

The

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SHORT-WAVE MAGAZINE

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

SEPTEMBER

1938

**VOLUME II
NUMBER 7**

Good Valves for U.H.F.



The above wording is an exact reproduction of an editorial notice which appeared on page 19 of the August issue of "The Short-Wave Magazine."

Readers particularly interested in the higher frequencies may not be aware that the Hivac special short-wave types offer considerable advantages over those of the more usual construction. While this improvement in performance makes their inclusion well worth while in any battery operated short-wave receiver, the gain is most marked above 28 Mc—below 10 metres. Here, on the receiving side, the SG220 SW and D210 SW will give smoother oscillation and better sensitivity, and a "straight" 56 Mc receiver becomes a relatively simple matter owing to the manner in which lay-out is facilitated by the construction of these valves. The first-named is a screen-grid type, and the latter a triode detector; both have top grid connections, and are priced at 12s. 6d. and 5s. 6d. respectively.

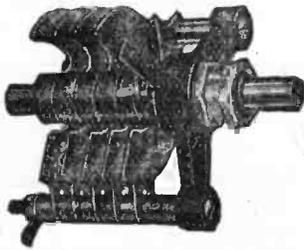
For low-power transmission, the PX230 SW is worthy of consideration. It is a power triode, also with top grid and a ceramic base—this feature is common to all Hivac valves in the SW category—and is therefore an attractive proposition for the man who works from batteries and wants to get the highest possible efficiency in a simple circuit. This type costs 12s.

Further information and data sheets can be obtained from Messrs. The High Vacuum Valve Co., Ltd., 111-117, Farringdon Road, London, E.C.1.



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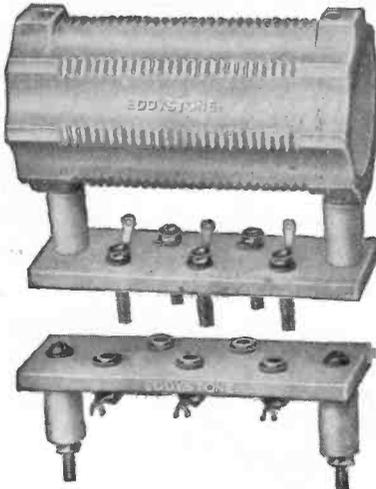
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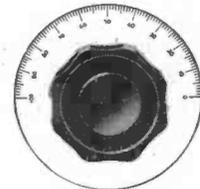
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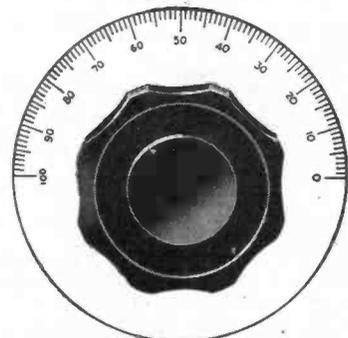


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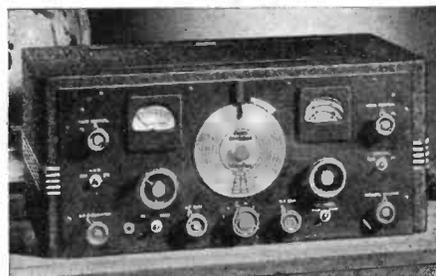
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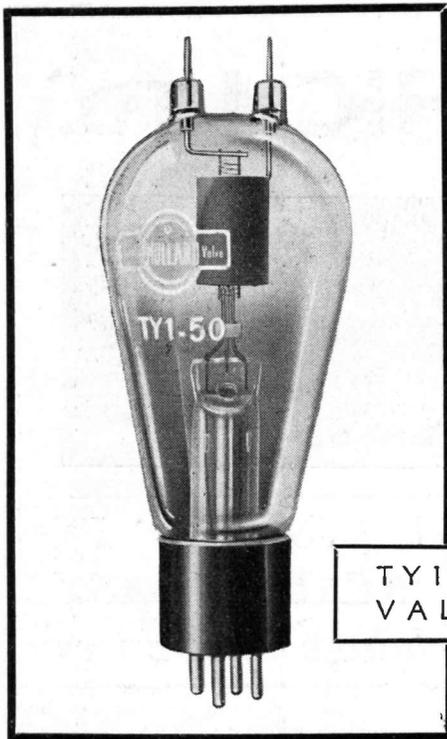
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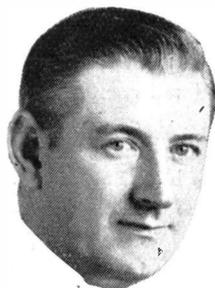
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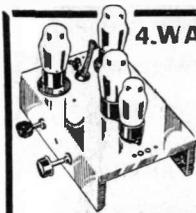
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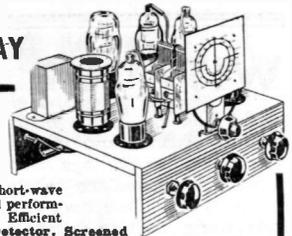
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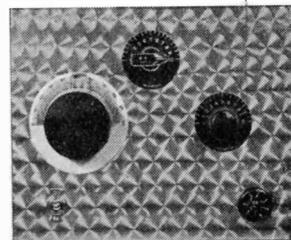
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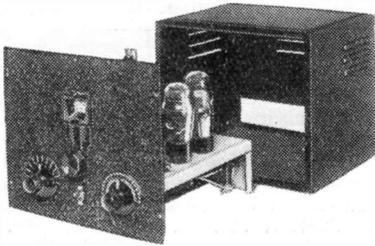
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THE SHORT-WAVE MAGAZINE

Vol. II. SEPTEMBER, 1938 No. 7

Editor: AUSTIN FORSYTH (G6FO)
 Editorial Asst.: S. W. CLARK (2AMW)

Business Manager: C. T. MILDENHALL
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"SHOW THE FLAG"

While the time of year makes little difference to the real enthusiast, the Show usually heralds the opening of the season for those to whom radio is only one of their interests.

We offer in this issue a survey of what is available in the way of short-wave equipment and apparatus, which we hope will be of real value, with the idea that readers will keep it as a guide to the market. In addition, we carry a great deal of very useful and interesting advertising, and at the risk of introducing a commercial note, we feel justified in recommending our readers to support the firms whose names appear in these pages.

It is no secret that the success of any paper, no matter how influential or well-established, ultimately depends on two things only: Circulation and Advertising. The second comes with the first, and so again we would say—as we did last year—that every reader can help us, first by introducing the Magazine to radio-minded friends, and secondly always by mentioning it when writing to advertisers. It really does "help you, help them, and help us."

Though now established, this Magazine is as yet a young paper, and has had to make its way against considerable difficulties. The success we have been able to achieve so far has had to be worked for—very hard. We of the staff are particularly grateful for the two things which have been of greatest assistance, the regular reader and the regular advertiser.

The paper can only be built up on the solid foundation of Circulation and Advertising, so that if you, as an individual, also think it worth while, it is really very easy for you to help simply by "showing the flag" at every opportunity.

Finally, we should like to draw attention to the fact that the extra advertising this month has not led to a reduction in the amount of space usually devoted to general reading matter.

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On The Amateur Bands

By OLD TIMER

WE USED TO HEAR a great deal about "ham spirit," that elusive quality which brought all transmitting amateurs together in a bond of friendliness; in fact, there is no doubt that a genuine "freemasonry" existed.

Although this quality still abounds, we feel there is room for a great deal more; there does not seem to be the desire for mutual help and co-operation that there once was. For instance, we hear that cliques are formed which exclude certain other amateurs in the district that intentional over-modulation and poor quality notes are used, and that no endeavour is made to correct these faults when they are pointed out.

● Co-operation

Certain districts find difficulty in obtaining apparatus or operators for National Field Day, and then again, the older hands are heard to criticise the new-comers, and offer no help or advice to show them where they can improve their knowledge. Take the vexed questions of QSLing. If you are not interested in collecting cards, is there any reason why you should be so discourteous as to ignore completely the request for a confirmation of a contact? Let us suppose that someone wrote to you asking your advice; would you be so ill-mannered that you would not acknowledge the letter? Is there any reason then why a card should not be sent when yours has been asked for? We have heard some of these "non-interested" stations begging for a card from a new country, but when a station asks them for their card, and they are not any longer concerned with that particular country, they ignore the request entirely. And they say that "ham spirit" still exists!

● The Experimental Side

The most common excuse for failure to QSL is the old one of being an experimenter. Our licence demands that we should all experiment, but what is there left for us to discover that has not been found out before? Nothing? No,—plenty. Do you realise that it takes twenty-two years to know anything of the behaviour of the sun-spot cycle, and this means that it is necessary to be constantly active on all the amateur bands to study this important and interesting cyclic phenomena on which the whole process of short-wave propagation depends. The study of propagation problems with different aerial arrays takes years, the number of experiments that can be performed by the active transmitter is legion, and the only way he can discover and learn is to find out for himself.

● The Higher-Frequency Bands

The man who is always striving to break new ground will undoubtedly be found on 56 Mc, where the scope is enormous. 28 Mc is but little understood, especially during periods of low activity in our summer. We feel sure that if every amateur

who works on 28 Mc equipped himself for 56 Mc operation with crystal control for immediate QSY, there would be many more noteworthy 56 Mc contacts resulting, following a QSO on 28 Mc. The recent instance of G2XC's reception of Italian 56 Mc signals is a case in point.

● Amateur Snobbishness

In view of the fact that we are all learning, and all studying some particular aspect of the science, is there any real reason why a group of DX workers should look down on the users of 7 Mc 'phone, or the 100% 'phone operators despise the CW people, or the confirmed enthusiasts for the "top band" refuse to co-operate with the patient amateurs who operate solely on 56 Mc? There is a "war" on at present between those who use CW exclusively on 56 Mc, and those who believe that 'phone is the best medium. It is true that these differences of opinion show that the experimental side is in a healthy condition, but while keeping to your own opinion try and see the other man's! Revive the old "ham spirit," cut out all manifestations of *ego*, and be ready to help the man who needs your assistance, thus playing your small part in making Amateur Radio an even better thing than it is already. Remember that you are not in a position to criticise the actions and opinions of someone else until you yourself have had experience of what he is trying to do.

● QRP

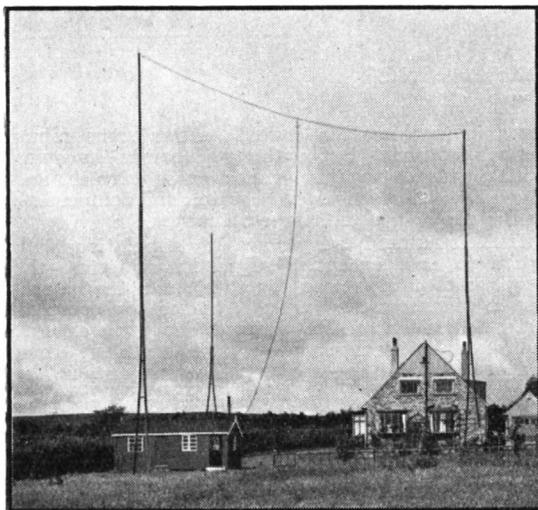
We are glad that the discussion on QRP has created such lively interest, and we have some more opinions of readers this month. An AA licence-holder writes to tell us that he visited one "10-watt" station and was surprised to find that the transmitter consisted of two 100TH's in PP modulated by two more 100TH's in Class B. The transformer in the power supply delivered 2,000 v. and the input was 380 watts!

G6TC of Wolverhampton puts forward a good case in support of G6HV's suggestion that the initial licence should be for 50 watts; he suggests that this would mean no change in the transmitter at present in use (in the majority of cases), as the average power of the "10-watt man" is in excess of this figure. He argues that it is natural for an individual to wish to increase his power after a short period on the air. Providing the cash is available, the input will mount; furthermore, G6TC thinks that the number of cases where all continents have been worked with a genuine ten watts can be counted on both hands, and to achieve this it would be necessary to have an unusually good location. The average location would require for WAC a greater input than 10 watts. In summing up, he thinks that there would be far fewer cases of "power flaunting" if a general licence for 50 watts was granted at the start. Although we

sympathise and agree with much of what G6TC says, we can assure him that those instances where all continents have been worked with a genuine 10 watts is far greater than he imagines. Too many amateurs believe that a ten-watt WAC is not possible, and so they do not really try to do it on this power.

● High Power on 7 Mc

2FFV of Rotherham is annoyed by stations who use 100 watts on 7 Mc for local contacts, thereby reducing the possibility of communication for the man who can only afford a few watts. We certainly think that every station should be equipped with some method of reducing power to that necessary to maintain reliable contact, although the interference caused by a 100-watt station is little more than that from a well modulated 20-watt transmission, providing a communication-type receiver is used. In spite of 7 Mc being the starting point for most newly-licensed amateurs, the possibility of perfect contacts is still very great providing the receiver is selective; in fact, if CW is used there



Any amateur would be proud of the very fine aerial installation shown above. It is owned by G8KD/8KF, G. W. Bagshaw, Newfield Lane, Dore Moor, Sheffield, and some further details are given in the text.

should be very few cases of lost contacts unless you have a local next door. Our advice is to equip yourself with a good receiver before you build your transmitter. Some very good articles have recently appeared in the radio press giving details of how to build a single-signal receiver for a few pounds, and our answer to the man who says he cannot afford to buy one is—build one, and if you are a true experimenter you should welcome the opportunity.

And now to prove that real QRP can be of use, we have a letter from G3IN of Saxmundham, Suffolk who sends us a list of QSOs made during the most crowded periods on 7 Mc. His log includes such stations as LX1AW, OZ's, GI and G's all over England, and the input was 10 mA at 200 volts, i.e., 2 watts.

You see the ideal aerial array of G8KD/KF in our photograph. His QRA is 750 feet above sea

level and there is nothing to prevent his signals being heard anywhere. The earth system is a network of copper rods spread out under the aerial wires, connected to two main earth conductors which lead into the station. He finds the old Marconi aerial gives very satisfactory results compared with the more modern Hertz types, and high power is not necessary to work DX with such an arrangement and location.

G8KD is really an old timer, having had professional and amateur interests before the War. He thinks that the type of amateur is changing, inasmuch as the older ones always took the trouble to read and learn and let DX working be a secondary consideration to scientific studies. You will remember that we expressed the same views a few months ago, but we think that the amateur is continuing to learn *inevitably* by the very fact of being on the air and trying to improve his results.

● Be careful what you say

Our old friend G2NS tells us an interesting story. A local G8 and G3 heard from the authorities about BCL interference. When they attempted to argue, the official produced an eight-week log of everything uttered by them—whether at noon or four in the morning! Another case we heard was of a certain licensed amateur operating a friend's station, and stating who it was at the microphone. Our vigilant authorities pounced on the owner for permitting an unauthorised person to work his station. How much more, therefore, is it necessary to refrain from allowing ladies to speak over your transmitter, when they are not licensed to operate!

● Calls Heard

We are trying to make the Calls Heard section, which appears in the back pages of the Magazine, as useful as possible to British transmitters. It is considered that carefully selected lists will prove of interest and value to all G's.

To this end, we are publishing G calls under the following heads only: 1.7 Mc, 56 Mc and G Stations Heard Overseas. The other logs which appear—Set Listening Periods and Listeners' General Lists—are intended primarily for purposes of comparison among our SWL readers, and we know that where a British station is mentioned as having been heard, say, on 7 Mc 'phone during an SLP, the fact will be of very little interest to the operator concerned.

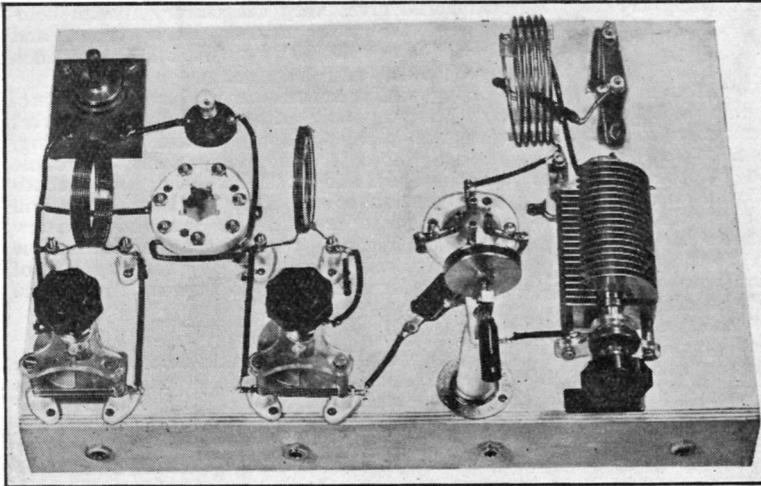
Any suggestions from transmitters for extending the scope of the Calls Heard section will be welcomed, and we shall also be very glad to have lists from overseas readers of the British amateur stations they hear. We know that a great many 7 Mc and even 3.5 Mc G transmissions are received at real DX, and this is the sort of information we are after.

● Handles

And finally we are glad to know from VK2NO that he is in entire agreement about the nonsense of the "handle racket." This is the opinion of one of the leading amateurs in Australia, and we feel that it would be a good thing if all stations refused to continue this absurd and childish practice of asking for Christian names ("handles") before beginning a contact. VK2NO suggests we merely reply that ours is broken!

Transmission for Beginners

By A. A. MAWSE



The CO-PA transmitter, rebuilt, improving RF output and stability.

This, also the neutralising and general operation of the circuit, is fully dealt with here.

AS IS SO OFTEN the case, when one's experiments seem to be going well, there suddenly comes a dead stop and the resultant pause either provides fresh incentive or . . . well, let us not discuss any retrospective step! As the writer has pointed out before, he too is learning from experience and naturally mistakes will be made in the process; but these errors teach useful lessons and are cleaned up before reaching cold print, or at least before readers are led astray.

Those more advanced readers (perhaps many would not admit reading this series—but we know they do!) who may have glanced at last month's photograph of the CO-PA had an opportunity of spotting one of the errors referred to which, after a stern lecture by Mr. Editor, resulted in the transmitter being completely re-designed and it now takes the form illustrated above; and the lesson has been well and truly learned.

● Construction

In some extenuation, the original layout worked well, there was plenty of RF, and the wiring was laid out with the consideration of assisting the constructor to follow the theoretical drawing. Now for the errors: All coil condenser leads must be kept as short as possible, otherwise the L/C ratio is affected and unnecessary losses introduced; in the re-arrangement it was noted that condenser settings were nearer maximum, so that it may be possible to add another turn to each coil, bringing the plates further out with more turns, thus improving efficiency.

This is an important point, for the RF must be confined to the coil-condenser circuits, and if long leads permit straying then good power is wasted and at the same time control during adjustment becomes difficult through hand-capacity effects; this latter point was especially noticeable, and in the rebuilt version with the PA tank condenser in a horizontal position the meter showed that less guesswork was called for in allowing for it. Even

now, approaching the controls shows some minor meter variations, but without elaborate screening a little trouble in this connection is normal, and after a few trials it is easy to watch and compensate for the one or two milliampere changes.

There is no need to lay down any stipulations with regard to size, except a suggestion to group the components fairly close together, and the photographs will show the various distances by comparison. Notice that all RF wiring is above the chassis, and also that each stage—crystal oscillator, triode and power amplifier—is clearly in a section: To the left is the cathode coil; next, after the CO valve, is the plate coil; then (in the forefront) the .0001 mF (T.C.C. type M) coupling condenser to the PA.

From left to right the jacks are: Key (in CO grid), CO plate-current meter, PA plate reading, and GB+. These are all Bulgian close-circuit type and being mounted in wood require no further insulation. Other components appearing in the same photograph which have not been specified earlier in the series are the neutralising condenser (Eddystone 1088); Premier .00016 transmitting type (C3) with its associated 6-turn 18SWG coil wound as described in July on a 2½-in. former, mounted on Eddystone No. 1029 pillars; a T.C.C. type 340 .002 mF by-pass condenser and the Eddystone valve-holder.

Use is made of one of the coil pillars for retaining the condenser C3 in position by adding an "L"-shaped piece of brass at the back end, while the fore position is held in an extension bracket. Under-chassis wiring should also be noted; an earth (or low potential wire) runs the length of the chassis. Components shown here are the RFC in HT+ in the left-hand corner; above this is the GB resistor (10,000 ohms) and its .002 mF by-pass, and at this point another RFC (receiving type by Q.C.C.), to grid of PA valve; immediately under the amplifier valve holder is the filament filter combination of two T.C.C. .002 mF tubulars and home-made humdinger.

The new coil for the PA tank must be heavier than those in the CO, and 18 SWG has been chosen. Six turns are perhaps not quite sufficient, and seven should be tried in individual coils. This coil must also have its windings spaced for two reasons: To reduce self-capacity and secondly to allow of tapping to be used. This was achieved with advantage by dental treatment to a standard crocodile clip! The HT by-pass condenser need not be above the board but it was thought that there might be a possible source of loose connection here and that it is best for any likely trouble to be visible; also, RF is evident from the clip to condenser terminal.

Having wired up and made a preliminary test for drive by RF indication at the CO tank, the next thing is neutralising, and a few notes are given below. But before passing on it should be pointed out that we are using precisely the same circuit as last month with a new drawing to the right, the coupling point "C" joins the old circuit at the top of coil L2, and the AA then has to be transposed to L3. The point being that the .0001 mF condenser C4 connection completes the addition of our PA.

● Neutralising, Theory—

Feed-back, induced by grid-to-plate capacity when using a triode, must be cancelled because this

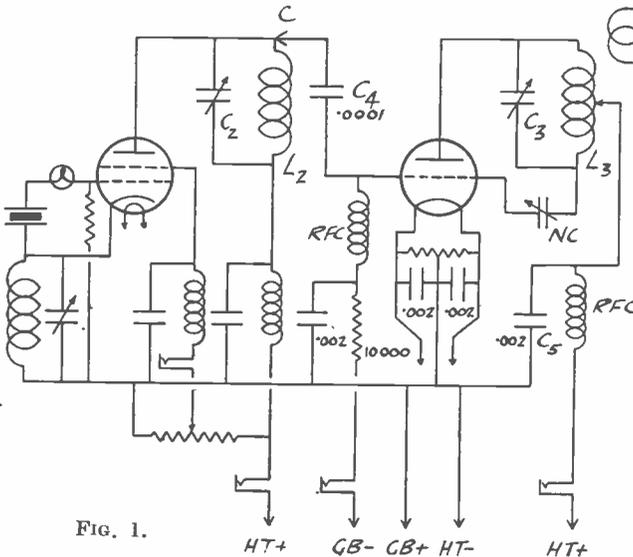


FIG. 1.

