Prince, 3, Mill Road, Cambridge.

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WANTED: Mains chokes, vy cheap, to take 200 mA, about 20 hy. to go in 500v pack.—2FBT, The Garden Cottage, Folkestone, Kent.

SALE: 1939 Winter Callbook, 5s.—E. Harris, 53, Walsey Road, Ashford, Middlesex.

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NEW unused Impex 5Y3G, 3s. 9d.; also 6K7G, 4s. 9d., postage extra.—Camp, 71, Sudbourne Road, Brixton, S.W.2.

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QUERY COUPON

S.-W.M. 5/39

### Readers' Smalls

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