RF voltage acts as excitation which is unwanted; in other words, it causes self-oscillation in the PA stage, which is required to be driven, and to work solely as an RF amplifier. In the Hartley circuit used in an early article the opposite effect was aimed at, when it will be remembered how the grid circuit was purposely arranged to promote maximum excitation, as that was a single-valve self-oscillator. Now that the CO gives the necessary drive any feed-back in the PA will cause inefficiency and unstable operation.

To cancel this inevitable inter-electrode capacity in a triode, it is necessary to neutralise the grid and plate externally. There are several ways of doing this but if the main idea is understood the method to be explained will serve as a general illus-

tration. The circuit below (Fig. 2) shows that portion of the PA stage with which we are immediately concerned, where the small capacity NC must be adjusted to neutralise the PA when it is tuned to resonance on the tank side. The tap x (two turns down from the plate end for the 14 Mc coil) and its associated condenser C5 have the effect of producing RF voltages of opposite phase at z and y, the two ends of the plate coil. If that voltage at the lower end (y) is fed to the grid through the unwanted plate-to-grid capacity in the valve can be cancelled out after the correct ratio of turns between x and y is obtained.

The value of NC required is governed by the plate-to-grid capacity of the valve in use, the tapping point x, and wiring. The latest Eddystone 1088 fits nicely here and is not necessary to make calculations as the range of 1 to 8 mmF covers most requirements. Theoretically the neutralising condenser's mid capacity should be the same as the maker's plate-to-grid capacity figure, but to allow for variations due to circuit and layout a larger value is advocated.

● —and Practice

The above may sound fairly simple, and having once set about the job of neutralising in a methodical way, it is hoped readers will be able to regard this

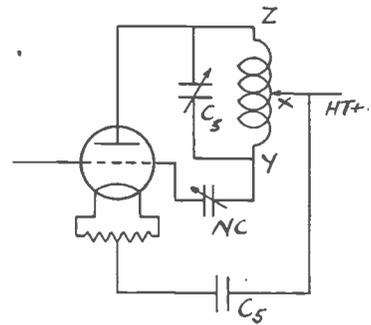


FIG. 2.

Above—The circuit of that part of the PA discussed under "Neutralising."

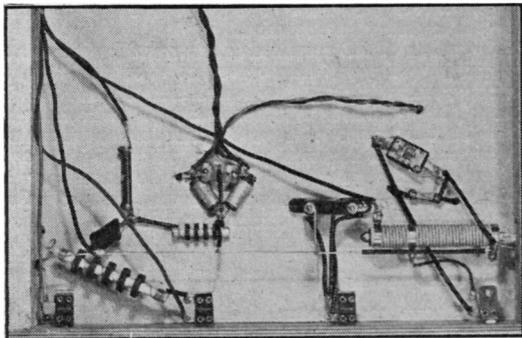
The complete circuit of the two-stage transmitter is shown on the left. As the CO end was fully described last month, PA values only are marked this time, showing how the circuit is being developed.

important lesson as learned and will not find it again a boggy. We hear a lot about the difficulties of neutralising and know it is not as easy as these notes would make it appear; however, let us try and adjust our PA in the way it should work out, then those who find more snags than are mentioned (perhaps due to deviation?) are invited to write for their individual solution.

The simplest apparatus for indication of correct neutralising is the tuning loop, which is held near the PA tank with HT to this stage disconnected and filament on. With NC at maximum or minimum, and the CO driving, adjust the PA condenser until a glow is obtained in the loop, showing that RF is being pulled through the PA valve from the CO. Then adjust NC until the glow disappears,

taking care to rotate C2 gently about resonance to take up tuning variations due to NC.

Easy! Yes, but let us first of all consider something which may make it not so simple. The external capacity created by some fancy wiring may be too great for coverage by NC, in which case the glow "stays put." The RF indication may lessen on tuning NC from minimum to maximum, but it may not go right out. If this happens, the tap x should be moved one turn at a time up or down the coil and the process carried out again.



Looking underneath. Note the PA filament by-pass components and the screen-voltage potentiometer for the CO.

It is quite likely that the CO stage will be thrown out of oscillation due to the load put on it by the PA, and after checking up on this with a loop the same sequence has to be gone through once more. As the adjustments are a touch here and there the final condenser settings are quite easy to reach.

To summarise: PA unloaded (no AA coupling), filament current on both stages; HT on CO only and CO driving; tune PA until RF is indicated in the loop; adjust NC so that glow disappears while keeping C3 at resonance; re-tune CO if necessary; and finally, test again for complete absence of RF in the PA. The valve is now neutralised, but later on we shall see how necessary it is to test for exact neutralisation, as the application of HT with the drive on may induce self-oscillation in the PA.

● Meter Indications

While on this subject, we might mention here more accurate methods of neutralising than by using a tuning loop. First, get the CO going with the crystal fairly well off resonance, i.e., not too near minimum dip, then swing the PA tank condenser (the PA filament is lit but no HT applied) till the CO plate meter needle kicks—which it will do when resonance is obtained on the un-neutralised PA. Next, adjust NC till movement of the CO needle ceases. The PA is then quite accurately neutralised.

Another method is to insert a milliammeter in the PA grid lead. With the CO driving, and little or no bias on the PA, HT off and filament on, a current reading of anything up to 12 mA will be obtained in the PA grid lead. The grid current will be found particularly sensitive to PA tank condenser variations when the valve is un-neutralised. Hence, it is only a matter of adjusting NC till kicking of the grid meter needle ceases.

The main points are: Keep the CO away from the setting at which it "flies off the handle," i.e., ceases

to oscillate; find approximate resonance tune position on the PA tank using the tuning loop, and start with NC at either minimum or maximum setting. These three rules apply to all methods of neutralising adjustment.

● Final Tuning of the PA

Immediately upon application of HT to the PA note the voltage reading and remember that if the PA tank is tuned off resonance the milliamperes will rise very high, which condition is bad for the valve, and often the meter! With the Tungstram 0-15/400 500 volts will be in order; this is a point in favour of using triodes for PA work.

Now make adjustments to C3, aiming all the while at getting the *lowest* reading in the PA plate meter. This will be found to coincide with a maximum RF output as indicated by the tuning loop.

● Bias adjustment

Correct PA bias voltage is found by switching off CO and varying PA bias with HT on that valve only till a zero reading is obtained in the PA plate meter; then double this negative voltage, which final figure in our case was 108 volts. The valve is then biased to "twice cut-off," cut-off being the value which just reduces plate current to zero. There is no drain from the battery because when drive is passing to the PA the rectified grid current is fed through the battery and in fact tends to charge it up! With this arrangement of biasing to double cut-off no HT is drawn by the PA until the drive comes on from the CO, i.e., till the latter is keyed. In other words, the CO drives the PA plate current up.

The AA may now be applied and should have some form of swivelling so that the degree of coupling can be varied: if too tight RF output will be "killed." After the best position has been found it will in all probability be necessary to back off somewhat so that the licensed wattage is maintained, for the PA reading will now rise from about 12 mA to treble this figure, and 36 mA at 500 volts is—well, read "Old Timer." But this is for next month's work, when experiments with ECO working will be tried, as suggested by an interested reader. Also the problem of decreasing power will have attention.



A reader's version of the "Class B" 1-valve receiver, built by T. C. Chambers, 9, Highfield Lodge, Southampton.

THE TROPHY V.

A B.T.S. Superhet Reviewed

THIS IS a receiver which falls into the general listening class, in that while it has several features which will be found attractive to transmitters for amateur working, it will also appeal to those who require a set covering both the medium and short-wave bands.

● Main Features

The wave-range is continuous from 10 to 550 metres, in four steps, and a speaker is built into the cabinet. The valve line-up is FC, IF, 2nd detector, output and rectifier; AVC action is provided, and a separate beat-oscillator is incorporated in the triode section of the multi-element IF valve. Both the BO and AVC are switched, and a head-phone jack is wired in the output stage in such a way that plugging in the 'phones disconnects the speaker.

A particular point about this set is the fact that it is fitted with mechanical band-spread, and is thus a challenge on this feature alone to certain of the cheaper American receivers of similar design. The dial itself is quite a sound job mechanically, and certainly does enable band-spread effect to be obtained. It works on the double-pointer principle, the outer one being the "minute hand." On a 360-degree basis, our check gave the following figures for the spreading of the five amateur bands the set covers: 1.7 Mc, 130 degrees; 3.5 Mc, 60 degrees; 7 Mc, 30 degrees; 14 Mc, 20 degrees; 28 Mc, 15 degrees.

The main dial is calibrated reasonably accurately for general working, the limits of the amateur bands being shown, while the other markings enable one to find one's way about without difficulty.

A useful feature is the provision of both doublet and plain aerial connections, the only external leads required being aerial, earth and power line.

● Performance

As with any basically simple superheterodyne circuit, a certain amount of second-channel trouble is to be expected, and there is no doubt that this receiver would be considerably improved by using it with a one- or two-stage preselector. Apart from this, results were up to expectations, and 7 Mc was good. The usual signals were heard on all bands, though we did not expect to find much on 28 Mc in view of the time of year.

The set performed best with a long inverted-L type of aerial, though a ten-metre doublet found signals on that band which could not be heard on the big aerial.

Short-wave broadcasting and commercial telegraph stations were well received, as were stations on the medium wave-band, with excellent quality and balance on the audio side—noticeably better than on many comparable sets.

The set is well finished, attractively housed, and great care has been taken with the mechanical and electrical design. Resonances are eliminated by rubber mountings, and there is no trace of microphony effects. The mounting is actually a little too

"light" for close tuning on the higher frequencies, but this could easily be corrected, while a larger knob on the tuning control would also be helpful.

These are small points to criticise, for at its price of £9 complete, the B.T.S. Trophy V. is worthy of consideration by any listener wanting a set of this type. It is marketed by Messrs. British Television Supplies, Ltd., Faraday House, Charing Cross Road, London, W.C.1.

INTERNATIONAL DX CONTEST

Radio Society of Northern Ireland's Annual Event

This Contest is open to the world, and takes place during the four week-ends of October, as follows:

<i>Start 1200 GMT.</i>	<i>To</i>	<i>Finish 2400 GMT.</i>
Oct. 1.		Oct. 2.
Oct. 8.		Oct. 9.
Oct. 15.		Oct. 16.
Oct. 22.		Oct. 23.

Rules:

The Contest is open to all licensed transmitting stations, and the licensed power must be used.

Only one operator is allowed at each station. If more than one person operates a given station, the scores count separately.

To gain points, all stations must exchange RST reports.

Stations may be worked once only during the Contest to count for points.

All licensed frequencies can be used.

Scoring:

One point for Europe.

Two points for Africa, above Equator.

Three points for Africa, below Equator.

Three points for North American continent.

Four points for South America.

Four points for Oceania.

In the case of Irish stations only, their score is to be multiplied by the number of countries worked. For this, the nine American and five Canadian districts count as separate countries.

Awards:

For the leading Irish station the Leonard Trophy will be awarded for one year, with a replica.

For the leading station outside Ireland a Gold Medal.

For the second station outside Ireland a Silver Medal.

Logs:

All logs must reach the Hon. Secretary, Radio Society of Northern Ireland, 19 Little Victoria Street, Belfast, North Ireland, on or before December 31, 1938.

Adventures of an Op. _____ "PURGATIVE"

No. 9

By N. P. SPOONER (G2NS)

THE OPS who came back from the war spent some time studying the latest developments in cable telegraph working. A year after my return I found myself bound for Rio (the "i" being pronounced as an "e," by the way). The cable station there linked the outer world, via St. Vincent—Ascension—St. Helena, with Barbadoes, Brazil, Argentine, Chile and Peru. Let us seek adventure in the sunny "Land of To-morrow," Brazil, which many people still believe to be a swampy, fever-stricken, tropical country of dense forests and endless rivers, infested with poisonous snakes and half-castes who start a revolution every week-end.

Actually, Brazil's progress is equal to many other nations and her capital can boast the finest natural harbour in the world. In the north-west corner of that vast country lies the least-known and most thinly populated State of all—"Matto Grosso." It is a fitting name because, with the exception of small areas and narrow fringes bordering the numerous streams, it is mostly "thick bush." Much bloodshed attended the wandering of wild Indian tribes and the subsequent over-running of the State by feverish fortune-hunters who discovered that the colossal wealth to be found there could appease their wildest dreams.

Somewhere in its vast depths there lies a Hidden City reputed, like those of the old Incas, to be packed with gold and precious stones. It is believed that somewhere amongst its most densely matted vines there swings a strange tribe of pygmy monkey-men who would provide the "missing link." The likelihood of these two beliefs is supported by Colonel Rondon, of the Brazilian government, who, half-Indian himself, is the only man to have penetrated to any great extent into the Unknown of the north.

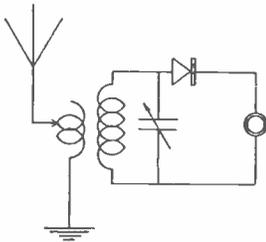


FIG. 1.

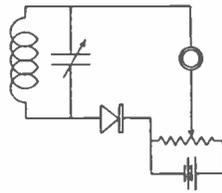


FIG. 2.

● Some original gear

Exploration parties often passed through on their way to the jungle and one day a group brought with them two crystal detector sets for weather reports and the testing out of various crystal couples under very rough usage. Specimens of galena, graphite, tellurium, zincite, bornite, copper-pyrites, steel, carborundum and silicon were carried. The circuit of Fig. 1 was to serve for such couples as galena-graphite, tellurium-graphite, zincite-bornite and zincite-copper pyrites. For zincite-tellurium and for carborundum-steel the circuit of Fig. 2 was to be substituted.

For those who, in the dim mists of the past, have forgotten the object of such a device as a potentiometer it may perhaps be mentioned that if an attempt were made to trace a characteristic curve of the application of an alternating EMF of about 0.1 volt to a tellurium-zincite couple the result would be nil. It would be found that practically no current would flow until the EMF reached nearer 0.3 volt. This also would be the case with carborundum-steel and in order, therefore, to make the couple conducting a potentiometer and battery were used to maintain an average EMF across it. Carborundum-steel required about 0.7 volt, and in practice the potentiometer was adjusted slowly until the most sensitive position was found.

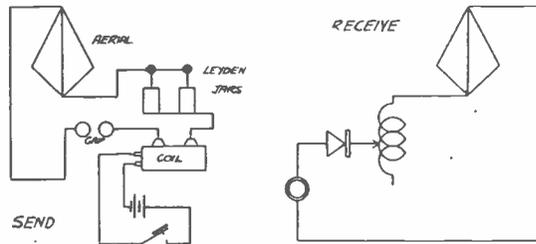


FIG. 3.

We discovered that the Portuguese Op. in charge was a real old-timer with an amazing fund of knowledge. He dispensed quite a lot of dope and amusing reminiscences about instruments that nowadays can only be seen in museums. As the strides taken by radio have been so great it might not be out of place to touch upon some of the subjects. He described some portable gear, carried on two push-bicycles, and actually in operation as far back as 1911. The gear in Fig. 3 consisted of a spark coil, gap, leyden jar condensers, key and dry batteries. The range was about 4 miles and the aerial made of three wires, each 12 ft. long, supported on a 10-ft. bamboo fishing rod.

He remarked that the idea of transmission and reception then without an earth was thought to be so revolutionary that the scheme was to be adopted on aeroplanes.

● Novel Detectors

Even in those days the cry for selectivity and sensitivity was raised and many ingenious methods were evolved for selective operation in detector circuits. A Bunsen burner flame detector he made proved "very sensitive." It consisted of a square of wire gauze held over the flame by insulated supports. An upright of insulation held the two terminals A and B in Fig. 4. From them, and close to each other, projected two platinum wires. On the bottom wire attached to terminal B was a small tray

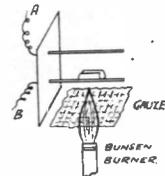


FIG. 4.

of platinum holding a pinch of common salt. The two circuits used with this detector are given in Figs. 5 and 6.

The coherer, magnetic and electrolytic detector was discussed and he expressed his opinion that, like many crystal couples, the more sensitive a detector proved to be the more trouble it gave. From a constructional point of view, for instance, the coherer was a beautiful thing, but only those who have attempted to receive an intelligible message on one know its disadvantages. To obtain the necessary filings, a silver dime and a nickel five-cent piece were defaced. A pinch of the dust was placed between two plugs in a glass tube, the plugs being silver with wires attached. Normally, the filings were non-conducting but they became conducting when subjected to small differences of oscillating potential. This effect allowed current to flow from a local battery and give sufficient power to operate a buzzer,

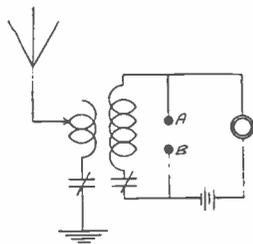


FIG. 5.

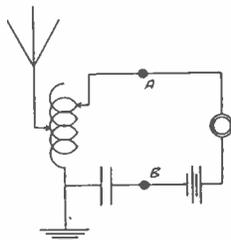


FIG. 6.

sounder, relay, syphon recorder or Morse inker. An adjacent circuit contained a de-coherer that restored the filings, by tapping the glass tube, to their original state of non-conductivity in readiness to be operated again by the following signal!

Gear was expensive in those days, £3 being a normal price for a .0043 mF variable condenser with fourteen vanes, and £2 10s. for a pair of headphones.

● Other early types

Magnetic detectors were used chiefly by the commercials owing to the amount of mechanical work

involved and the necessity for a really good clock-work train. Briefly, a moving iron wire was drawn continuously through a tube. Two strong permanent magnets magnetised it and, by the property of the iron, the magnetism was carried forward in the direction of motion unless oscillations were arriving. Two coils were wound on the tube, one for aerial-earth and the other for headphones.

With regard to electrolytic detectors, they usually consisted of a thin platinum wire protruding, from a glass tube, into dilute sulphuric acid. Into this acid also dipped a silver rod and current from a local battery was prevented from flowing between platinum and silver by ordinary electrolysis, which formed a bubble of oxygen gas on the platinum wire point. Directly oscillations arrived, however, they caused the bubble to disperse and the battery current could then actuate a pair of headphones.

After the party had moved on, we had time to study the local cow-punchers and found them to be a mixed crowd. The Brazilians ranged in colour from jet black of the West African freed slaves, through varying degrees of café-au-lait, up to European white. The Paraguayans had a warm tint of coppery Indian blood that contrasted with the Argentine swarthinness.

● The Cook's revenge

Upon arriving at that very same ranch an ex-RAF pilot and myself thought ourselves suddenly back in France. It appeared that the cow-hands had been annoying the camp cook. He retaliated one morning by cooking their rice and beans in Croton oil. The startled consumers thought that they had been poisoned and someone thereupon opened the cook's stomach, from hip to hip, with a knife. We helped to bury him but by then sides had been taken and the battle blazed. We buried two more who, sadly hampered in their movements, had held on to their trousers instead of their revolvers. The rest, apparently preferring the company of the cattle to that of their loving companions, then fled to the bush and left us in peace!

Next month - - - - - No. 10: "FIRE"

Beware of Resonant Microphone Leads

A USEFUL TIP by A. E. J. COOPER, G5VT

When a crystal microphone was first installed at this station considerable trouble was experienced from RF feed-back in the speech amplifier, even on the lower frequency bands. All the usual remedies were tried—careful screening, grid stoppers, HF chokes—but complete stability could not be maintained if the gain control was turned to maximum.

As the amplifier was stable without the microphone, the RF was obviously being introduced via the microphone lead, although this was shielded cable; yet the various chokes which were tried at the grid of the first valve in the speech amplifier had little effect. Then an *ultra-SW* choke was put in, and the trouble almost vanished.

● USW harmonics

This gave the clue to the source of RF feed-back; the microphone lead was measured and found to be

8 feet long—half wave for 5 metres! The 56 Mc harmonic was being picked up from the transmitter and a voltage antinode produced at the end of the lead, just where it was connected to the speech amplifier.

Very little HF energy would need to be collected under such conditions, and screening braid cannot be expected to provide 100 per cent. shielding. Consequently the length was altered to bring it out of resonance, and a complete cure resulted. Actually 6 inches of wire were added but in most cases it would be more convenient to cut off a few inches; the point is to detune the line.

Unfortunately 8 feet is the standard length of lead for one of the best known makes of crystal microphone, but it is noted that one manufacturer has observed the pitfall and advertises his products as being supplied with non-resonant leads.

HAVE YOU HEARD...?

THIS MONTH I am not in a position to comment on reception conditions due to my holiday, but judging by the numerous reports that have reached me, they appear to have been up to the customary standard for the time of the year, although, apparently, few if any newcomers have made their debut during the past few weeks.

● I meet Eddie Startz

Although I dislike including personal notes I feel sure that many readers will be interested to learn of a recent visit paid to "The Happy Station"—PCJ, Hilversum. Several weeks before leaving England I wrote to the popular announcer, Eddie Startz, requesting an interview and visit to PCJ and shortly after I was informed "over the air" that it would be possible and that a letter would follow. But, alas, no letter arrived; however, my plans had been completed and I was scheduled to be in Hilversum on August 2, even if only to gaze at the studios from the outside!

The great day arrived and I was astounded at the magnificence of the town with its beautiful ultra-modern buildings, particularly the wonderful Town Hall and imposing studios of the leading broadcasting organisation, the A.V.R.O. My companion and I had permission to visit the latter, our guide being no less a personage than the Superintendent of the building, and so absorbing was the place, so palatial the studios and so entertaining the Dutch Reginald Foort—Pierre Palla—that we almost overlooked the time and that PCJ was then broadcasting to the world. However, eventually we realised that a move would have to be made; another twenty minutes and PCJ would be off the air; a hurried consultation followed, 'phone bells rang and before I had completely grasped the situation I was holding the instrument and talking to Eddie Startz for the first time; would we go over to PCJ? Would we!

Fortunately the A.V.R.O. Superintendent kindly offered to act as our guide, producing to my amazement not a sumptuous car, but ordinary bicycle, and answering to my comment on this that every-one cycles in Holland! A furious ride followed, through crowded streets, over gaping tram- and train-lines that endeavoured to impede our progress; level-crossing gates barred our way; there was only one thing to do—we did it—lifted our machines bodily and marched unceremoniously across the foot-bridge. The N.S.F. (Nederlandsche Seintoestellen-fabriek) buildings and towering masts hove into sight, our cycles were dumped down regardless on any thought of their well-being, while a moment later we crept breathlessly into the presence of the shirt-sleeved announcer himself.

My presence was announced and I was beckoned to the microphone below which, on a table, I noted an orderly array of listeners' letters that were receiving Mr. Startz's attention, extracts being read from them and acknowledgement made together with a promise of the station's QSL card. After a cheery explanation of my presence to the unseen audience I was subjected to a brief questioning and had the pleasure of saying "Hello" to a few friends, in the meantime noting the studio's green curtains,

the carpeted floor and other sound proofings, the whole being, but for the modern microphone, very reminiscent of the old B.B.C. studios.

Everything was conducted in an extremely breezy and informal manner, and at the conclusion of my brief though thrilling stay at the microphone, I sidled quietly from the room with the announcer's bi-lingual good-night greeting (there was not time for the inclusion of Spanish and French announcements as is customary) ringing in my ears. A touch of a button on the table was the indication to the solitary engineer in the nearby control room that the broadcast was about to be concluded; I marched in just as the two gramophone turn-tables, one bearing the familiar Mario ("Harp") Lorenzi recording "Just the echo of a song" (chosen by Mr. Startz himself) and the other the National Anthem, were set in motion. Through the Philips' receiver, used as a monitor, we heard first one then the other, and so the programme and my first broadcast terminated.

An exceedingly interesting chat followed during which I learnt that America takes the greatest interest in PCJ's programmes; that all listeners' letters are filed, read by Eddie Startz personally and then forwarded to the Philips' office for acknowledgment by QSL card. Mr. Startz is an amazing personality and conversed fluently in his slightly "Americanised" English, permitting me to question him freely. Both he and the A.V.R.O. Superintendent gave the B.B.C.'s Empire Service high praise, although they could not resist joking about the "Oxford accent" and Oxford-accented Arabic! At 22.30, after being handed the all-important missing letter, written that same day!—we departed after a most enjoyable and enlightening chat with one who is without doubt the greatest broadcasting personality in the short-wave world. We were told afterwards, however, that he would never make a good announcer for the simple reason that he simply could not be formal, a fact that Mr. Startz had already confessed in our presence!

● "The Merry-go-Round"

Next morning we rode to Huizen, a small town some five or six miles distant. Here we inspected the transmitter equipment and had the pleasure of clambering over the foundations of the extraordinary revolving masts, generally termed by the jovial Startz as the "merry-go-round." These are made of wood and weigh, if I remember correctly, 100 tons, the whole structure revolving on two circular steel tracks, being hauled round by means of man-powered winches. At two points nameboards indicate "Johannesburg" and "Buenos Aires," and it is only necessary for the masts to be turned to either position for programmes to be directed either to South Africa or South America, according to the time of day and the nature of the programme. A short distance away could be seen the PHI masts as depicted on the station's QSL, but the 19.71 m. array was less imposing, being comprised of short wooden poles. Unfortunately lack of time prevented an inspection of the PHI transmitter, although the Engineer-in-Charge was particularly anxious that we should do so.

A visit to "The Happy Station"; Broadcast Band News and other items of interest, compiled and presented by F. A. BEANE (2CUB)

● **Broadcast-band news**

TGWA, GUATEMALA CITY.—A recent attractive QSL card from this station was accompanied by the following data:—TGWA is permitted to use the frequencies 9,685, 11,760, 15,170 and 17,800 kc. with 10 kw. power, and until further notice will use the 15 Mc channel in daytime and 9.68 Mc at night. The present schedule is:—TGWA, 15,170 kc, weekdays 18.45-19.45, marimba music from the studios; Sundays 18.45-23.15 (with the 21.30-23.15 period dedicated to Europe); TGWA, 9,685 kc, 04.00-06.00. Concerts for the U.S.A. are given Tuesdays, Saturdays and Mondays from 04.00 until 05.30. A TGWB with 1,000 watts power will shortly operate in the 49 m band, but unfortunately the schedules given are not clear, neither are those for TGWA. Address reports to "Radiodifusora Nacional, La Voz de Guatemala, Guatemala City, Guatemala, C. America."

HP5G, PANAMA CITY, sends QSL card giving the following information:—Wavelength 25.47 m, 11,780 kc; power 1,500 watts; address Apartado 1121, Panama City, and full title "Emisora HP5G, Ron Dalley."

CXA8, COLONIA, URUGUAY, 31.12 m., is still well heard and appears to commence broadcasting at 00.30, and has been heard closing with multi-lingual announcements at 08.00 on Sundays.

TI2XD and not 2XG appears to be the call of the new Costa Rican, introduced last month, according to the Cuban publication "Radio Guia." Listen between midnight and 04.00 and address reports to Apartado 1729, San Jose, Costa Rica. The writer has received no confirmation of his report of June 19 up to the time of compilation.

● **Cuban broadcasters**

I am grateful to W. R. Day and Ricardo F. Rubio (Havana) for much of the following data:—

COCX, relays CMX, "Casa Lavin," on 25.55 m., 11,740 kc, weekdays 14.00-07.00; Sundays, 14.00-06.00 (Monday morning); address Apartado 32, Havana, Cuba.

COBC, relays CBMC, El Progreso Cubabno y los Almacenes de Trajes El Gallo," on 30.12 m., 9,963 kc, weekdays 12.55-06.15 and Sundays 12.55-06.00 (Monday morning); address Apartado 132, Havana, Cuba.

COCD, relays CMCD, "La Voz del Aire," on 32.08 m., 9,350 kc, weekdays 16.00-06.00; Sundays 16.00-01.00; address Apartado 2294, Havana, Cuba.

COCC, relays CMQ, "de la Crema Dental Colgate y el Jabon Embellecedor Palmolive," on 30.93 m., 9,700 kc, weekdays 13.00-07.00; Sundays 12.55-06.30 (Monday morning). Programmes are begun and concluded by the playing of "Siboney."

It will be noted that slight changes have been made in all the wavelengths of the above.

● **New Swiss station**

This new station, situated at Schwarzenburg, announces wavelength as 31.46 m., 9,535 kc, and is QRM'd by the French TPB11. Broadcasts are made every weekday from 19.00-20.00 and directed to South Africa. German and English announcements are made by a male and in French and Italian by a female. Reports are requested and should be sent to "Swiss Telegraphic Administration, Berne, Switzerland."

The call-signs of the Finnish stations are OFE for 25.47 and OFD for 31.58 m. The former is heard 07.05-18.05 and the latter 18.15-23.00.

● **Malaya on the air**

Tan Bin Hussain (Ipoh) sends interesting cuttings dealing with the inauguration of the new B.M.B.C. short-wave service. So far tests have been made on 48.58 m., 6,175 kcs, and 30.96 m., 9,690 kc, but have not yet been reported in Great Britain.

● **Spanish transmissions**

A card from "Radio Nacional de Espana," kindly forwarded by W. Nicholson (Carlisle), gives the following schedules:—

FET1, Valladolid, 42.82 m., 7,006 kc, 12.30-22.45 (approx.); "Radio Espana," Bilbao, 41.40 m., 7,246 kc, at 08.00, 13.00 and 20.15-21.45 (approx.); "Radio Espana," San Sebastian, 41.64 m., 7,204 kc, at 08.30, 13.00, 14.00, and 18.45-21.45 (approx.); "Radio Nacional," AZ, Frente de Madrid, 44.4 m., 6,750 kc, 42.55 m., 7,050 kc, at 10.00, 12.00, 15.30, 19.00 and 21.00, 24.00 (approx.); EA9BJ, Alcazarquivir, 42.10 m., 7,125 kc, at 13.20 and 19.30; FET5, Burgos, 40.81 m., 7,351 kc, at 13.45, 17.50, 18.30 and 19.15-21.45 (approx.); EA8AE, Las Palmas, 41.96 m., 7,152 kc, at 12.00 and 20.15; EA2BH, Jaca, 21.25 m., 14,115 kc, 41.80 m., 7,717 kc, at 14.30, 17.00 and 01.00; EA9AH, Tetuan, 21.75 m, 13,992 kc, at 22.00 and 02.45; "Radio Nacional de Espana," 40 m, 7,500 kc, at intervals between 09.00 and 03.00.

● **Readers' News**

A number of interesting reports have been received as a result of my appeal of last month. One, T. H. Scarth (Darlington), submits further details of the KHRH-DJC communications, while Thomas P. Byrne (Dublin) states that W2XGB, Hicksville, is now active on 12,862.5 kc, broadcasting dance band recordings in the mornings. He also adds that the schedule of the new Swiss station on 31.46 m is as follows:—daily 1900-2000, and 0045-0145 on 15,305 kc (19.6 m) and 0200-0300 on 11,865 kc (25.28 m). A third reader, A. G. K. Leonard (Maidstone), reports PSE, 14,935 kc, 20.008 m Wednesdays 2200-2210 programme to Germany, and Thursdays (except the 1st of each month) 2100-2130 to Italy; Saturdays 2100-2130 to France, and the 23rd of each month 2200-2230 to Germany.

PSH now operates Tuesdays, Wednesdays, Thursdays, Fridays and Sundays 0000-0100; Tuesdays 0130-0230; Saturdays 0000-0130. PSA, 21,080 kc, 14.23 m, Fridays 1850-1900 and the first Thursday of each month 1715-1800 to Italy.

(Continued on p. 32).

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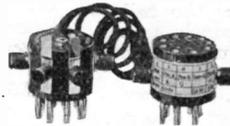
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The SHORT-WAVE RADIO MARKET

A general Review of the Apparatus available

EDITORIAL NOTE.

Readers will be aware that many firms specialising in the short-wave field do not necessarily exhibit at Radiolympia. The following survey is therefore divided into two sections, exhibitors and non-exhibitors, arranged alphabetically. We do not suggest that this brief review is fully detailed, but those firms named all offer certain apparatus of interest to readers of this Magazine, and it is hoped that the survey will be used as a guide to the market.

All-wave receivers are intentionally omitted as information on them should be readily obtainable from local sources.

Readers requiring fuller details from the firms listed are assured of prompt attention if they mention the Magazine.

RADIOLYMPIA EXHIBITORS

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

Winder House, Douglas Street, London, S.W.1.
Stand No. 21.

The range of testing instruments marketed under the trade name "Avo" has long been known as setting a high standard in both accuracy and durability.

Probably the most popular of them all is the Universal Avomator, a 22-range AC/DC instrument costing £5 10s. In the average amateur station, this meter will cover nearly all requirements, while it is also extremely useful for receiver test work and fault finding.

The latest comprehensive instrument is the 46-range Universal Avometer, price 16 guineas, which is practically a portable laboratory. It not only gives AC/DC voltages in convenient ranges up to 1,000, but also capacity, power and decibel indications, as well as current readings for both AC and DC from milliamps to amps, and resistance measurements from half-an-ohm to 40 megohms.

The two meters mentioned above have counterparts for DC work only, at £2 5s. and £9 9s. respectively.

Other important products of this company comprise test oscillators, capacity meters, valve testing panels, exposure meters and coil winding machines.

Those readers interested in television work will find the High-Resistance DC Avomator a valuable adjunct to their equipment. Costing £3 10s. it reads current to 250 micro-amps, voltage to 1,000 volts, and has two resistance ranges of 0.5 and 0.50 megohms.

BELLING & LEE, LTD.,

Cambridge Arterial Road, Enfield, Middlesex.
Stands Nos. 4 and 5.

A visit to these stands provides a unique opportunity for those troubled with interference by static to hear of some solution from a suppression engineer. In order to assist theoretical advice, demonstrations are given covering many sources of present-day electrical noise. On view is the new Eliminoise all-band aerial which incorporates a switch for medium/short-wave reception; the well-known components available from this firm of specialists in noise suppression are also on show.

SYDNEY S. BIRD & SONS, LTD.,

Cambridge Arterial Road, Enfield, Middlesex
Stand No. 102.

Since the very early days, "Cyldon" condensers have borne the hall-mark of quality. Well designed and beautifully finished, they are available in a variety of types and ranges for both reception and transmission. In the latter field, they set a particularly high standard, and are nowadays widely used on commercial equipment. For the short-wave experimenter, keen on using the best, "Cyldon" products will have a special appeal.

BRITISH MECHANICAL PRODUCTIONS, LTD.,

79a, Rochester Row, London, S.W.1.
Stand No. 107.

Last year's lines have, without exception, been included in the coming season's programme, which shows wise discrimination in production. Nine new components have been added to the large number of items already available, and each will find application by the short-wave constructor. An octal valveholder with new edge contacts for American valves, 6d.; a ceramic octal holder, also for American valves, 1s. 3d.; an acorn ceramic valveholder for English or American types, 2s.; three valve-cap connectors; a handy carton of fuses (1.2 to 5 amps.), 1s. 6d.; and finally, a frequentite trimmer condenser, which is a new departure from those products usually associated with the popular trade name "Clix."

BRITISH TUNGSRAM RADIO WORKS, LTD.,

Tungsrarn House, 82-84, Theobalds Road, London, W.C.1.

Stand No. 20.

In addition to the standard receiving types, Tungsrarn have available a number of "specials" which will interest short-wave workers. On the receiving side, these include the VX2, a hexode capable of good conversion gain down to five metres, also the VP2D and the SP2D, high efficiency RF pentodes of the variable- μ and straight types respectively. These three valves have the control grid at the top.

The TH4A is a mains triode-hexode suitable for HF operation, with or without separate oscillator, while in the "E" range series is the ECH2, a battery triode-hexode requiring a very small heterodyne voltage. An interesting output valve is the EL11, which is a "twin pentode" for push-pull

service. It gives $4\frac{1}{2}$ watts audio for 35 mA plate current at 250 volts, and has a 6.3 volt IH cathode.

On the transmitting side, Tungrams have a number of useful and interesting valves: The APP4g, an exceptionally efficient RF pentode with top grid connection, which has often been specified in Magazine designs for low-power and exciter applications; the QS-12/501, also a pentode but rather larger, being rated for 20 watts dissipation and having an anode-grid capacity of 0.2 mmF only; the OQ-71/1000, a UHF triode capable of handling 150 watts input on 56 Mc, with top grid and plate connections; and the OQQ-50/1500, another special triode with side grid and top plate connectors, dissipating 50 watts and having a slope of 3.6 mA/V.

Transmitters will find all these valves worthy of investigation; their efficiency is extremely high, and prices compare favourably with the American product.

A. F. BULGIN & CO., LTD.,
Abbey Road, Barking, Essex.
Stand No. 72.

Messrs. Bulgin have been in the component business since the very early days, and their tremendous range of products is well-known to all experimenters and home-constructor enthusiasts. Their catalogue lists a large number of those small but essential parts almost impossible to obtain elsewhere—switches in amazing variety; plugs, sockets and connectors of every type; insulators of all descriptions; condensers, tapped power resistors, panel fittings and knobs of all shapes and sizes, are only a few of the items available.

Though the firm is now chiefly concerned with quantity orders from the Trade, it still takes a deep interest in the individual amateur and his needs. This is proved by the wide range of specialised short-wave components available, all of which are highly efficient and most reasonably priced. We can say without hesitation that in the famous Bulgin catalogue will be found practically every item required for the construction of a receiver, together with many parts for the amateur transmitter, including microphones, precision slow-motion drives, stand-off insulators and ganged switch assemblies. Two pages of the catalogue are devoted to Vibrator HT Units, of which Messrs. Bulgin have made a special study.

DUBILIER CONDENSER CO., LTD.,
Ducon Works, Victoria Road, North Acton,
London, W.3.
Stand No. 69.

Special attention to the production of electrolytic condensers of new design is a feature associated with this stand. Their manufacture in a very compact form has been made possible by special processing of the foil used. All the familiar types are available, as well as some more recent designs. Dubilier fixed condensers can be obtained in a very wide range, covering practically all requirements of the experimenter. They are the products of one of the oldest firms in the business, specialising in condenser manufacture.

EDISON SWAN ELECTRIC CO., LTD.,
155, Charing Cross Road, London, W.C.2.
Stand No. 18.

Apart from Mazda receiving valves, for which there are battery, mains, universal and rectifier types for all purposes, some specialised valves are available under the trade name of Ediswan. Those likely to interest transmitters are the ESW.20, which is pluggable with the T.20, priced at 17s. 6d.; the ESW.501, a UHF triode of low-loss design, and several high-power rectifiers. The Mazda AC.4/Pen is also worth mentioning as a useful valve for triode operation and frequency multiplying.

EVERETT, EDGCUMBE & CO., LTD.,
Colindale Works, Hendon, London, N.W.9.
Stand No. 55.

Messrs. Everett, Edgcumbe, in addition to marketing an extensive range of meters and test gear for industrial uses, have on view their well-known series of miniature meters of all types, suitable for the amateur. The main exhibition consists of a service valve-tester.

FERRANTI, LTD.,
Moston, Manchester, 10.
Stand No. 75.

Though this firm is now in the market with a wide range of receivers and similar apparatus, it is best known among experimenters for its comprehensive listings of panel and test instruments of every description.

Ferranti meters are still the ambition of most amateurs, the flush and projecting types being found in up-to-date stations all over the world. A visit to this stand, or a glance through the Ferranti meter catalogue, cannot fail to prove interesting and instructive.

F. C. HEYBERD & CO.,
10, Finsbury Street, London, E.C.2.
Stand No. 2.

The Heyberd line of transformers and power supply equipment has been known for many years, and more recently this firm has gone in for battery chargers ranging from single-cell units to those of the largest capacity for big charging stations. Messrs. Heyberd can be consulted on any problem connected with DC supply from an AC source.

THE HIGH VACUUM VALVE CO., LTD.,
111-117, Farringdon Road, London, E.C.1.
Stand No. 103.

Hivac valves have been so often specified in the Magazine for both reception and low-power transmission that it is unlikely any reader will have missed them.

The complete range of sixty battery, mains, nidget and special short-wave valves is being retained for the new season, with certain additional types, such as the C.R.3 and C.R.3a cathode-ray tubes, the HVU1 high-voltage rectifier for CR tube operation, and the G.R.1 and G.R.2 grid controlled rectifiers. Then there is the Y.230 battery tetrode, and the VP215C vari-mu HF pentode designed to take the same voltage on both screen and plate. The AC/Z is a useful low-power transmitting valve—though actually a receiving type—and the PX.230SW can be recommended as a PA for battery working.

MORRIS & CO. (RADIO) LTD.,
"Jubilee Works," 167, Lower Clapton Road, E.8.
Stand No. 74.

The products of this firm are very well known to all our readers under the name of Premier, and it is impossible to mention here more than a few items which appear on their stand.

We should be doing them less than justice if we did not first say that Messrs. Morris and Co. are making a very real contribution to the amateur market. Being staffed by experienced transmitters, who know what is required, the range of apparatus available is not only exactly suited to amateur needs, but is also extremely reasonably priced.

A good example is the new Premier Communication Receiver, a five-valve five-band set covering 12-2,000 metres with electrical band-spread, BFO, send/receive switch built-in speaker, and 'phone jack. It is housed in a black crackle-finished steel cabinet, and costs only eight guineas complete. We prophesy that this receiver will attract a great deal of attention.

Then there is a complete ten-watt transmitter, for CW and 'phone operation on any band to 28 Mc, having a built-in power pack; with coils and crystal for any two bands, the price is ten guineas. Other items on show include a C.R. tube outfit, on which any testing work can be done, even that hitherto only possible with much higher-priced equipment. The unit is complete, beautifully built and finished, and costs £10 10s.

Another important contribution to amateur requirements is the range of variable impedance-matching transformers, which ensure high-efficiency 'phone working over three power ratings of 50, 150 and 300 watts in the modulated stage. The new Matchmaker universal output transformers, also in three ratings of 5-7, 10-15 and 20-30 watts, and priced (for example) at 29s. 6d. for the latter, will be particularly attractive to the low-power man, since each transformer allows of eleven different ratios being used.

Messrs. Morris also show a comprehensive range of the small parts they actually manufacture, such as variable condensers, chokes, coils, etc., etc., and in our view their stand cannot fail to interest every short-wave enthusiast.

MULLARD WIRELESS SERVICE CO., LTD.,
225, Tottenham Court Road, W.1.
Stand No. 30.

It is with great pleasure that we are able to draw attention to the fact that this famous firm of valve manufacturers—one of those which have been in the business since the earliest days of radio—is doing everything possible to provide the British amateur transmitter with valves suited to his requirements.

We mention elsewhere in this issue the new TZ08-20, a triode similar to the American T.20; the practical applications of the TY1-50 have already been described in the Magazine, and the modulators—MZ05-20 and MZ1-100—are well known.

Other useful types are the PV05-15, PV1-35 and the FZ1-35, transmitting RF pentodes of high efficiency. Of these, the first-named is the most popular, and can be thoroughly recommended for amateur applications where high frequencies are involved and only low driving power is available. All these pentode types can be very effectively suppressor-grid modulated.

Messrs. Mullard are keeping continually in mind the needs of the amateur, and in addition to the transmitting valves already available, the Cathode-Ray Department offer two very useful C.R. tubes of the high-vacuum type—the E.40-G3 at 70s. and the A.41-G4 at 135s., the latter of which is obtainable with a white screen.

We need not detail here the very extensive range of receiving valves, which are used the world over. Readers requiring further information have only to address an enquiry to the Receiving, Transmitting or C.R. Tube Departments.

PHILIPS LAMPS, LTD.,
Philips House, 145, Charing Cross Road, London, W.C.2.

Stand No. 51.

Reader-interest here will be focussed on the exhaustive investigation which Philips have made into the problems of SW reception as affecting all-wave sets, and particularly the causes of background noise. They have produced a type of multi-grid valve known as the Silentrone, in which a new beam technique is utilised to produce high-gain noiseless RF amplification. An extra "shadow" grid is interposed between screen and control grids, with the object of reducing screen current to as low a value as practicable. In this way the irregularities in the electron stream which are the main source of valve noise are correspondingly reduced.

RADIO GRAMOPHONE DEVELOPMENT CO., LTD.,
Globe Works, Newtown Row, Birmingham, 6.

Stand No. 36.

Placed on the market primarily for users of all-wave sets, the R.G.D. aerial system nevertheless claims attention from readers interested in SW reception. Briefly, this arrangement involves a 60-ft. top with a transformer at the centre linked by a 75-ft. transmission line to a second transformer at the set, to balance out interference picked up by the line. It is claimed that losses are negligible and the matching holds good over the 15-2,000 metres range. All necessary components are included in the price, 35s.

THE INCORPORATED RADIO SOCIETY OF GREAT BRITAIN,

53, Victoria Street, London, S.W.1.

Stand No. 10.

Though the R.S.G.B. has nothing to sell in the way of apparatus, it offers to all those with an interest in amateur transmission membership of one of the world's leading Amateur Radio organisations. The Society's publications set a high standard in a specialised field, and it is not too much to say that the recent progress and assured position of Amateur Radio in this country are largely due to its efforts. The "T and R. Bulletin" circulates to members only, and on the stand is available "The Helping Hand to Amateur Radio," serving as an introduction to the subject.

R. A. ROTHERMEL, LTD.,

Rothermel House, Canterbury Road, London, N.W.6.

Stand No. 80.

Price reductions for microphones and pick-ups provide welcome news, more so when inspection of the present models reveal refinements which suggests that increases in cost might be justified. Three additions to the crystal microphone series are the Bullet, Lapel and Junior; priced between £2 and £3 15s. they represent a contribution to this market that is worthy of attention by those interested in high fidelity work. Centralab volume controls are shown and prices remain the same.

STEATITE & PORCELAIN PRODUCTS, LTD.,

Stourport-on-Severn, Worcestershire.

Stand No. 76.

Besides insulators for every conceivable purpose the product "Faradex," which is claimed to have very low loss at high frequencies, is used for small-sized condensers. A feature of the latter is that frequency drift is compensated for, ensuring a high degree of stability. An interesting exhibit.

STRATTON & CO., LTD.,

Eddystone Works, Bromsgrove Street, Birmingham.

Stand No. 77.

Messrs. Stratton's, manufacturers of the Eddystone range of short-wave apparatus, may justly claim to be one of the best-known firms in the amateur market. They were established as such many years ago, and have been among those who have done most to foster short-wave development and activity. Their designs, in all the large number of components they manufacture and the specialised apparatus

they have produced, bear the hall-mark of originality and a keen appreciation of what is wanted for a particular service. Their eminence in the short-wave field as designers and manufacturers has also brought them big business as Government and commercial contractors.

We cannot in this space deal adequately with the extensive range of Eddystone products available—suffice it to say that practically every requirement of the short-wave experimenter will be found in their catalogue.

The stand exhibit this year, besides components, shows a quantity of apparatus built up from the designs given in the new Eddystone Short-Wave Manual; among these may be mentioned the complete miniature station, both transmitting and receiving, with built-in power supply, and arranged for either CW or 'phone working; the rack-and-panel 25-watt transmitter, also fully described in the Manual; a home-constructor all-AC communication receiver designed by G5BJ; and various other units, such as wavemeters, field strength meters and kindred apparatus.

New constructor aids include a particularly ingenious ganged-condenser mounting cradle, designed for unit assembly, which allows either one, two or three condensers to be used. Condensers in the standard Eddystone ranges, from 18 to 160 mmF, are available to fit this cradle, this being achieved by making all condensers of the same over-all dimensions. The design of the cradle is such that both rotor and stator sections are completely insulated. Another new product which we think is attractive is the standard die-cast well chassis, 8½-ins. by 5½-ins. by 2½-ins. deep, made of an alloy very easy to work. These chassis are partly drilled, supplied with loose terminal strips, and cost only 5s. 6d.

The *pièce de résistance* is, of course, the brand-new type E.C.R. Communication Receiver, which is dealt with elsewhere in this issue. Every amateur will want to discuss it with the enthusiastic Eddystone representatives on the stand. For the man with more modest ideas in receivers, there is a four-stage HF-det-2LF straight receiver, known as the improved Everyman, which is available as a home-constructor kit. This set has two-dial band-spread tuning, a-t-o bias, uses plug-in coils and looks very professional in its standard steel cabinet.

Much of the success of Messrs. Stratton is undoubtedly due to the fact that many of the senior members of their staff are active and experienced transmitters, who, like most of us, are very far from regarding radio purely as a business.

THE TELEGRAPH CONDENSER CO., LTD.,

Wales Farm Road, North Acton, London, W.3.

Stand No. 81.

All condensers offered last year are retained with some new types added. Those lines newly introduced and of particular interest comprise a series of precision disc and cup designs, covering capacities from 2 mmF to 100 mmF with tolerances of 1 per cent. for most sizes; a dual (.8-16 and 8-8 mF) electrolytics; and some small dry electrolytics, at 2s. 6d. and 3s. All types of moulded mica condensers are available with wire ends as well as tags. T.C.C. components have often been specified in the Magazine, and may therefore be regarded as setting a standard in their particular class.

WESTINGHOUSE BRAKE & SIGNAL CO., LTD.,

82, York Way, King's Cross, London, N.1.

Stand No. 35.

Rectifier units, chargers, "Westector" high-frequency detectors and other accessories make for a full display on this stand. There is a commercial charger working, demonstrating in particular the flexibility obtainable in modern practice.

WESTON ELECTRIC INSTRUMENT CO., LTD.,

Cambridge Road, Enfield, Middlesex.

Stand No. 83.

Although the main exhibit caters for the service engineer the short-wave experimenter will find many instruments of the dead beat type that will interest him. Quality meters are an investment, and here we are able to see beyond the bare price factor.

WINGROVE & ROGERS, LTD.,

188-189, Strand, London, W.C.2.

Stand No. 106.

Slow-motion drives, air and mica dielectric trimmers, and some special short-wave condensers present a fine display, and the name "Polar" remains the trade-mark of a product associated with sound workmanship. "Wearite" is another traditional title that those of long experience in the field of experiment will be pleased to find is still borne by a range to be seen on this stand, although the latter equipment is not for the home constructor generally.

NON-EXHIBITORS

A.C.S. RADIO,

16, Gray's Inn Road, London, W.C.1.

A.C.S. Radio cater exclusively for the short-wave experimenter, listener and amateur transmitter. All leading makes of American communication receivers are handled and the new models are available soon after release. These are carefully tested and aligned where necessary before delivery, and carry a 90-day guarantee. Besides receivers, a large and varied stock of components is carried and being suppliers of many American products their showroom, newly opened in a more central district, will well repay the time spent on a visit.

This firm takes the wise view that an efficient service department is essential for building up goodwill, and H. Miles, G2NK, the technical manager of A.C.S., makes a special point of supervising this side of their activities very closely.

ADGIL INSTRUMENT CO.,

35, Manor View, Finchley, London, N.3.

This is a small firm specialising in the production of Morse keys of various types, which can be recommended as well balanced and soundly constructed instruments.

AERIALITE LTD.,

Castle Works, Stalybridge, Cheshire.

Leaflets are available showing the various types of aerial in which this firm specialise. There is a di-pole outfit at 17s. 6d.; the "Coilite" is also a doublet-type, which retails at 12s. 6d. and is complete with transformer.

ALL POWER TRANSFORMERS, LTD.,

8a, Gladstone Road, Wimbledon, London, S.W.19.

This firm, whose products have frequently been specified in the Magazine, market a really useful range of power transformers and smoothing chokes, soundly engineered and competitive in price.

Readers who contemplate re-building their power packs, making additions to existing equipment, or who are thinking about their first power supply unit, cannot do better than consult Messrs. All Power Transformers on the matter.

A. L. BACCHUS,

109, Hartington Road, London, S.W.8.

A kit of parts for making a one-valve receiver for 12s. 6d. is the offer of this firm, and having inspected the parts we have no hesitation in endorsing the claims made if usual care is taken in the simple building. Beginners will find here the opportunity for an inexpensive start to the hobby, and, as we said in an early issue, the parts will be useful after the first steps in short-wave radio have been taken.

BROOKES MEASURING TOOLS,

51-53, Church Street, Greenwich, London, S.E.10.

Messrs. Brookes were one of the first firms in the field with piezo-electric quartz crystals for the frequency control of transmitters. They use the greatest care in the manufacture and calibration of these quartz plates, first-grade crystals being certified accurate within 0.30 per cent. Second-grade crystals come up to GPO requirements, and, for the 1.7, 3.5 and 7 Mc bands, cost 10s. 6d. each. Various types of holder are available, including a special double air-gap design at 12s. 6d.

S. G. BROWN, LTD.,

Victoria Road, North Acton, London, W.3.

In the amateur world both of to-day and yesterday, Brown's Type A set the standard for lightness, sensitivity and durability in headphones. Though these are priced at 50s. a pair, being of the adjustable-reed type, there are others of the more usual design down to 20s. a pair.

CENTRAL RADIO & TELEVISION LTD.,

Otley Drive, Newbury Park, Ilford.

A speciality is being made of modulation transformers, and a tapped model rated for 50 watts is under production. It is suitable for matching practically any pair of Class B or AB valves to an output valve running at up to 50 watts, has a steel screening case and sells at 17s. 6d. Mains transformers, swinging and smoothing chokes and the stock of Taylor valves are other lines of interest.

DAY & ELLIOTT,

50, All Saints Road, Peterborough.

Good service is offered the amateur in American valves and mains transformers. There are two grades of the latter and naturally prices vary with the quality. American receiving valves suitable for transmission are in stock, as well as such types as the T55, T20, RK25 and RK39. Besides these components any other apparatus can be supplied, particular attention being paid to speedy delivery.

ELECTRADIX RADIOS,

218, Upper Thames Street, London, E.C.4.

The shop in Upper Thames Street was where we used to go for bargains nearly fifteen years ago, and there is still an endless variety of electrical apparatus of every kind offered there at keen prices. It is well known among short-wave enthusiasts and home constructors generally that much of what one needs in the way of odd things is not readily available from the usual sources. But it is probably to be found at Messrs. Electradix, who have done a big business with amateurs since the earliest days. Whether you want a meter, a 2-oz. reel of nickel-chrome wire, a small motor, or a complete petrol-electric generating plant, try Electradix Radios, who also market a very useful multi-range meter and test set under the name of the Dix-Onemeter.

ERICSSON TELEPHONES, LTD.,

22, Lincoln Inn Fields, London, W.C.2.

A good pair of telephones make all the difference to the pleasure derived from short-wave listening, and until comparison is made with those that may have been used for years one does not realise how bad the older pair may be after years of hard service. At 15s. per pair Ericsson 'phones would not be an expensive experiment in the knowledge that this well-known name is upon the purchase. They are used extensively by service departments and foreign governments.

FOX RADIO CO.,

Thrusington, Leicester.

This is a firm specialising in high-grade individually built apparatus for the discriminating buyer. The standard lines include the Fox 60T transmitter, completely self-contained and designed for either CW or 'phone, rated at 60 watts input, fully metered, and incorporating only the best components available. The CW section, with coils and crystal for 7 Mc, costs £23; complete with the modulator section and built into an enclosed two-tier rack with a hinged lid for coil changing, the price is £42, crystal to specified frequency 15s. 6d. extra.

The Fox 25T is a 25-watt 'phone/40-watt CW transmitter; also self-contained, with one multi-purpose meter, and built in a welded steel cabinet, it is priced at £19, crystal and microphone extra.

Self-powered modulators include the M60, M30 and M20, costing £21, £18 and £14 14s. respectively, while another interesting item is the calibrated Frequency Meter-Monitor, with curves laid out to give readings directly to 1 kc. The price of this instrument complete is £8.

Messrs. Webbs, of Soho Street, Oxford Street, W.1 have various models on show.

HOLIDAY & HEMMERDINGER, LTD.,

74-78, Hardman Street, Manchester, 3.

Though this firm is chiefly concerned with service work for the Trade and public sound amplification, it also handles a number of useful books connected with all aspects of radio. Of the two monthly journals for which Messrs. Holiday and Hemmerdinger are agents, "Communications" is probably that which will chiefly interest our readers. A review of the scope of this paper recently appeared in the Magazine.

JACKSON BROS. (LONDON) LTD.,

72, St. Thomas' Street, London Bridge, S.E.1.

For the coming season Messrs. Jackson Bros. are retaining most of the quality components previously offered. There are several modifications, however, but all are made with a view to improvement. Those condensers used in some of our constructional articles are with us for yet another year, and the prices remain. 56 Mc enthusiasts would be well advised to investigate some of the Midget types, while a very useful range of slow-motion drives is also listed.

OLIVER PELL CONTROL, LTD.,

Burrage Road, Woolwich, S.E.18.

The well-known range of Varley components—another of the names which have been in the business for many years—include a number of items of interest to the short-wave enthusiast: Variable power resistors in the lower ratings, a selection of high-efficiency midget transformers, mains transformers and chokes, together with a wide range of I.F. components.

PETO SCOTT CO., LTD.,

77, City Road, London, E.C.1.

This company has long been in the radio business as a supply house on deferred terms, and practically anything can be obtained through them on this basis. Comprehensive lists are available, which will be of great interest to many readers.

Messrs. Peto-Scott's own products include various specialised types of short-wave receiver, such as the Dual Purpose Communication model recently reviewed in these pages, and

a new geared mechanical band-spread dial, which has aroused considerable interest among set manufacturers as special methods are adopted to ensure complete freedom from backlash.

B.T.S. equipment is also handled, much of that available having been recently advertised or reviewed in the Magazine. This includes two items of particular interest—the 5-metre transceiver and a 7-metre superhet, both portable battery-operated instruments.

SIR ISAAC PITMAN & SONS, LTD.,

Pitman House, Parker Street, Kingsway, London, W.C.2.

The latest developments in the use of the short, ultra-short and micro-waves are dealt with in a valuable work, "Short-Wave Radio," by J. H. Reyner, recently published by Sir Isaac Pitman and Sons at 8s. 6d. net. This enterprising publishing firm lists several other books of interest to short-wave enthusiasts.

F. L. POSTLETHWAITE, G5KA,

41, Kinfauns Road, Goodmayes, Ilford, Essex.

Known as "The Hams" Bookshop" G5KA bears out this description by being in a position to supply most American publications. The more popular books are "The Call Book," listing every known amateur transmitter in the world; "The Radio Amateur's Handbook"; and "The Radio Antenna Handbook." We advise readers to write for the full lists.

THE QUARTZ CRYSTAL CO., LTD.,

63 & 71, Kingston Road, New Malden, Surrey.

Founded many years ago by two holders of amateur calls, "Q.C.C."—as they are known—have built up a solid reputation for themselves as manufacturers of specialised components. Quartz crystals for frequency control are their strong point, and many thousands of Q.C.C. "rock" are holding down transmitters—and performing other similar service—in all parts of the world.

Other useful items, most of which have been specified in Magazine designs on numerous occasions, include plug-in transmitter coils, crystal holders, RF chokes, stand-off insulators and meters. Messrs. Quartz Crystal Co. also handle the National range of American apparatus.

RADIO CONSTRUCTION SERVICE,

293, Rothbury Terrace, Newcastle-upon-Tyne, 6.

Manufacturers of piezo-electric crystals, this firm is able to supply three types at specially attractive prices, some as low as 10s. A useful range of holders include one designed to take advantage of the variable frequency characteristic of AT and BT cut crystals.

RADIOGRAPHIC, LTD.,

Deane House, Dean Street, London, W.1.

This firm laid the foundation of their business with amateurs through their original Glasgow establishment. They handle necessitated an expansion of their activities. Increased demand for the wide range of American products and a sales centre has been opened at the above address. Hytron valves are distributed by Messrs. Radiographic, in which make there are many transmitting types available.

RADIOMART,

44, Holloway Head, Birmingham, 1.

For many years suppliers of everything connected with British and American short-wave radio, and also manufacturers of a range of components, this firm though no longer almost alone in the field, as they once were, still do a considerable business. Their lines are well catalogued, and Messrs. Raymart also publish a useful Manual for the amateur interested in American designs.

RADIO RESISTOR CO., LTD.,

1, Golden Square, London, W.1.

Manufacturing under the trade name of Erie, there is a very wide range of fixed resistors available in all values and ratings. The firm has been concentrating on resistance production only for a long time, and any "specials" can be made to individual requirements. The range also includes volume controls of various types.

N. E. READ,

24, Church Street, Oswestry, Shropshire.

Mr. Read advertises a constructional service that includes the making of any SW apparatus made to clients' specification, using graded gear; the finished work is air tested and guaranteed. He also makes a feature of the supply of aerial equipment for the amateur transmitter and is sole agent for the American publication *Radio*.

G. SCOTT-SESSIONS & CO.,

Exchange Works, Muswell Hill, London, N.10.

If you are the owner of, say, a communication receiver and fear to "tinker" with the alignment or otherwise try for better results, this firm, long established as service engineers, will undertake to "hot it up," make modifications, extend the range, or do an overhaul at reasonable cost. This is only one of their services and in fact we can say they will undertake any constructional or installation job put before them, whether on the transmitting or receiving side.

SHORT WAVE RADIO LTD.,

97, Park Lane, Leeds, 1.

Though established comparatively recently as an amateur supply house, this firm is rapidly consolidating its position in the north of England. Many useful components, valves and other parts are available at really competitive prices. Some we might mention here are the all-brass variable condensers for reception and transmission, well designed mains transformers and swinging chokes, and a full range of Impex first-grade American valves. Messrs. Short Wave Radio also stock all Eddystone components and handle RME and Hallicrafters receivers, on which HP terms can be arranged. Particular care is taken to ensure prompt delivery of mail orders, and excellent service facilities are a feature of the organisation.

SOUND SALES, LTD.,

Marlborough Road, Holloway, N.19.

Another concern producing a useful range of quality mains apparatus, amplifiers, &c., the main interest in which for the buyer is that the gear is designed on *de luxe* lines.

SOUTHERN RADIO & ELECTRICAL SUPPLIES,

85, Fisherton Street, Salisbury.

Apart from the more usual stock carried this Wiltshire firm is endeavouring to cater for the amateur requiring accessories not usually listed, such as absorption wave-meters for 56 Mc, etc. This is a recent addition to the good range now carried and other new lines include a variety of aerial and superhet kits and a USW modulated oscillator. All branded goods can be supplied and prompt delivery is effected.

WARD & GOLDSTONE LTD.,

5, Percy Street, Tottenham Court Road, W.1.

A 60-page catalogue full of electrical apparatus is offered to readers, who will find much space devoted to aerials and short-wave components, ranging from soldering tags to meters—at very competitive prices, too.

WEBB'S RADIO, LTD.,

14, Soho Street, Oxford Street, London, W.1.

Under the management of H. R. Adams, G2NO, and staffed by several holders of amateur calls, to the short-wave enthusiast Messrs. Webb's showrooms are one of the attractions of London. As exclusive Hallicrafters agents, a full range and ample stock of these well-known receivers are always carried, together with nearly every other American product worth importing.

All Eddystone apparatus is on view, together with the "Economy" range of components exclusively marketed by Messrs. Webb's themselves. In addition to the array of gear outlined above, the stockrooms hold American transmitting valves of nearly every type, a wide assortment of components, including meters, mains transformers, small parts like valve-holders and insulators, a full range of McElroy keys and code-learning equipment, and many other items too numerous to mention. Suffice it to say that it is all there, and Messrs. Webb's new catalogue, a very well produced publication containing an enormous amount of invaluable information, will be found almost indispensable by anyone even remotely interested in the short waves.

WODEN SOUND EQUIPMENTS,

St. John's Square, Wolverhampton.

This firm is almost exclusively engaged in the manufacture of quality power transformers for the transmitting fraternity. Finished black crystalline with white porcelain terminals, heavy cast shrouds enclose all windings and leads, the result being a sound and substantial job having a particularly neat and workmanlike appearance. This brief description applies in the same way to Woden smoothing chokes, which can also be confidently recommended. A few price examples are as follows: Mains transformer, 500-0-500, 150 mA, three I.T's, 39s. 6d.; filament transformer, 10 volt, 2 amp., 13s. 6d.; smoothing choke, 30 henry at 150 mA, 25s.

All Woden products are stocked by Messrs. Webb's Radio, Ltd.

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STAND No. 74.

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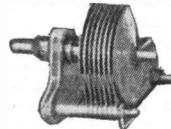
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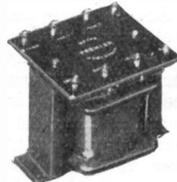
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STAND No. 74 at **RADIOLYMPIA**

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THE PREMIER 8-WATT UNIVERSAL AMPLIFIER is a 3-stage High-Gain Outfit with unusually fine reproduction and power. This model is available in Kit form at ... £4/4/- Or completely wired and tested at ... £5/5/-

The PREMIER 12-WATT HIGH FIDELITY A.C. AMPLIFIER has been designed for those who require a high-quality Unit capable of delivering truly linear and distortionless Audio Power.

The input valve is a 6J7, followed by a 6C5 as a 'phase changer to give the push-pull input to two 6V6 Beam Tube Output Tetrodes.

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DON'T FORGET! STAND No. 74

Two Receiver Circuits

By "TESTER"

ONE OF the most popular designs offered the short-wave listener in recent years has been the Magazine Class-B One-Valve set, which was described in our first issue (March, 1937) and has been cropping up ever since. The circuit is essentially simple, consisting of a Class-B valve used as two triodes—one half the detector and the other side the LF amplifier. The original design has been found efficient on all bands 1.7 to 28 Mc, and with suitable plug-in coils, the coverage is continuous. Five-metre reception is also possible, though the tuning is a little critical.

This receiver is to be found in many stations, at home and abroad, and in this article we discuss the addition of a tuned HF stage to make the set still more effective.

The circuit arrangement is shown in Fig. 1—quite straightforward, as is the circuit it is intended to precede. The valve is a Hivac SG.220.SW, with

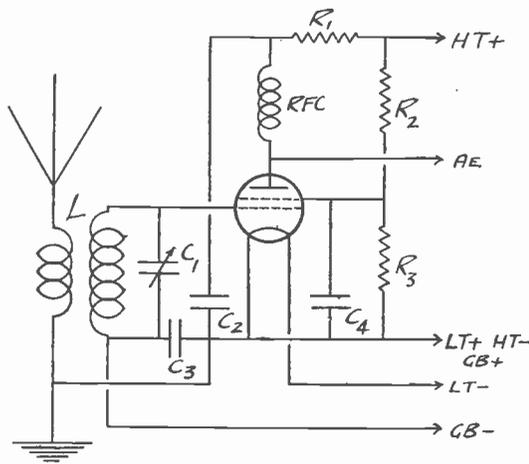


FIG. 1.

An HF Stage for the Class B Receiver. It can also be used for any other 0-V-1 type of circuit, but a condenser must be put in series with the lead marked AE where there is not already an aerial condenser.

top grid connection, and the output from the unit can be taken directly to the aerial terminal of any Class-B receiver built to the original specification.

Parts that should be used are as follows: L, Eddystone four-pin coils to cover the desired wave-ranges; C1, Eddystone 100 mmF Microdenser; C2, C3, C4, .01 mF, any good make; R1, 10,000 ohms; R2, 40,000 ohms; R3, 50,000 ohms, all rated 1-watt. The choke RFC can be an Eddystone standard short-wave type, No. 1010.

Additional parts required will be coil mount, valve-holder, extension set and mounting bracket for C1, and a set of Clix terminals for the connecting leads.

An HF Stage for the Class-B and a good 56 Mc Design

● Construction and Operation

Both are simple. It is advisable to build the unit into a screened box, which can be similar to that used for the Class-B receiver itself, thus matching up in appearance. There is really no point at which the constructor who can read a circuit diagram will go wrong, the only thing to mention being the fact that while C1 can be mounted direct on the front panel, it is better to have it on an extension control, and the Eddystone mounting bracket will also automatically insulate the condenser from the chassis, which it will be seen is necessary, as in all biased HF valves.

Note that the supply wiring is arranged to "answer" that adopted for the Class-B receiver, so that the leads as marked can be taken straight to the appropriate supply points for the latter. $-1\frac{1}{2}$ volts should be applied at the HF stage GB lead.

Operation is as follows: With the same type of coil in both HF stage and Class-B, reduce the "aerial" coupling condenser (which now becomes the feed condenser) in the latter to about half-scale and adjust the detector side till that valve is oscillating gently. Then set the tuning of the detector to near the mid-way position, and swing C1. A marked peaking effect will be obtained, requiring reaction to be backed off in the detector.

It will now be found possible to tune on both units "in step," though the movement on C1 will be much less than on the detector tuning, owing to the latter condenser being smaller.

On frequencies from 1.7 to 7 Mc, any signal will be sharply peaked as the HF stage is brought into tune, and there should be a marked gain in strength over the Class-B alone. On the higher frequencies of 14 and 28 Mc, the capacity of C1 is such that it will practically "stay put" for maximum sensitivity on these two bands, though there will be more tuning on it for 14 Mc than on 28 Mc.

The over-all gain should be at least three R points, and it will probably be found that some signals tend to over-load the set. The best results will only be obtained after a little practice in tuning the HF stage and detector side together, and in adjusting the series feed condenser from band to band. This will be found to affect signal strength and selectivity, and the set can be adapted, by limiting or increasing detector input, to a wide range of conditions.

● A 56 Mc Circuit

Fig. 2 shows a tried circuit which will give excellent results on five metres, and if properly constructed, it is amply stable for the reception of weak CW.

The main points to note are the use of a Hivac D.210.SW detector valve—this is quite important—the filament chokes FC, and the method of controlling reaction. L2 is the reaction winding, bypassed to earth through the .0001 mF fixed condenser. The 50,000 ohm potentiometer in the plate lead of the detector controls anode voltage and

therefore regeneration; thus, the difficulty of constructing a low-loss reaction circuit is eliminated, as is hand-capacity on what is usually a most troublesome control.

The filament chokes FC are double-wound on one former—30 turns of No. 22 DCC on a quarter-inch diam. wooden dowel will be found satisfactory, or the Lissen Hi-Q filament choke can be used—and it is important to get this choke as near the valveholder as possible.

All other values are marked, but a certain amount of explanation is required regarding some points. The aerial coupling condenser C_0 consists of two strips of aluminium mounted on midget stand-off insulators so that they can be varied in relation to one another; these strips are $1\frac{1}{2}$ -ins. long by $\frac{1}{4}$ -ins. wide, and are bent as shown in the diagram. This condenser will be found capable of taking care of the load presented by almost any type of end-on aerial.

Notice that the grid-leak is directly across the grid condenser. It should be wired like that, and the grid leads kept as short as possible; an $\frac{1}{4}$ -in. saved here and there makes a lot of difference to sensitivity and ease of oscillation. Also note that the grid return is positive—this also will be found necessary, or a potentiometer can be used for finding the best setting. Our tests show that taking the grid side to LT positive is all that is required.

Coils L_1 and L_2 can be Eddystone 4-turn and 3-turn windings respectively, of the USW type, and mounted on a frequentite base. Actually, our own reaction coil consists of three turns of "Glazite" held up on a pair of insulating pillars, and set in that position which ensures easy oscillation.

With impedance coupling, a pentode should be used in the LF stage: alternately, we find a Hivac Y.220 is good, and the values are arranged to suit it. The choke LFC should be of the high-impedance type, with an Eddystone USW choke at RFC. This applies also to the 'phone leads, and it will be seen that further by-passing is provided in the form of a .001 mF condenser from the plate of the output valve. This value should not be increased, or it will begin to cut off audio.

The 50,000 ohm potentiometer *must* be a good one for silent operation, and we definitely recommend the Varley 3-watt type CP.159. The 2 mF condenser is for silencing the slider, and should go straight across the middle and earthed terminals of the potentiometer. In our case, this precaution enables absolute silence to be obtained, and the detector goes in and out of oscillation very smoothly.

The small by-pass condensers should all be mica, and note that detector de-coupling is necessary in spite of the presence of the control resistor.

● Construction

This can be left to individual preference, but some care in this respect will be found essential for good results and smooth and stable operation. The grid circuit is the important point. The small tuning condenser should be on a long extension control, with the grid coil right alongside. Good slow-

motion is also very necessary, and we recommend the Igranic dials now available from Webbs. Special attention must be paid to keeping all detector leads as short as possible.

Slow-motion must be provided for the 50,000-ohm control potentiometer, and this should also be on an extension shaft with short leads.

Our model embodying this circuit is built on a wooden baseboard about 12-ins. square, with the two variable controls well towards the back edge, and everything on the detector side "mounted on air." The LF stage components come from the detector end towards the front of the baseboard—there is no panel—and hence one's hands are away from what is "hot."

● Adjustment and Tuning

About 150 volts HT, or more, should be used, and with the aerial on, vary C_0 and the position of L_2 till oscillation is obtained with the control potentiometer about half-scale. The whole object of these adjustments is to get a degree of aerial coupling and a reaction coil setting which give smooth oscillation. They are easily found after a little experiment.

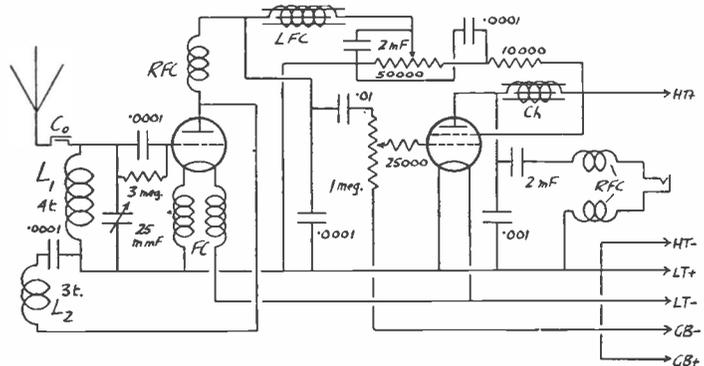


FIG. 2.

The circuit for 56 Mc discussed in the text.

With a four-turn grid coil and a 25 mmF tuning condenser the 56 Mc band will come somewhere between 10 and 50 degrees of an 0-100 degree dial, with that amount of band-spread. This entirely depends of course upon the vagaries of individual constructors, but is near enough for guidance.

It will probably be asked—why not use a five-turn coil and a 10 or 15 mmF condenser, thus improving band-spread and L/C ratio. Yes, why not? The answer is that as things are at present it is very useful to be able to listen outside the band and above it (in wavelength) to see what the limit happens to be for the reception of commercial stations and harmonics. Moreover, a 40 degree spread is ample for the moment, and even an R2 signal is quite easily tuned. Too much band-spread can be a nuisance, in that it takes so long to get from one end of the band to the other that an answering signal (to a transmitter) might be lost.

* * * *

We hope to give in the October issue photographs both of this receiver and the HF tuning unit already described. Space is at a premium this month.

The 1938 Sky Champion

A Fine Hallicrafters Production

THE LATEST Sky Champion is an up-to-date American receiver, well in the communication class, and at its price of £15, will find a ready market in this country—we are told it is already selling well. Whatever our hopes and fears may be for the now long awaited British reply to the range of receivers available over here from the factories of Hallicrafters, RME, National and Hammarlund, it is evident that our own people will not find it too easy to beat on price a set like the one we are now considering—we say this with a full sense of our responsibility, and in spite of a sincere desire to see a really good British communication receiver at about £18.

To get back to the Hallicrafters Sky Champion: It is a five-stage arrangement, with separate FC oscillator and BFO, making eight valves in all including the rectifier. It is beautifully built, with smooth and noiseless controls, and covers a frequency range of 44 Mc to 550 kc in four bands, with plenty of overlap to make this coverage continuous.

● Circuit and Design

The circuit is quite straightforward—it is noticeable that many good American designs have dropped the multi-element valve idea—the result being that the set can be well laid out and properly screened, all of which contributes to its excellent performance. The pitch control, actually a small variable condenser in parallel with the beat-oscillator main tuning, is a particularly useful refinement, in that it enables greatly improved discrimination to be applied to a CW signal; in fact, if the pitch and tone controls are used together, it is possible to pick out CW through almost any QRM, so that in this respect the apparent selectivity approaches that of a receiver fitted with a crystal-gate.

The value of the RF gain is, we find, most appreciated where the local noise-level is high, in that the strength of average signals can be maintained by cutting down on the RF side and advancing the audio control. A little practice with these two knobs shows that the set can be adjusted to suit a wide range of reception conditions, and it is not just a matter of turning them to maximum or minimum.

A further interesting point is that the necessary connections are brought to a rear-panel socket for plugging in a Hallicrafters Type SM18 "S" meter for visual indications of signal strength. This meter is, of course, an extra.

The last control we need consider is the "send-receive" switch. Unlike several much more expensive receivers, there is no stand-by creep, i.e., when changing back to "receive," it is not necessary to re-tune to find the other station again. He is still there.

● Mechanical Features

Apart from the fact that all controls are smooth, quiet and positive, the main tuning arrangement is worthy of special mention. It incorporates the now well-known Hallicrafters etched stainless-steel dial, 5-ins. in diameter, on which the calibration was found to be very accurate. A comfortable knob

controls a form of fly-wheel tuning, driving a smaller dial, marked 0-100, for band-spreading, i.e., band-spread is mechanical and not electrical. That an excellent mechanism has been evolved for the purpose is shown by choosing stations at random on different bands, and noting the dial readings—it is possible to come back to them with certainty every time.

We need not worry about how many yards of scale this mechanical system of spreading represents, because the following figures, taken on the 0-100 dial, give the coverage on the five amateur bands: 1.7 Mc, 450 degrees; 3.5 Mc, 90 degrees British section, 190 degrees for full 3,500-4,000 kc; 7 Mc, 95 degrees; 14 Mc, 40 degrees; 28 Mc, 110 degrees.

● Performance

As one would expect, the set gives an excellent account of itself on all amateur bands—and indeed throughout its tuning range. The response is very even from band to band, and once one has got the hang of the controls, the receiver is a real pleasure to use under actual QSO conditions—and that is the main thing from the transmitter's point of view.

As the tuning range is continuous, all short-wave channels are covered—commercial telegraphy and telephony, broadcast, shipping, aircraft, etc.—while of course the medium-wave BC stations also come in well and with satisfactory quality.

There is an absolute minimum of second-channel, though it is noticeable here and there, and the general impression one gets after a few hours with the set is that it has ample punch for all ordinary purposes. The amateur band performance was very critically examined, and we can say that this receiver cannot fail to be considered extremely good value for money. It is naturally not as good as receivers twice or three times the price, but it is a good deal better than any in the same price range.

The whole construction, finish and appearance is most satisfying, the cabinet being of steel, sprayed smooth grey, and the controls are arranged sensibly. One small criticism is that on a very strong signal, there is a tendency for "dither," apparently due to vibration of the main dial. This might be a peculiarity of the model we had for test.

All Hallicrafters' products are handled in this country by Messrs. Webbs Radio, Ltd., Soho Street, Oxford Street, London, W.1, who also now hold sole importing and distributing rights to the Trade.

Mann Variable Directional Aerials

The various types of variable directional aerial marketed by A. W. Mann, 62 Costa Street, Middleburgh, Yorks, are enjoying a greatly increased demand, as the design is undoubtedly effective and does all that is claimed for it.

Messrs. Mann are now in a position to supply their equipment to the Trade under the usual terms, and enquiries will receive prompt attention. Retail business at the above address will be carried on as before.

Regeneration in Superheterodyne Receivers

By R. C. HISCOCK, 2FIK

Some interesting Lines of Experiment

THE CHIEF REASON why so many amateur-band superhets are in demand to-day is because they provide far greater selectivity than the straight receiver. But with the ordinary superhet it is very difficult to maintain satisfactory communication on any of the amateur bands when using phone. To overcome this successfully, some system of single-signal reception has to be introduced. One way of doing this is to put in a crystal filter, but an equally effective and cheaper method is to use regeneration in the IF amplifier and the RF stage.

● I.F. Regeneration

An intermediate frequency amplifier that has regeneration successfully applied to it functions in much the same manner as a regenerative first detector.

A crystal filter reduces unwanted signals off resonance frequency, whereas the regenerative IF stage increases the wanted signals and leaves the unwanted at their normal level. The crystal system does not

resistor R1 and the condenser C2. The coil is connected so that the HF current passing back to the cathode, induces a voltage in phase with the voltage on the grid. A 5,000 ohm variable resistance controls regeneration, and is shunted across the coil. The blocking condenser C4 is inserted in series with the variable resistance so that the cathode resistor is not shorted, consequently no variation in DC grid bias takes place. Reaction is at maximum when the variable is all in circuit, and at minimum when R is at zero, and the coil is shorted.

In Fig. 2 quite a different hook-up is shown. Here a small superhet without an IF stage is made regenerative. Such sets are often called "Supergainers" after the famous American original described in "QST." They are rapidly becoming popular among the home constructors, as they are cheap and easy to build. The performance of this kind of set is good in itself, but when regeneration has been fitted the gain and selectivity are generously increased. The second detector is made reactive by

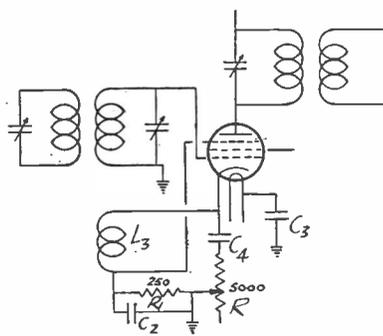


FIG. 1.

Condenser C3 from one side of the heater to earth prevents modulation hum.

increase the stage gain in any way—in fact it has a tendency to reduce it—and an extra IF valve is necessary to make up for the reduction. This is perhaps where the reaction method wins, for it greatly increases both the stage gain and the apparent selectivity.

The standard type of 465 kc transformer requires an additional winding of 25 turns of No. 33 SWG to be bunch-wound in the same direction as the grid coil. The winding should be slipped on so that it it towards the earth end. Should there not be enough room on the former, fasten a length of $\frac{3}{4}$ in. by $\frac{1}{2}$ in. diameter dowel to it. Then the regeneration winding can be wound on this additional piece.

Fig 1 shows the circuit of a typical regenerative amplifier. The feed-back coil L3 is connected in the anode return circuit, between cathode and common negative (earth), through the usual cathode

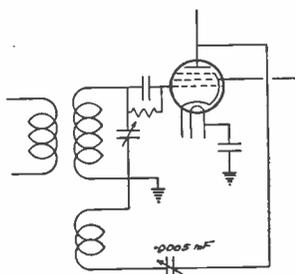


FIG. 2.

Regenerative 2nd Detector.

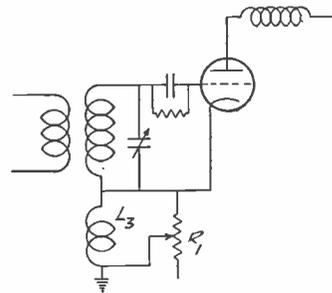


FIG. 3.

L3 and R1 as in Fig. 1.

means of the additional winding on the IF transformer coupled to the anode through a .0005 mF variable condenser. A receiver incorporating this same method was briefly described in the December, 1937, issue of this Magazine.

The use of a regenerative second detector stage also obviates the need of a beat oscillator. It is the same as a first detector operating at intermediate frequency, instead of the actual signal frequency. Fig. 3 shows a similar circuit using cathode injection. Note that the conventional grid leak and condenser must be inserted in the grid line.

Before starting construction of a regenerative superhet, the following points should be well understood. (i) Instability is caused by bad screening and long leads in the IF section. (ii) Do not trim the IF transformers with the reaction turned up. (iii) Take care to insulate the reaction condenser spindle from the metal panel.

● RF Regeneration

An annoying trouble in superhets is image interference. This happens when the frequency changer has insufficient selectivity ahead of it, or in other words, no pre-selection. Under such conditions there is a tendency for signals to be picked up at a frequency of intermediate plus oscillator frequencies, as well as the desired signal, which is intermediate frequency lower than the oscillator frequency. To

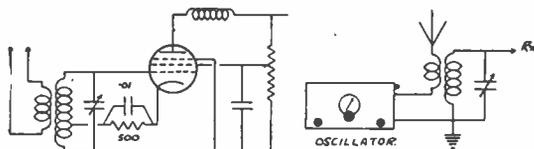


FIG. 4.

Using a separate oscillator for the RF Stage.

give the receiver a good image ratio often means the introduction of two HF stages. This is not always a necessary expense, as there are far simpler ways of improving the input selectivity.

One of the most effective of them is to introduce regeneration in the pre-selector circuit, which has the effect of raising the circuit gain at resonance for the desired signal. Fig. 4 shows the general arrangement when using a separate oscillator valve, instead of feed-back reaction. When feed-back is used, the control has to be re-set as the wavelength changes, but with the system shown in Fig. 4 this slight inconvenience is avoided.

Some readers who have both a TRF and a superhet should try connecting the aerial terminals of the two sets together, so that they run off the same aerial. Tune both sets to just below oscillation point; note the great increase in the strength of the signal on the superhet.

Figure 5 illustrates a cathode feed-back circuit in the frequency-changer stage. Reaction is obtained by means of a small winding L_4 coupled to the grid coil, and controlled by the variable resistor R_5 in the screen of the RF pentode. Figures 6 and 7 show the same system using electron-coupled reaction. There is no difference in performance in any of the three feed-back systems shown, and the intending constructor may choose whichever suits his layout best.

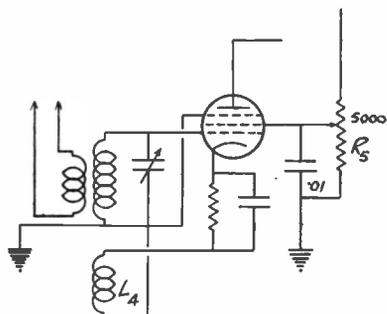


FIG. 5.

Cathode feed-back in the FC stage.

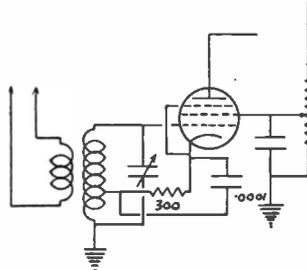


FIG. 6.

Electron-coupled regeneration in a pre-amplifier stage.

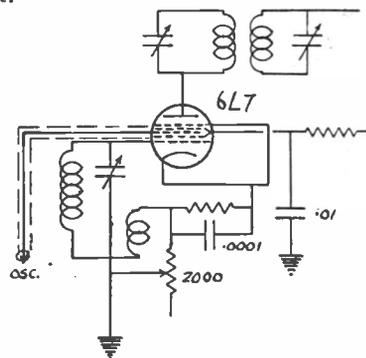


FIG. 7.

Regenerative mixer stage.

1.7 Mc TRANSATLANTIC TESTS

As last year, we are proposing once again to organise 160-metre tests with the States if sufficient support is forthcoming.

The period proposed is early in February, at intervals over a fortnight, between the hours of 4030 and 0730 GMT. A number of American amateurs are enthusiastic about such organised efforts to make 1.7 Mc give up its DX, and there is no doubt in our mind that it only needs co-operation on both sides, together with a little support from Old Man Conditions, to make 1.7 contacts possible across the Atlantic.

We of the Magazine have consistently urged that more attention be paid to our lowest-frequency band, and the results of past years, together with the ease with which Continental QSOs are made when European amateurs do show up on 1.7 Mc (note the log from Switzerland in this month's Calls Heard section) indicate that sustained effort at the right time will give results. The remarkable DX potentialities of 3.5 Mc are well known, and we visualise the time when 1.7 Mc contacts with the States before breakfast are as commonplace as they usually are on 3.5 Mc about October onwards.

As we know that 1.7 Mc is being well supported now by both transmitters and listeners, a section to stimulate listener interest will also be arranged for the February, 1939, Tests.

But we must hear about that support we can rely on now. If you would like to come in on the Tests, please drop us a card right away. We will do the rest.

"HAVE YOU HEARD?"—cont. from p. 19.

XGJ, "The Official Voice of China," Hankow, operates daily 1300-1330 on 25.66 (11.68 Mc), announcing in English, French and German, with programmes of news and music.

HJ4ABU, Apartado 217, Medellin, sends a plain folder type card giving frequency as 8,650 kc and slogan "Emisora Universidad de Antioquia." HCJB has been on 12.45 Mc and 48.1 m around 0300. OAX5C relays OAX5A on about 31.65 m and has been heard well; signs off with organ recording at 0530 and English announcement. The address is "Radio Universal, P.O. Box 112, Ica, Peru."

The present schedule of W4XB, Miami, is 1900-2100 and 0300-0600 daily; HVJ has been testing on 16.86 and 31.41 m and the new Swiss station has been heard to the schedule given above.

The Other Man's Station

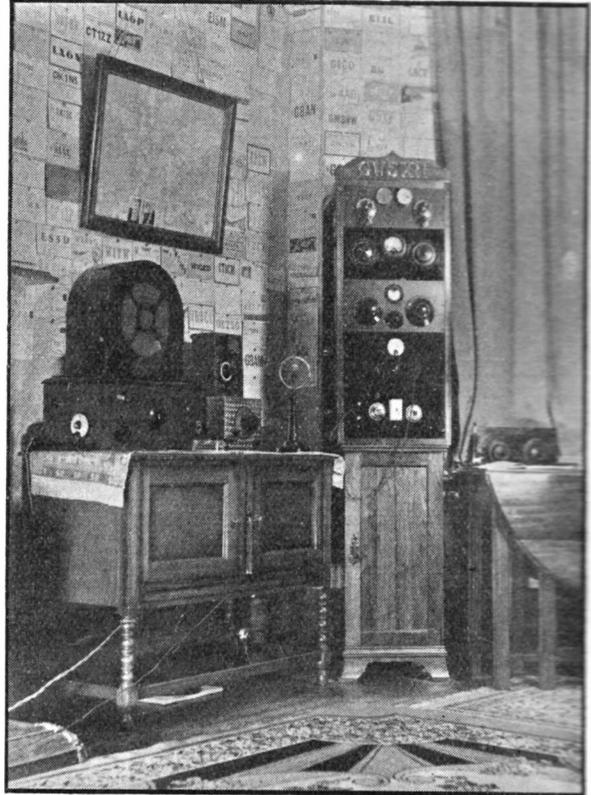
GW5XN

THE CLEAN-LOOKING outfit which is the subject of this month's Station Description is the QRP rig owned and operated by R. H. Clapp, GW5XN, 151 Stanwell Road, Penarth, S. Wales.

His particular bogey is the fact that the mains connection is 200 volts DC, and he is necessarily tied to low-power working till such time as the AC becomes available. An interesting foot-note to the power problem at GW5XN is that Penarth must be one of the few places in the country where they buy AC in bulk and serve it out to the customers as mercury-arc rectified DC!

In spite of these disabilities—there is no generator hidden away anywhere!—GW5XN has a remarkable DX 'phone record, which shows what can be done with genuine QRP even in these days of QRM. Apart from a great many of the more usual 7 Mc QSOs, by concentrating on 14 Mc since the beginning of this year he has worked 'phone to W1-4, W8, VE1, KA, SU, LU and U3, together with a number of European contacts. Though no Antipodean telephony QSOs have yet been obtained, he has had R5-6 reports from ZL and VK, and the latter has been hooked on CW. Six months of 'phone operation on 14 Mc has put 38 countries and 10 zones into the log book.

Our photograph shows the whole of the equipment. The transmitter line-up is 6A6 push-pull CO, capacity coupled to a 6A3 buffer-doubler, with a pair of 6A3's in push-pull as the final amplifier. This PA stage is plate-modulated by parallel 42's, with a 76 as speech amplifier, and the microphone is of the single-button carbon type. Heater current for the transmitter and modulator is obtained from a 6-volt car battery, which is kept on charge during operating periods. This involves the dissipation, in the form of waste heat (during the summer), of about fifty times as much power as the whole station consumes for actual transmission!



GW5XN has carried out a great deal of experimental work with aeriels, the most successful up to date being a 67-foot Windom link coupled to the PA. The aerial tuning network can be seen at the top of the rack, with the PA, doubler-CO, and modulator speech-amplifier stages in order underneath. The receiver is a straight 1-V-2, and a monitor and test set are also visible to the right on the operating table.

Both the station and the results are a credit to the operator, and amply prove that QRP will still get there if it is combined with patience and the careful study of aerial design and conditions.

A British Communication Receiver — At Last Eddystone Ring the Bell!

A few hours before closing this issue for press, we picked up the very latest news at the Eddystone stand at Radiolympia—and saw their new Type E.C.R. Communication Receiver.

In this brief announcement we can only give the main details, though they will be sufficient to interest readers in what is both a milestone and an achievement. The set is a ten-valve superhet, coverage 9-200 metres in four ranges, with separate band-spread and band-set tuning controls working against individual scales, and equal electrical band-spread on the five amateur bands. Crystal-gate is fitted, with phasing and selectivity controls, and

the valve line-up is tuned RF, separate oscillator and mixer, two IF stages, diode rectification, BFO, two LF stages with $3\frac{1}{2}$ watts output, and rectifier for the built-in power supply. Controls include separate RF and LF gains, and a signal-strength meter is incorporated, calibrated in R's and db. The over-all sensitivity is better than 3 mV for 50 mW output on all ranges.

The set is all-British, including the valves, Birmingham designed and built, and is a real engineering job throughout. The price is £45 nett, the only extra required being a speaker. We shall be giving extended information and a complete Test Report in our next issue.

Listeners' DX Corner

By
THE DX SCRIBE

We show you this month the receiving station of R. Lee, (BR51173), 9 Theobalds Green, Heathfield, Sussex. Mr. Lee has many certificates to his credit, and a full description is given in the text.

MR. R. J. LEE (whose photo appears above) is the sort of short-wave listener we like to introduce. His record is very interesting. It shows that he is ever on the watch and, always being glad to enter organised listening contests, he has made a reputation for himself as an SWL really useful to transmitters. His certificates include: HAC—Class 3 (BSWL), HBE, Winner of RSGB 1.7 Mc Receiving Contest 1936, 2nd place in BERU Receiving Contest 1936 (first in Britain), 2nd in the British Isles Section of the VK/ZL Contest 1935, 3rd in the same Contest in 1936, 5th in BERU 1937, and he has hopes that the 1938 BERU will see him placed higher still. By the way, we happen to know that our contributor Mr. Bourke of Jersey is first in this latter contest. Mr. Lee also heard KHRH (see August "Have You Heard?") in contact with Berlin at 0605 BST on July 12, using an 0-V-Pen. His other receiver is a 2-v. super-regenerative for 56 and 28 Mc.

We acknowledge here shack 'photos from I. W. K. Smith of New Malden, Surrey; J. Hunt of Chingford, E.4; and Sydney Janes of Croydon. As we hope to use these in future issues of the Magazine there is a supply for the present; we will let you know when we want some more.

● 56 Mc

We are very pleased that this band is attracting more attention among readers, and there appear this month four interesting logs from E. Crowe (Hampstead), G. F. Keen (West Hove), J. H. Cant (G6FU, Lewisham), and C. T. Fairchild (Brighton). Both the latter lists really show how many stations it is possible to receive on this frequency. Some of them are good DX, as a glance at the Call Book will prove. Mr. Crowe received a signal "W1APA" and then "G2GC," and is therefore not sure whether he heard G2GC calling the American. This would seem to be a case of harmonic reception from a British station, but as G2GC is in Durham, and Mr. Crowe in London, it makes it even more mystifying. Was it possible that you misread the call of G2XC, who is very active on this band? The time of reception was 11.45 p.m. and the signal only lasted half a minute. Of interest is the fact that he finds that a long multi-wave aerial is much better than half-wave doublets, confirming what appeared in the 56 Mc notes in August.

● 28 Mc

The patient shall be rewarded. At long last 28 Mc has begun to wake up again. P. Casling of Hale, Cheshire, has been receiving PY2CK on



'phone and sends in a log. Other good stuff (heard by your DX Scribe) includes H17G, W4FT, and W3EOZ on July 29, and VU2FZ, VU2FV, VU2AN, VU2FS, ZE's, VQ3TOM, VP6YB, W6KLU, W6DUC, with some unidentified signals, on Sunday, August 14. In our SLP this month we shall expect a bumper log for 28 Mc, as the season has started in real earnest! A simple 0-V-1 will give all the results needed for DX logging on this band as well as 56 Mc; it is advisable to add a "passenger" RF stage to stabilise the whole receiver, and stop swinging signals when the wind is blowing.

Mr. Casling has received a card and 'photo from XU8MR in Shanghai, and noticed that conditions were marvellous on 14 Mc between 2300 and 2400 BST on August 6. VK5JS at S6 was a surprise, as he was logged at 2307 BST! He remarks on the amazing number of S. Americans to be heard lately, and also mentions receiving VQ3HJP, who has a T6 note and works chiefly on the HF end of 14 Mc. Another Tanganyika station to listen for is VQ3TOM, very active now on 14,020 kc. He is ex GM2TM.

● Queries

W. R. Gilmore, 35, Thornhill Park, Knock, Belfast, N.I., sends us some queries. He heard an HK on 7 Mc calling a W5 on 'phone and asks if W's use telephony on 40 metres. The answer is that no station in the U.S.A. or its possessions may operate 'phone on 7 Mc. NY2AE is in Panama Canal Zone which frequently carries the prefix K5; the two are the same country. VR6AY operates infrequently now on 14,310 kc (approx.). Cards for stations of unknown QRA, sent via the postal authorities of the country concerned, may or may not reach their destination. In the first place, they will only obtain them if they are licensed, and secondly, if they are unlicensed, they may get caught and fined just because you have addressed your card to a call-sign. Motto: Never address a

card "blind" to a station call, if you are not sure he is licensed. It is not fair to the operator.

S. B. D. Young, G2YY of Berwick, is wondering if signals from Australia were received "the long way round" when he worked VK6MU at 0045 BST on three occasions during July. We think that on 14 Mc they will always choose the *dark* path from the Antipodes, and therefore it would appear that in this case the signals travelled over India and Russia to Europe, as the time would be 8.45 a.m. in Perth on the same day.

Talking of VK6, you will remember that N. Stevens of London, N.W.10, asked if this part of the world had ever before been received on 'phone in England. T. W. Hickinbottom, 29, Gibbs Road, Banbury, Oxon, has had a card from VK6YZ confirming a report sent to him on March 20. The input was only 18 watts, and he was unable to raise anyone at the time. Other QSLs received by Mr. Hickinbottom include HP5A, W7BVO, HI3N, VP6YB, HJ1ABP, HJ1ABR and K4EMG.

● QSLs

Yes, we must give you the usual paragraph on QSLs, as otherwise the Corner would not be complete! We get more letters on this subject than on any other, so if some of you feel left out, you will understand that space is limited. But we do our best to include everybody. Since March *this year*, S. F. M. Edwards, Birklands, Hornsea, Yorks, has received verifications from 105 countries in all continents! It should be noted that he does *not* send IRCs, but full reports instead. These include all the data we have recommended in recent issues, both in the Corner and elsewhere in the Magazine, and when he has received a card, he does not just stop sending reports. Results are: four cards from VQ4KTB, one from ZE1JA who wishes it to be known that his station's cards are reserved for actual contacts, but he will acknowledge reports containing useful information, and F18AC and NY2AE have also QSL'd. This only goes to prove what we have always maintained. Send a really detailed report covering days of listening to the same transmission, give comparative signal strengths of other stations heard in the same area, make a note of the fading over a long period of time, and tell the operator what station, if any, was interfering with him, especially if the latter was using crystal control, as this will enable a frequency change to be made if bad QRM continues. It will not be necessary to enclose an IRC if all this is done thoroughly, as it is obvious that the report is of the greatest value to the most "hard-boiled ham." Finally, Mr. Edwards tells us that VQ4KTB uses 30 watts and is now to be heard on 14,020 kc, F18AC with 50 watts has contacted 87 countries, TF3C puts a wonderful signal through with only 10 watts, KA1CS and KA7EF were heard at 2230 GMT, and W5BCU uses 75 watts and would appreciate reports from British listeners.

I. W. K. Smith (BSWL744), 264, Malden Road, New Malden, Surrey, has received cards from ZB1E, VK3WA, W4DSY, W7EKA and W7AMQ. N. J. Neame, 39, College Place, Brighton, 7, would like to see an international stamp bureau where stamps for reply postage could be exchanged for British stamps. The cost of IRCs handicap a serious listener, and he asks if it is necessary to send a 6d. coupon for a reply from U.S.A. We are afraid it is, but here again, any reliable stamp

dealer would be pleased to sell 3-cent. stamps to you. QSLs were received from CO2LY, VS7GJ, K4ENY, PK2WL, ZB1T and CT2BC. Ahmad Nawaz of Simla, India, sends a list of British calls. He tells us that VU2BG is located in Dibrugarh, Assam and never sends QSLs. That area has recently been submerged following violent storms and hurricanes, and Ahmad thinks it would have been cheaper to have QSL'd everybody and saved himself from the wrath of the gods!

● Rueda Del Oeste

More details of this organisation have come in following our remarks last month. The Association was apparently started by LU8AB and caters for listeners as well as transmitters. If you want information write to LU8AB, who will put you in touch with the local Association Manager in your country (if such exists). The rules are very strict, and you must count your friends' enemies as your own enemies!! (We are not going to join.—Ed.). We are grateful to Bill Wedge, 6, Manor Court, Forest Hill, London, S.E.23, for sending the rules along, while L. Levitt, 2DOD, Well Lane, Kippax, Leeds, informs us that membership of The Western Association is open to amateurs throughout the world.

● News from U.S.A.

We are pleased to have had a letter from Roger Legge, 20, Beethoven Street, Binghampton, N.Y., U.S.A., the home of the SWL! He sends some interesting details of reception on 7 Mc 'phone, EA8AB, 8AE, 8AS, 8AK (Canaries), EA9AI, 9BJ (Spanish Morocco), TG5, YV3AQ, HK1SM and CT1GJ. Up to the present he has heard 118 countries on 'phone of which 108 have been verified. QSLs received include ZP2AC, ZE1JR, VK7JB, VK6WS, EA9AI, VP1DM, VK9MI, SUIRD, CN8AV, and numerous S. Africans. In addition to this he has logged 250 British amateurs on 'phone in four years.

● Early Morning Listening

We made some remarks last month about Mr. Rutter not wishing to wake the house in the early morning, but we apparently misunderstood him! The trouble is that the opening and closing of doors, and the general noise of the alarm, may possibly wake those members of the household who do not think early morning radio is so hot. He feels that other people may be faced with the same difficulty, and he thinks that SW listening should not be the cause of discomfort for others not interested. We quite agree, and trust that our early morning SLPs are not encouraging selfishness in this respect. Mr. Rutter continues by remarking on the really good conditions of the last six weeks. Australians and S. Americans have never been heard in large numbers, and Asians have been really consistent. Some unusual stations heard were XU1MW, PK1VY, PK3GD, HK3LC (ex HK3LDC who QSLs), YV6AM, VQ2HC, KA7EF, CE2BX, and PK3WI at the unusual hour of 0932! We really think that PK3WI came the long way round in this case. He queries VQ1AR (VE1AR?) whom he believes he heard at 1850 BST on August 6, but he is not sure of the prefix. Can anyone oblige with a suggestion? VK3BM, using a V-beam with 16 elements per leg, has been heard by most people with remarkable consistency, which proves the thing really works!

● We put our foot in it

Mr. Lindsey Pairman of Dunoon, Scotland, suggests we be more careful in guessing at people's nationality. Just because he does not always send IRCs does not prove he is Scotch! He tells us he was born in Newcastle and thinks that the suggestion that Scotch listeners are too mean to buy IRCs is dangerous! Well, your DX Scribe is Scotch, and he doesn't mind; *and* he has only sent about four coupons in his life—but has thousands of QSLs! Lindsey is in a holiday resort and would welcome visitors at this time of the year—He hopes to have a GM3 call soon.

● ZK1AA

Many have reported reception of this station, and the time has always been between 2300-2400 BST. Signal strength is very good, and absence of fading has led us to believe that this transmission originates in Europe or U.S.A. W1HKK, on holiday in Budapest, was heard discussing the problem with a G station from HA1P, saying that he had reason to believe that the signal came from Hungary. We have never received anything from the ZK part of the world at the time given, although VK is to be heard around midnight. ZK1AA has said that he is "a BC station using 980 watts input," but we will not believe in him until a verification is shown us by someone!

And while we are on the subject of rare stations, we give you some QRAs. ZD4AB, T. Hall, Engineering Dept., Post Office, Accra, Gold Coast. CN1AF, Jose Sierra, 19, Rue des Sources, Tangier

(IZ), North Africa. XOH5NK heard on CW by S. B. Osborn, 51, Eversleigh Road, N.3, is the call of a Finnish amateur on board a ship in the Atlantic.

Mr. Osborn also remarks that he heard G2QY on 28 Mc when the latter was actually transmitting on 56 Mc. This may be due to the fact that the 6L6 doubler used by G2QY was radiating some 28 Mc component, or it may have been caused by the detector valve in the receiver, oscillating on 28 Mc, beating its second harmonic with the 56 Mc signal. Thus "overtone reception," which is not uncommon.

● CW without a BFO

G. W. Barron (2DSN) of Whetstone, N.20, sends us a log covering a year's listening, and during that time he has heard 86 countries. For CW reception he relies on the "plop" of the keyed signal, as no beat oscillator is used, and telegraphy is easily copied by this means, especially when slight modulation is used by the CW station. In addition to the above, he has logged all States of U.S.A. except Nevada, but no doubt W6FUO has now given him this missing one on 14,225 kc.

John Laing, 34 Holystone St., Hebburn-on-Tyne, Co. Durham is ready to stand by for any test transmission on 1.7 or 3.5 Mc.

● Set Listening Periods

These continue to be popular, but many people find it difficult to get logs through in time for the next issue of the Magazine. Therefore, we think it would be better for all concerned to set periods

DX FORECAST FOR SEPTEMBER 1938

(All Times GMT)

	7 Mc	14 Mc	28 Mc
North America.			
Eastern States of U.S.A., VE1, 2, 3, VO, K4 and West Indies	00.00-06.00	19.00-09.00	16.00-21.00 (part)
Western States of U.S.A., VE4, 5, XE, K6 and 7	05.00-06.00	05.00-08.00 22.00-24.00	17.00-19.00
Central America	00.00-06.00	22.00-08.00	16.00-22.00
South America.			
All	00.00-06.00	19.00-08.00	09.00-11.00
(Note:— S. America is frequently heard when U.S.A. signals are absent)			15.00-21.00
Africa.			
ZS, CR7	22.00-00.00	18.00-20.00	08.00-11.00 14.00-18.00
VQ2, 3, 4, OQ, ZE, ZD2, 4, FQ8, FB, etc.	22.00-01.00	16.00-20.00	08.00-12.00 13.00-18.00
FA, FT, CN, SU, ST	20.00-08.00	All Day	08.00-20.00
Asia.			
J, XU, VS1, 2, 3, 6, 7, UO, FI, HS, etc.	Nil.	16.00-20.00	08.00-10.00
J, XU	Nil.	08.00-09.00	
YI, ZC6, VU (north), U8, 9	22.00-24.00	14.00-21.00	08.00-11.00
Oceania.			
VK, VK9, VR2, 4, 6	21.00 (VK only)	04.00-09.00 18.00-20.00	07.00-10.00
ZL	06.00-08.00	06.00-10.00 18.00-20.00	09.00-10.00 (rare)
PK, KA, Guam.	Nil.	16.00-19.00	10.00-12.00

nearer the end of the month, i.e., results from the SLPs given below should reach us by the 12th October, which is ample time for everyone. We endeavour to vary the hours and dates each month to obtain a comprehensive survey of the bands. Also, please let us have more logs of the frequencies other than 14 Mc, which still carries the bulk of the listening. This time we are publishing the best ten 14 Mc logs.

- 1 Sept. 21 0700—0830 BST (1½ hr.) — 14 Mc.
- 2 Sept. 24 2300—2400 BST (1 hr.) — 1.7 Mc.
- 3 Sept. 28 0700—0800 BST (1 hr.) — 7 Mc.
- 4 Sept. 28 1800—2000 BST (2 hr.) — 28 Mc.

There is no doubt that QRN spoilt our last 1.7 Mc period, and we are not surprised! Make a special endeavour to log CW calls in the 28 Mc period, as the lack of QRM will help on this band. C. A. Betts, 19 Wychall Lane, Birmingham, 30, suggests that we include a short resumé of conditions at the time of reception, with barometric pressures, temperature, noise level and any other useful data; this data to be kept down to as few words as possible, and to accompany the details of receiver and aerial direction, etc. It is a good idea, and should be followed; it may mean we shall have to cut out some logs, but it will greatly increase the value of our SLPs. Please tabulate calls strictly in *alphabetical* order, not in order received. This is important.

Mr. Betts addressed a card to "CNI AF, Tangier" and was agreeably surprised to receive his QSL in reply. The input is 50 watts into a "zepp" aerial and CNI AF speaks only a few words of English.

Many have written to say they do not agree with Mr. J. E. Laing that the amateur bands are wasted space which would be better employed by BC stations. H. E. Sutton (2AAS) and D. Skipworth (2FFD) feel that this thought can only be engendered by the behaviour of certain 7 Mc 'phones. We regret to say that there are still some amateurs who are unable to conduct their contacts in accordance with the terms of their licences—at least the tripe they talk does not appear to be of any experimental nature—but we feel that this useless type is disappearing, and the G3 appears to be trying his best to talk sense and in general behave himself on the air according to the best standards. We dislike "hi" and "dit dit dah dit dah" intensely!

K. E. Roberts, 2 Chestnut Close, Southgate, London, N.14, heard a signal giving an address in Guatemala; this would undoubtedly be TG5 who chooses a peculiar call, and is now operating on the LF side of 14 Mc. N. Vaus, 54 Bingham Road, Winton, Bournemouth, gives fuller details of this station. The reason he does not use any letters after the "5" is because they are not yet allotted to him. Do not overlook TG9AA on 14,380 kc. Mr. Vaus would like to get in touch with other SWLs in his district or **correspond** with anyone interested in the short waves. His best reception for the month included **KAT7EF** in Negos I. Phillipines, CR7BH, and VK2XS at 2220 BST; the latter is not unusual, but is confined to very short periods, and it is therefore not mentioned in the DX Forecast.

● Frequencies

I. C. Fletcher of Bexleyheath again contributed some accurate frequencies. XU8CM 14320, VU2KK 14305, VU2JM 14375, VU2FZ 14350, NY1AD

14345, PK3AA 14375, FB8AB 14375, ZE1JN 14370, PK2WL 14185, and KA7EF 14180. The last two only are 'phone stations. Of interest is the fact that AC4YN (Lhasa, Tibet) wrote on the back of his card to Mr. Fletcher that he always appreciated SWL reports, as invariably he finds these of greater value than reports given by the station with whom a contact is made. He continues by saying that any card carries that feeling of friendship which can never be ignored. A few more transmitters like Reg. Fox, AC4YN, would give us a better amateur world! Mr. Fletcher agrees that we should publish lists of stations who fail to QSL, but the majority of opinions on this point indicate that we should not. To clear the matter up finally, a list of 16 stations is sent by him. It so happens that the DX Scribe himself has 9 of these cards—more than half—so what one man gets, the other doesn't, and we rather feel that no useful purpose will be served by putting anyone in the pillory for not QSL'ing. It is sufficient to mention those stations who *have* sent cards, which is always of interest.

● DX Forecast

This Forecast has met with widespread approval, and as a result of many requests we are enlarging it to include 7 and 28 Mc. Do not be disappointed, however, if you hear little DX on 7 Mc. It is rather early in the season yet, and the times given are more an indication when the different parts of the world may be expected. It is quite on the cards that 7 Mc may break through with wonderful DX, and again it may produce nothing. It is for that reason we have not previously included this band. 28 Mc is showing signs of life, as already mentioned.

Leslie J. J. Morgan, 45 Parkwood Road, Bournemouth enquires if it is possible to make up a 56 Mc coil on an Eddystone 6-pin former. The answer is that two turns will tune the band to a nicety—we have tried it. Use a two- or three-plate condenser for tuning. Cards have been received by Leslie from VK3KX (the mighty voice on 14055 kc), W5YW and XE1GE. R.W.H. (signature illegible), "Crowndale," Hainault Road, Chigwell, Essex, has also received VK6MW on 'phone, and had an interesting experience after erecting a doublet aerial in the same direction as his normal 100-ft. one. Result, eight amateurs in South and Central Africa, and twenty-two VKs, which he was unable to receive on the 100-ft. aerial, although this latter wire picked up the PK's in fine style. Motto: Try changing your aerial if you are unable to bring in a given portion of this small globe! In two years he has logged 74 countries on 'phone, including nearly 2,100 amateurs.

Our old friend H. Suggden of Bradford gives us some last-minute news of TG5. His QRA is now changed and should read—John Guillen, P.O. Box 12, Guatemala City. Other DX received includes W9EOZ (N.D.), W9CPM (Neb.), W7AHS (Idaho), W6FUO (Nev.) and PK2UU, a new one in Java. Malcolm Geddes, G2SO, 44 Lindisfarne Av., Leigh-on-Sea, whose station description appeared recently, wants to see more logs of British Isles stations from the Colonies and Dominions; you will find that we have two overseas logs this month, but we can do with more. Malcolm as a transmitter gives us their viewpoint by saying that logs on reception of 1.7, 3.5 and 56 Mc signals are appreciated. P. Trinder, 31 Clarence Rd., Sudbury, Suffolk, would like to correspond with any SWL

anywhere. He, together with nearly everyone else, has received a card from VQ4KTB, who seems to be a good amateur in every sense of the word.

● Exchange Racket Again

Bryan W. Montague, "Onega," Chipstead Valley Road, Chipstead, Surrey, is annoyed at an advertisement he has seen, "Wanted QSL cards, not G's, good prices paid." We really think that things have come to a pretty pass when anyone can be so unusual as to require any QSL card, unless of course there is some special reason for it, unknown to us. Most people look upon cards as "spurs won," but to buy anyone's cards—Gosh, and other things! Bryan mentions that there is a G5 in his district with R9 plus key-clicks, and hopes that this friendly hint will eliminate the trouble. (If it doesn't, better write to the "Old Timer"—Ed.) We also acknowledge photos from Bryan and Gordon W. Lane, 31 Marriott Rd., Coventry. We hope that these two will appear in print in due course.

H. Owen, 2 Campion Av., Bashford Pk., Newcastle, Staffs., queries "OQ4C," but we feel sure that you have transposed the Morse for "Y" as OY4C is supposed to be in the Faroe Is., though there is no definite proof that he is. There is no such call as OQ4C. Jas. W. Shaw, 19 St. Ives Mount, Upper Armley, Leeds 12, does not wish to see lists of stations who have a bad QSL reputation, and mentions that he is all in favour of the friendly atmosphere created between transmitter and SWL. He has cards from YI2BA, SP2HH, K2ENY (Virgin Is.). C. Usher, 24 Carlisle Rd., Dartford, Kent, designs all his own apparatus (the Scribe's hat comes off) and is at present constructing an 8-valve super. His "line-up" is as follows:— Presel. VP21, Mixer X22, Osc PMHL, 2 stages 465 kc K9's, IF VPT210, Det. and AVC HDD, BFO HL, Audio HPT. It will be equipped with mechanical and electrical bandspread and R meter. We look forward to receiving details of the results.

K. Holyland of Harrogate noticed that W1BVO and VE5ACN put through outstanding signals on July 11 between 2130—2230 BST. This is unusual, but not unknown. He heard W1BVO say that he had received over 500 SWL cards during June and could not possibly hope to reply unless postage was prepaid.

Lionel J. Le Breton is the BSWL QSL Bureau manager, and is therefore in a position to enlighten

us on quite a few things. First, he points out that Mr. Osborn's 1.7 Mc log was in reality reception of 3.5 Mc signals, because none of the stations listed worked on 1.7 Mc that night, but were on 3.5 Mc all right. This was caused either by plugging in the wrong coil, or receiving them as second harmonic signals (as already explained by 28 Mc reception on 56 Mc) thus bringing them out on 1.7. We think that the wrong coil was used in this case.*

VU2EU wishes it to be known that he using a V-reflector, would appreciate reports, and is setting aside 200 special cards for listeners. His frequency is 14380 and he used to sign VU2CR. Address your card to W. H. S. Metcalfe, 3rd Indian Div. Sigs., Meerut, U.P. Lionel mentions ZC6AA as being suspicious, but his QRA is T. Fletcher, No. 2, W/T Coy., Royal Signals, Sarafand, Palestine. He is a friend of ZC6AQ and is found at the same address.

● A Good Idea

We must also mention a good idea suggested by Austen Johnson, 282 Jiggins Lane, Bartley Green, Birmingham, 32. He has drawn up the 14 Mc band in the form of a straight line marked off in frequencies. Well-received stations are then noted against their "spot" in the band, and can be found quickly relative to the positions of other stations heard. The American 'phone band cannot be dealt with in this manner, but a few of the rarer stations only are marked. The best times for reception is given against each call.

Finally, E. Strowbridge of London, N.W.10, asks if anyone has heard 14 Mc 'phone signals from Germany. No amateurs in that country are allowed to use 'phone on any band; there are one or two technical schools which have permission, but they are rarely working. Douglas Summers (2DWH), Tobacconist Farm, Minchinhampton, Nr. Stroud, Glos., informs us that he overheard W1COO tell a G that the Americans have used up all the calls in the ninth radio district. So you will shortly be hearing WA9AA, as they will insert a letter between the "W" and the number.

* ["Overtone reception" can be proved by tightening reaction. If the signal strength increases, it is second harmonic or "overtone" effect. On the fundamental, of course, increasing reaction beyond oscillation point weakens the signal.—Ed.]

CALLS HEARD

**SLP (2), August 7th,
18.00—20.00.**

28 Mc.

A. P. L. CASLING, 6 Ollerbarrow Rd., Hale, Cheshire.
CW—LU9AX.
'Phone—PY2AC (?), CK. SP2HH.

**SLP (3), August 9th
06.00—07.30**

7 Mc.

D. H. TOMLIN, 32 Moorsyde Avenue, Walkley, Sheffield, 10.
'Phone—ON4BA, BM, PC. OZ5BW.
F3QS, 8DP. G3GS, OT, 6LV, 8AW.
GM3JC.

C. E. WATSON, Jr., 45 Lattice Avenue, Ipswich, Suffolk. HF Pen-v-Class B amp. All LS.

'Phone—LX1AY. F3SP. ON4BM, OT, FS, JC, PC. F3CY, CJ, 8DP, SV, WU. G2AV at OZ5BW, FX, 3OT, GS, 6JZ, 8LS, LV, PT.

D. F. CHATT, BSWL959, 23 North View, Sherburn Hill, Co. Durham. 4v SH, LS.

'Phone—G2FX, 3LS, 6LV, 8LV, PT. GM3JC. F3CI, RR, SB, 8SV, TG, WU. ON4BM, FS, JC, PC. OZ5BW.

E. STROWBRIDGE, 11 Leigh Gardens, Kensal Rise, N.W.10. 6v SH.
F3IH, 8DP, SV. G2FX, 3GS, LS, 6JZ, 8PT. GM3JC. LU3KA. ON4BM, FS, JC, OT, PC. OZ5BW. SPICC.

C. A. BETTS, 19 Wychall Lane, Birmingham, 30. SH5.

'Phone—F3CI, MO, QS, UL, 8DP, DQ, SV, TG, WU. G2FX, 3GS (Jersey, C.I.), JN, PC, 6JZ, LV, 8LV, PT. ON4BM, FS, JC, OT, PC. OZ5BW.

**SLP (4), August 10th
22.30—24.00**

14 Mc.

H. OWEN, 2 Campion Avenue, Basford Park, Newcastle, Staffs. Eddystone "All-World Two."

'Phone—CT1DA, JO, PR, QA. G8DU. HA8Q. HK3LC. SP2HH. VE1DR, EI, 2BV. W1BLO, COO, EBO, JG, JWV, 2AU, DGH, DH, DYR, ICA, QI, 3BGT, BMA, EWF, EYS, 8AVB, JOE, NEX, NSF.

CW-SM5OF, VR. VE2DQ. VU2BG. WIATZ, HRN, ICI, KTG, 2CGH, IWM, 3DVE, GKX, 8GMH, MJK, OUK, PMJ, QHX. YR5MV.

C. CANNARD, 3 Mt. Pleasant, Hallen, Henbury, Nr. Bristol.

HABO. CT1QA. SUIKG. VP9G, L. CO2WM, 8BY. CE1AO. PY1GO, 2LM, 4BI. VE1BK, JP, DR, 2FK, 3MD, QJ, NP. LU5AN. VP3AA. W1KJ, JWV, GQA, 2BFV, ALO, 3EYS, 4CPG, 8AVB, MRM, BGP (Portable), BOQ, JOE, CNA, 9FJ.

R. W. HARLAND, Chigwell, Essex. 3v Battery.

'Phone-C5CV, 5ZG, 8TY. W1BLO, EBO, GQA, JWV, KJ, 2ALO, AU, BFV, BZ, DH, IXV, JKO, KDD, QI, 3BEI, PC, 5BEN, 8AVB, CNA, EIN, JOE, NSF, POQ, 91LW, PEQ. VE1BK, DR, 2BG, 3MD. SUIKG. CN8AM. CT1DA, PR, QA. SP2HH. FT8AU. VP3AA, 9G, L. PY1GO, 2CK, 4BI, CT, 5AQ. NY2AE. CE1AO.

BR5 3129, 8 Belmore Road, Thorpe, Norwich. 5v home-built.

'Phone-CE1AO. CN8AM. CT1DA, PR. CX2CO. LU5AN. PY1GO, GU, 2CK, LM, 4BI, CT. SUIKG. VE1BK, DR, EI, JP, 3HY, QJ. VP9G. W1JFG, KJ, 2BUX, QI, 8CNA, NSF, 91LW.

H. SUGDEN, 15 Arneliffe Terrace, Legrams Lane, Bradford. 5v SH, all LS.

CT1GO, GA. C6GA, 8WS. HABO. HK3LC. LU5AN. PY1GU, 2CK, LM, 3EN. SP2HE. SUIKG. VE1DR, EI, BK, JP. W1BLO, COO, DHS, EBO, GQA, IXO, JFG, JWV, 2AU, BFV, 2DGH, DH, DYR, IJD, IKV, JKO, QI, 3BEI, BGP, FII, PC, 4DRZ, 8CNA, JOE, MRM, NSF, POQ.

SYDNEY ASHWORTH, 53 Richmond Terrace, Darwen, Lancs. 4v SH.

'Phone-CE1AO. PY1GU, DO, GR, 2LM, CK, 4BI, CT, 5BJ. W9L. CO1BY, 2WM. VE1DR, EI, JP. W1EBO, JFG, GAN, KJ, JWV, BLO, 2DH, AU, BZ, BFV, QI, BFG, IKV, ALO, 3BEI, BGP, PC, FSC, CZJ, 4CPG, 8JOE, CMA, NSF, BGP, 9MM. SP2HH. CT1GO, DA, PR, QA. CN8AM.

D. J. MATHERS, BSWL1012, 36 Lower Beechwood Av., Ranelagh, Dublin. S.G.-Det-Pen and Adaptor.

'Phone-CT1DA, EJ, JO. EI2L. F3EQ, RT. HA4M. LU5AN. OK1LV. PY4BI. SUIKG. VE1EI, 3QJ. W1BLO, BR, COO, EBO, JKV, KJ, 2AU, DH, IKV, JKO, JWV, 3BEI, FII, PC, 8JOE, NFR, POQ.

EDWIN S. G. FISH, BSWL738, 52 Muir Drive, Irvine, Ayrshire. 0-v-1

CO2WM. F8XT. LU7AG. NY2AE. OK1LV. PY5BJ. SP2HH. VE1EI, FJ, FQ. VU2BG. W1BLO, COO, JFG, JWV, KJ, WE, 2AU, BFZ, BZ, DH, GW, 3PC, 60AH (portable in 3rd Dist.), 8BGC.

PAUL W. GIFFORD, Ellerslie, 21 Bengal Road, Winton, Bournemouth. Battery 0-v-2.

'Phone-W1BLO, EBO, JFG, KK, 2AU, BFV, BZ, DH, GW, KDD, QI, 3BEI, PC, 8HXW, JOE, NEX, NSF, POQ, QVR, CNA. CT1DA, PR, JO, QE. HABO. HK3LC. G2TR, 3BM. LU5AN. PY2CK. SP2HH. SUIKG. VE3QJ. VP9G, L.

E. STROWBRIDGE, 11 Leigh Gardens, Kensal Rise, N.W.10. 6v SH.

'Phone-CN8AM. CT1DA, JO, PR, QA, QE. G2AI, GL, 5CV, ZG, 6AW, LW, OV, ZI, 8SB, TY. HABO. LU5AN. PY2CK, LM, 3EN, 5BJ. SP2HH. SUIKG. VE1EI, DR. W1BLO, JFG, JWV, 2AU, BFZ, DH, 3BEI, PC, 8AVB, CNA, EIN, JOE, NSF.

C Calls Heard Overseas

AHMAD NAWAZ, BSWL990, "Moti Hall," Solan, Simla Hills, India.

14 Mc 'phone-EI2L, G2MF, XY, IS, 5BJ, ML, OV, VJ, 6XR, TZ, BW, DL, 8OF, KD, DM, OG, FB. GM3DD.

J. A. BATEMAN, BSWL110, 39 Golf Rd., Upper Darby, Pa., U.S.A. 6.4.38,

barometer 30.06, temp. 74, wx clear, rel. humidity 76, reception excellent.

14 Mc 'phone-CM8RJ (RS 48), MN (47), G2TR (46), TR (48), 6IA (36), 8OF (36), 2TR (47), 8OF (48), 6WX (48), 6UX (48), 8SB (58), QH (47), 2XY (58).

6.5.38, barometer 29.96, temp. 68, wx rain, rel. humidity 62, reception poor. G6MO (RS 47), 2AG (47).

6.8.38, barometer 29.94, temp. 78, wx clear, rel. humidity 82, reception poor. G2DH (RS 36).

6.17.38, barometer 30.06, temp. 74, wx clear, rel. humidity 84, reception fair. CI2CC (RS 48). G6WX (48). CW6GJ (48).

6.18.38, barometer 30.21, temp. 84, wx clear, rel. humidity 84, reception fair. EI2L (RS 48). CW6JW (47). G5TP (36), 2MF (58), 6UX (47), 2PU (47).

1.7 Mc.

B. W. F. MAINPRISE, received while at Vevey, Switzerland. 1-v-1, June 11-12.

EI6FP. C2CXP, HWP, JLP, MIP, NZ, RB, YYP, 3FM, 5AKP, IU, RY, UA, VDF, XLP, 6CX, LM, NAP, VC, ZR, 8OJ. G15HVP. GM6RIP, 8PMP. CW6AAP.

General 14 Mc.

N. J. RUTTER, 23 Bouverie Avenue, Swindon, Wilts. 9.7.38-10.8.38. 0-v-2, All LS.

'Phone-CE2BX, 3BH, CO. CN1AF. CO2BY, RG, RJ, WM, 8YB. CX1AA, 2CY, FB8AH. HC1FG, JW, 2HP. HK3AG, LC. K6OQE, KA7EF. LU4PB, 5AN, FG, 8AB, AC, 9FN. LX1AI, AV, TW. NY2AE. OA4AI, AW. OH2OI. PKIMX, RI, VY, 3GD, WI. PY1DK, EW, FN, FR, GJ, GO, GR, GU, HJ, LU, UJ, 2BA, BH, CK, CO, ER, HO, HS, HV, IT, JC, KD, KP, KR, LM, MI, 3EN, 4BI, BU, CB, CH, CT, 5AR, BJ, BL, QI, 6AG. SUIAX, KG, RH. TF3C. TC5, 9AA. TI1AF. U3BX. VE3MD, OI, QI, AHN, 4ADV, 5PE. VK2AHA, AFO, AQ, BI, BK, BZ, EQ, HS, LZ, NQ, NS, NY, OO, VA, VV, YQ, 3BM, HG, KX, PE, WA, ZL, ZX, 4DK, 5AI, BF, SW. VP3AA, 6MY, YB, 9L. VQ2HC, 4KTB. VU2CA. W5BEK, BGT, DUK, FFM, FSS, 6AH, CQS, CUG, DUW, FPN, FPU, FUG, GVM, IKQ, LS, MLC, NCW, NNR, NTX, OCH, OI, YU, 7BVO, EKA, FEZ, 9GGS (Col.). XE2FC, IK. XU1MW. YV1AP, 6AM. ZE1JA, JR. ZS1AX, 4H.

MARTIN C. BOURKE, 2AOU. "Credition," Samares, Jersey, Channel Islands. 10.6.38-10.7.38.

14 Mc 'phone and CW-CE3DG. CM2AZ, BK, BO, RZ, 7AE, AO. CO2KZ, KC, LY, RJ, WZ, 6OM. CR7AU. CT3AB. CX2AG, BT, 3JC. EL2A. FB8AH, AB. F18AC. HM2PB. HK2LVC, 3AL, GL, 4EA, K, LE. HS1BJ. J2J, KJ, 7CR, 8CD. KA1AA, ME, CS. K4EMG, ESH, RJ, DTH, 5AA, AC, AH, 6MVV, NVJ, NZO, OCL, OQV, OVN, PGQ, PIN, PTW, PPR, PVA, 7GIE, GSC. LUIDJ, FC, 2HF, 3DH, FB, FV, 4BH, 7DS, 8EN. NY1AA. OA4UR. OQ5AM, AQ, AS. PK1MF, 2WL. PY1DC, DS, HV, GJ, 2AK, EC, HN, LM, 4AP, 5BJ. ST2CM, 6KR. TI2AV. UE8ME.

VP1BA, 4TI, TK, 5GM, 6FO, YB, 7NC, NR, 9G, L, O, X. VE5ACS, AAD, EC, ES, GI, KC, MT, NF, OJ, OT, SR, VO. VO6D. VQ2HC, 3HP, 4CRI, CRT, KTB, KTF. VR6AY. VS7MB, RF, GJ. VU2EB, FD, FV. VK2AEK, AFN, AHA, BK, BO, EJ, FM, GE, LA, NG, NY, OQ, PH, QM, TY, UC, 3BG, ES, HG, JA, KS, KX, MW, PE, PS, WA, 4BB, CG, GE, JU, KC, NO, PX, RT, RY, TY, UR, UL, VD, VU, WD, 5FM, HF, HK, IF, JS, LW, ML, RR, WK, WR, 6AF, OQ, 7AG, NC, YL, 9DM, VG.

W5ACE, AQV, BYX, CPR, CWW, DG, DJI, DNV, EVD, FFX, FJE, FNH, FNO, FRO, FRZ, GGV, GHP, GRE, GRL, GUZ, HL, HWD, PJ, PS, SBO, VEW, XED, YW, 6AHP, AOJ, AWP, AX, BLE, CLZ, CUH, CVW, DBB, ELC, EOU, ENW, ERH, FDY, FK, FKG, FOW, FZ, FZY, GK, GRL, HBF, HX, ISB, JGG, JIN, JJA, KBL, KJK, KKG, KIX, KUT, LOJ, LUR, LVQ, LYM, MCG, MGZ, MJF, MSG, MTC, MUB, MVQ, NCV, NNI, NNJ, NQI, OFC, OHB, OHF, OI, ONO, OSX, OWL, PAR, PEN, PFV, PGO, PKN, PLC, PNW, PPK, PGV, PWR, TT, WTT. 7AEL, AGE, AGE, AMX, BRU, CMB, DNW, DSZ, DXZ, EGB, EKA, ENW, EVO, EZX, FHW, FJS, GBS, GGE, GK, MF. XU8OL, RL. XELAM, AG, BC, GE, Q, 2AR, TY. YV1AQ, 2CU, 5ABY, AE, AK. ZK6AA, AQ. ZD2H. ZE1JA, JG, JI. ZL1CE, MR, 2JO, JZ, 3FZ, GC, 4DL, OU. ZS5DC, 6DM, EZ.

56 Mc.

C. F. KEEN, 2BII, 20 St. Leonards Road, West Hove, Sussex. QRA-The Devil's Dyke, near Brighton. 17.7.38-14.8.38. Straight 0-v-1, 110 feet horiz. wire. C2XC, ZV, HG, JK, NH, OD, NHP, QY, XI, IJP, MR, 3PP, SNF, CM, MAP, 6XM, LK, PK, FU, CY, ACP, 8MG, DF, OQP, OQ, IX, LY, OS.

C. T. FAIRCHILD, 2DGR, 1a Dover Rd., Brighton, 6, Sussex. 0-v-1 Straight Reinartz.

CW-G2HG, JK, LC, MV, QY, XC, ZV, 3PP, 5CM, OJ, 6CY, FO, FU, LK, PK, XM, YI, 8DF, IX, LY, MR, OS, OQ, OQP.

'Phone-G2MR, MV, ZV, 5CM, 6LK, 8LF (?), OS.

Harmonics-G2RU, 3JF, KJ, 8AC, OQ, 6CY, RM.

Mod. CW-G5MAP, 2MR.

E. L. CROWE, 28 Carlingford Road, Hampstead, N.W.3.

'Phone-G2CU, 5CD.

CW-G2MC, QY, 300.

J. H. CANT, G6FU, 7 Elthrua Road, Lewisham, S.E.13. Received since April 17, CW, ICW and 'phone.

G2AO, AW, HG, JK, LW, MC, MR, MV, NH, OD, QY, RD, XF, YL, 3CU, OO, 5CD, KH, LB, MA, OX, RD, 6FL, JI, LK, NR, OT, OV, PK, RH, VA, VX, WL, XM, 8MG, OQP, SK.

Logs were also received from:

C. A. BETTS, Birmingham.
F. P. BRAMLEY, Burton-on-Trent.
B. CAGE, Ipswich.
D. F. CHATT, Sherburn Hill.
H. LISTER, Pocklington.
B. W. MONTAGUE, Chipstead.
G. PAIRMAN, 2DKF, Dunoon.
P. E. TAYLOR, Barnet.
C. G. TILLY, Bristol.
P. TRINDER, Sudbury.

News of Five

By A J DEVON

The Month's 56 Mc Notes

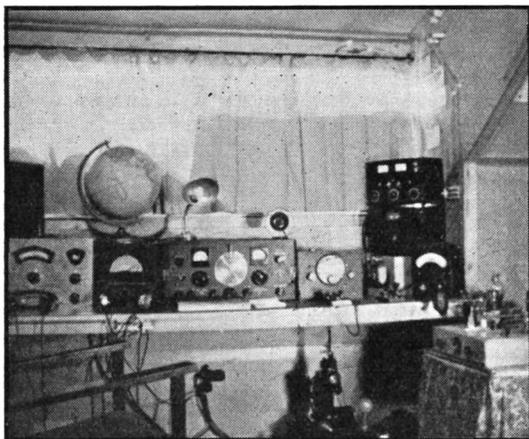
WE THOUGHT we should have a great story to tell this time when the news got round that two G stations had had contacts with SM late last month.

Investigation showed that it arose from a particularly stupid "leg-pull," in that a certain operator had allowed another G, who was thought to be in Sweden, to talk over his 56 Mc 'phone. A third G in the same town fell for what he imagined was a genuine DX QSO with a station signing an SM call, and naturally told all his friends.

The ensuing flood of correspondence drew explanations and apologies (except from the operator chiefly responsible, who says he only works on 28 Mc) from some scared individuals who ought to have known better. But there is no harm done.

● Individual Reports

G6FU (London, S.E.13) has evidently been doing a lot of useful work on the band. Since April 17 he has identified no less than 37 stations on 56 Mc, about half of them using CW, and 18 have been QSO'd on the key. G6FU draws special attention to the value of CW for working outside the "area



The operating position at G2ZV, C. J. Rockall, Aubretia, Seafield Road, Rustington, Sussex. He is very active on 56 Mc. Tx is 6L6 ECO-6L6 PA.

of local influence," and also confirms from his experience the superiority of a multi-wave wire for both reception and transmission. Of the eight aerials he has tried, from dipoles up, best results have been obtained with a $2\frac{1}{2}$ -wave top having a reflector-director the same length; this arrangement has extended his range to over 50 miles. Experiments are being carried out with tilted aerials, which seems to us an important line of investigation.

G5MP, at present located in Chesieres-Villars, Switzerland, uses an 0-V-1 with separate quench valve (when required), the "supering" effect being controlled by a variable resistor across the quench coil, thus enabling the quench intensity to be adjusted to the incoming signal; at minimum setting, the resistor shorts the super-regenerative section, enabling straight reception to be obtained for CW

listening. G5MP tells us that the French stations F3DN, F3MZ, F3NK, F8BF and F8KV have regular contacts amongst themselves at distances up to 120 miles.

● European Note

Here are some brief details of the F3DN-3NK working: The distance is nearly 95 miles, inputs 36 watts at both ends using stabilised transmitters, and the country between Annemasse and Volnay rises to over 5,000 feet. Simple types of half-wave aerial are used by both stations, and QSO has been maintained regularly since July 14, with 'phone. Signals vary from RS-57 in daylight to RS-59 in the evening, the best time being 2100-2200 BST, when F3DN and F3NK are always there. F3DN has also worked the Geneva group, and has heard an HB in Lausanne. He and F3NK are on the look-out for G's, and have CW receivers.

● Other Activities

G2XC (Portsmouth) makes a close study of sunspot phenomena in connection with 56 Mc DX conditions. We hopefully asked him if he could forecast periods of good conditions for us; he says there is absolutely no certain way of doing this, owing to the complexity of the diurnal variations in sunspot activity, these affecting the long-period cycle on which a forecast might be based. G2XC says that by careful observation it is sometimes possible to give about five days' notice of a possible change in conditions, but again there can be no certainty about it.

G2ZV (Rustington, Sussex) a general view of whose station appears here, is regularly active and maintains a schedule with G2OD (Ascot, 45 miles) with the South Downs in between, no difficulty being experienced in getting S7 'phone reports practically nightly. He is also a supporter of the long-wire aerial, using 135 feet end-on, loose-coupled to the PA tank. The receiver is 0-V-1. 2DDD (Añgering) co-operates with G2ZV.

G6IH (Malvern) gets out well in all directions, and has been reported by 2AAH (Chichester, 112 miles). He remarks that a moist atmosphere appears to absorb signals, reducing QRP with him.

G8LY (Winchester) had started on a dipole-and-reflector, the whole thing to be rotated from the station, the last time we heard from her, while G5WU (Penarth) will be on before long with a Collins 30J transmitter and RME or National receiver. He is well situated right over the Bristol Channel. G2BI (Calne) is also going into action on 56 Mc, with a CC transmitter and 0-V-1 receiver.

G6FO (Newport, Mon.) has not been able to maintain as high a level of activity this month as last, but in the two or three weeks prior to August 20 received reports from 2DGR (Brighton, 132 miles), G5MA (portable near Alton, 96 miles), G2ZV, 115 miles, G2BI, 45 miles, and G5RD (portable near Oxford, 88 miles) while on August 9 QSO was effected with G6IH, RST-579, the latter's 'phone being S5-6. The ground between Newport and Malvern rises to about 1,000 feet, and G6IH is consistently heard at Newport.

And now, some news from the North, please.

FIVE - METRE TESTS AND CONTESTS

Exceptional 56 Mc Activity Promised for September 9 to 11

The GW Trophy and Snowdon Tests

BOTH TRANSMITTERS and listeners will be glad to know that from September 9 to September 11 there will be plenty to work and listen for on five metres.

● The GW Trophy

This is to be competed for during the week-end Sept. 10-11, between 1800 GMT on the 10th and 1800 GMT on the 11th, and for the actual transmitters' prize, only RSGB members are eligible. Logs must be complete, with the time stated in GMT, while RS-33 is the minimum report which will count for points.

Scoring is on the following basis :

Under 10 miles	1 point
10 to 15 miles	2 points
15 to 20 miles	3 points
20 to 30 miles	5 points
30 to 40 miles	8 points
40 to 50 miles	12 points
50 to 75 miles	20 points
75 to 100 miles	35 points

plus 5 extra points for every 10 miles over 100.

It should also be noted that stations can be either fixed or portable but the location must not be changed during the period of the Contest. While any number of QSOs can be made with a given station, only one will count for points.

Completed entries, with full information, should be sent to J. N. Walker, G5JU, 4 Frenchay Road, Downend, Bristol, not later than October 8, 1938.

● The Snowdon Tests

The Snowdon Tests are being organised by David Mitchell, GW6AA, The Flagstaff, Colwyn Bay, N. Wales, who is a very active 56 Mc experimenter. His plans are as follows, the location being near the summit of Snowdon :

General Operation. Sept. 9, 1830 to 2130 GMT.
Sept. 10, 1100 to 2230 GMT.
Sept. 11, 0830 to 1900 GMT.

CW Working Only. Sept. 9, 1930 to 2030 GMT.
Sept. 10, 1330 to 1430 GMT.
Sept. 11, 1330 to 1430 GMT.

Schedules with stations over 80 miles distant are wanted, and all reception reports will be appreciated and acknowledged. Several radiating systems, beamed in different directions, will be used, the main one being bi-directional diagonally across the British Isles from Sligo, I.F.S., to North Foreland, Kent.

GW6AA will have several receivers with him, designed for both CW and ICW/'Phone reception. He will be able to stand-by on schedule for 112 and 224 Mc (2½ and 1½ metre) transmissions, replying on 56 Mc, on which band all transmission will be carried out from Snowdon.

● The Magazine Awards

In connection with the activity announced above, the SHORT-WAVE MAGAZINE offers two prizes for (a) the most outstanding performance by any transmitter operating from his home QRA, and (b) the best reception log sent in by any listener not holding a two-letter call, irrespective of location.

These two awards will be made at the absolute discretion of the Editor of the SHORT-WAVE MAGAZINE and in determining the recipient under section (a), such factors as location, power used, operating times, etc., etc., will be taken into consideration. If necessary, a request may be made for proofs of the results claimed, so that all entrants are asked to send in logs and other information as complete as possible.

The closing date for the receipt of entries relative to this three-day activity is September 24, and results will appear in our October issue, out Oct. 5. Descriptions of the winners' stations and apparatus will be published, so that we should be glad to have, if possible, good clear photographs with all entries. Those not required will be returned.

It should be carefully noted and clearly understood that entries for the Magazine Awards must be sent to our Office at 84-86, Tabernacle Street, London, E.C.2 quite independently of any reports and logs sent to G5JU or GW6AA.

These organised 56 Mc Tests should, we feel, lead to extremely useful and interesting results, and the Trophy available and prizes we are offering will merely be an incentive for and not the purpose of a big entry by all 56 Mc enthusiasts.

Webb's Great Circle Map

This is a large coloured wall map, on a great circle projection centred on London, which everyone interested in Amateur Radio will find invaluable, while it is essential for experimental work with aerials. It shows the world as it really is from the radio point of view.

Every international prefix is marked on the appropriate country, and a list at the side shows these prefixes alphabetically, by countries. The time zones are given, and from the map it is merely a matter of looking at it to ascertain the true bearing and distance of any part of the world from London, which can actually be taken to include the British Isles, as there is obviously only a minute change in the bearing and distance of, say, Sydney from London or Dublin.

The price of the map is 4s. 6d., post free (10s. 6d. printed on heavy linen and mounted on rollers) and is obtainable from Messrs. Webbs Radio, Soho Street, Oxford Street, London, W.1.

"PUSH-TO-TALK"

CLUB HISTORY—V.

A simple quick-operating circuit.

BRENTWOOD

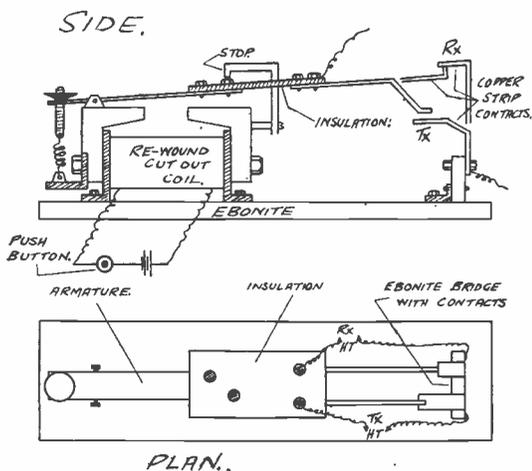
By N.P.S.

IN THESE DAYS, the quicker one can change over from "Send" to "Receive" the better. Many find that working duplex is not always possible and at times even the ordinary break-in system is not satisfactory.

There is still another method that is not only simple but very effective. A "Push-to-Talk" system can be devised if there is a separate receiving aerial and some means of switching the transmitter off rapidly as the receiver comes on, and *vice versa*. This can be done by using an old car cut-out, rewound to a high resistance to work on a few volts, and an ordinary bell-push that is pressed to put the carrier on the air only when talking. It can also be used for CW, working as a keying relay. As the push only carries a small local flash-lamp battery current it can be placed anywhere handy.

● The Arrangement

The illustration should be self-explanatory and shows an old French cut-out that was rewound to 500 ohms and works on 4 volts. The contacts that



control the transmitter and receiver HT supply are wired across the ordinary switches, so that either the relay or the normal switching can be used. If anyone is fortunate enough to be able to get hold of one of the hand-telephones of the type seen in the PO call boxes, a very compact and snappy system can be made up. In this, the small bell-push that controls the HT can be clamped to where one grips the instrument and operated by the thumb, the carbon microphone spoken into in the usual manner and the ear-piece plugged into a monitor for checking the speech—or into the receiver if loud-speaker reception is not wanted. A rapid back-chat style of operating follows.

● Other Applications

In addition to "Push-to-Talk" it is possible, by adding a couple of DPDT switches and an extra

FOLLOWING a request by Mr. C. F. Turner, 2ATU, to those interested in short-wave reception to help him in the formation of a club, Brentwood and District Radio Society began life early in 1935. Four very keen people gathered together for the first meeting, and elected 2ATU hon. secretary. In a short time, the membership increased to eight, and regular meetings took place, at which a feature was instruction in Morse code. In 1936, Mr. Turner was forced to abandon his duties temporarily, and Mr. N. K. Read, 2BNK, took over the appointment as hon. secretary. Mr. G. L. Turner was appointed chairman, while Mr. J. E. Nickless, G2KT, kindly consented to becoming president. Towards the middle of the year, the Society produced the first edition of "CQ," its official organ, which appeared monthly until lack of articles and of reports made regular publication out of the question. "CQ" was edited at first by Mr. Read, but is now under the direction of Mr. S. Duniam Jones, G8KM, who is a very active and enthusiastic supporter of the Society.

At the first annual general meeting held in Brentwood, the total number of members reached seventeen. Mr. C. F. Turner had meanwhile returned to the district and became chairman on the resignation of Mr. G. L. Turner. At the beginning of this year, Mr. Read was compelled to relinquish his position, as he had to take up business in the Midlands; in his place Mr. J. R. Deane Sainsbury, 2CYW, the present secretary, took over the reins, and meetings were held at the QRA of Mr. Jones. At first some difficulty was experienced in arranging suitable meeting-days to satisfy all concerned, but these were later fixed at the 10th and the 25th of the month, a scheme which seems to work quite well. The Society has been able to enjoy several interesting lectures given by representatives of well-known firms; a few of these included the General Electric Co., Premier Supply Stores, and the makers of the famous "Avo" instruments.

Two receiving contests have been held, and last month a direction-finding contest, described under "Club Activities" in this issue, was a great success. Interest in this work has been stimulated thereby, and it is hoped that co-operation with the other Essex clubs will be possible in future.

The Society has a transmitting licence, and radiates under the call of G8HV; G8KM is official operator. The present membership now amounts to twenty-four, while a good number possess full calls or artificial aerial permits. Recently affiliation with the R.S.G.B. was confirmed.

Those desiring further information should communicate with the hon. secretary, "Brunook," Chelmsford Road, Shenfield, Essex.

pair of relay contacts, to "monitor" one's sending with a buzzer at the same time that the transmitter is being keyed. One switch will throw the key straight to the transmitter key-jack for normal keying and, in the opposite position, reverse it for relay-keying of the transmitter with simultaneous buzzer "monitoring." The other DPDT switch throws the relay contacts either to "Push-to-Talk" or buzzer "monitoring."

LETTERS TO THE EDITOR

Support for QRP

I am a firm supporter of the "10-watt only" operator. The man who hots up his rig and aerial to work the DX is the one who gets the kick out of Amateur Radio—more so than if he had 50 watts going up the spout. With regard to "Old Timer's" column, I can confirm that G8UT did WAC on his very low power, doubling in the final. He only had batteries at the time.—C. USHER, 2CCD, 24, Carlisle Road, Dartford, Kent.

An R.N.W.A.R. Corner?

May I draw your attention to that much neglected body of amateurs who for some years have devoted their energies, spare time, and spare cash in an endeavour to equip themselves to be of service to the country in time of emergency. I refer to the R.N.W.A.R. I think a "Corner" devoted to the construction and operation of simple CW transmitters and receivers for use exclusively on our frequencies, together with data on the erection of efficient aerials, would be much appreciated, especially by members in outlying districts who cannot easily get to training centres for instruction.—J. RICE, 112, Frodingham Road, Scunthorpe, Lincs.

[We shall be very pleased to adopt this suggestion if members of the Royal Naval Wireless Auxiliary Reserve will write us in response to this letter and give us their views, together with details of their frequencies and equipment.—ED.]

25-watt Licences

The attention of this Office has been drawn to a paragraph entitled "High Power Permits" on p. 6 of your August issue.

Some perturbation is felt in this Department, particularly with regard to the statement concerning applications for 25-watt licences. It is therefore desired to point out that no increase in power above the normal 10 watts is authorized until this Department is satisfied that the power applied for is warranted by the experimental work in progress at the station concerned.—For Engineer-in-Chief, Radio Branch, G.P.O., Armour House, London, E.C.1.

Band-Finding by Magic Eye

It is well known that the easiest way in which to tune is by eye rather than by ear, and my tip is that a "magic eye" valve be incorporated in the frequency meter. In my case I use my Hallicrafter Sky Chief for finding the right harmonic and checking frequency. The fundamental, or "first harmonic," is of course always the strongest and will close the eye more fully than any other. The second harmonic is the next strongest, and so on. Thus, the harmonic required can always be "seen" and its frequency checked by reference to the receiver dial.

This method has obvious advantages in ECO working, and personally I have found it such a boon that I have discarded my dynatron-type frequency meter.—A. F. RAMSEY, G5RK, 97, Langley Way, West Wickham, Kent.

[This is a useful and practicable idea which would do away with the absorption wavemeter for those who have a good receiver fitted with "magic eye" tuning. "All-wave" receivers would, however, probably give confusing results due to secondary beat effects.—ED.]

Clearer Calls for DX

I have had a letter from a listener in Malaya complaining that many amateurs, and especially G's operating 'phones on 7 and 3.5 Mc, do not give their calls distinctly enough. He has heard quite a number and though sometimes able to copy 75 per cent. of the QSO, the call was lost owing to a hurried sign-off. This listener receives many G stations between 2200-2400.—JOHN GRIFFITH, Eton Villa, Blandford, Dorset.

Queer Skip on 14 Mc

Conditions on 14 Mc during the week-end Aug. 13-14 were extremely interesting. The early mornings were free from static, the reverse being the case in the evenings, and on the Sunday morning W6AH was heard up to 1030 BST, with three KA's, W5's and W7's also audible. During this period, short skip was also producing strong signals from G stations!

Since no J's or PK's were in evidence, it would appear that very good conditions extended eastwards from the Philippines across the Pacific, the American continent and the Atlantic. The fact that the only Antipodean signals at the time were VK2 and 3 also suggests that VU, J and the Far East generally were experiencing quite different conditions. I am using a Peto-Scott Communications Receiver with a pre-selector.—S. F. M. EDWARDS, Birklands, Hornsea, Yorks.

Amateurs and A.R.P.

A short time ago you published a very interesting editorial dealing with Amateur Radio in connection with Air Raids Precautions. Later, a letter from G2NS on the subject stated that it had been officially decided that amateur transmitting stations could not be used for A.R.P. work.

In view of the above, it is rather surprising to note that certain local authorities are already carrying out A.R.P. exercises using portable transmitting apparatus, probably under amateur calls. It would therefore appear that these local authorities are disregarding the Home Office circular stating "... the use of wireless for A.R.P. communications is not practicable . . ."—A. G. CLARKE, 318, Dickenson Road, Manchester, 13.

[We should be glad to have some further information on this point.—ED.]

For more enjoyment of your hobby—read "The Short-Wave Magazine" regularly

More Ultra-QRP 'Phone

In view of the experiences of 2CLG, Bromley, discussed by the "Old Timer" in the August issue, readers may be interested to hear of some similar tests carried out by G2GZ and myself during April of last year.

With an input of slightly less than *one watt* to the final of a CO-FD-PA, actually 10 mA at 80 volts, no less than 63 contacts were made in one month with G, GI, EI, F, ON and PA, all on the 7 Mc band. Many reports were R8/R9, and the lowest R5. The only difference noted in later comparative tests with 6 watts was that QSB was more marked with the one-watt signals.

The transmitters at G2GZ and G2JB are DC mains operated, and the QRAs are in the centre of London. I hope these few remarks will help to disprove the idea that QRO is essential for 100 per cent. 'phone contacts.—JOHN H. PAYTON, G2JB, 39 Penton Place, Kennington Park Road, London, S.E.17.

QRP, A.R.P. and Several Things

The discussions in your columns prove that QRP DX is occasionally possible under good conditions. In the Signal Corps, working with low power is regarded as being reliable up to about 50 miles only on CW, and half this distance on 'phone. The lowest input so far shown on my American QSL cards is 60 watts, and the reception is considered by the sender as remarkable. W6MUO, with 225 watts and a beam aerial, states that my report is his first from GM.

As regards poor operating, I do not agree that most of the delinquents are on the Continent. It is difficult to understand how many G's passed the Morse test, and the fact that amateur co-operation has been rejected for A.R.P. suggests that the authorities fear incompetent operators would do more harm than good.

To those who wish to become proficient operators, I commend the use of the recorder as described in the Magazine. There is no other way of acquiring correct formation and spacing. With reference to the query about obtaining carbon ribbon for the inker, I suggest readers try Messrs. Creed and Co., Telegraph Engineers, Croydon, Surrey.—C. G. WISDOM, BRS-540, 108 Nova Drive, Glasgow, W2.

[In QRP working, the Services necessarily allow a very wide margin of safety to ensure 100 per cent contact, but an amateur allows no safety factor at all, i.e., a given QRP DX contact can seldom be repeated; we could, however, quote exceptions to this. Though our correspondent is justified in his criticism of the operating ability of many amateurs, the general standard is fairly high, and is improving. We find that transmitters using the key start to become good operators after they have been on the air some time, as the standard Morse test bears little relation to what is actually required in a proficient operator.—ED.]

We are always glad to have good clear photographs of general radio interest, either of apparatus or stations. If sent us exclusively, and used, they are paid for and block presented to the reader concerned.

MULLARD'S TZ-08/20

A New Release

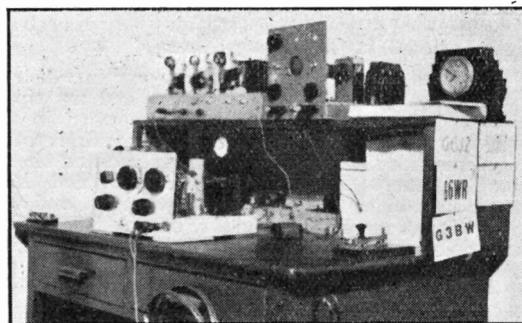
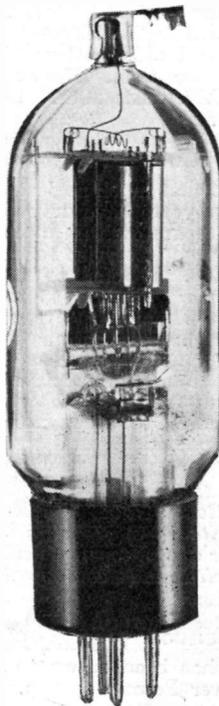
We are glad to be able to introduce yet another Mullard valve designed specifically for amateur operation. It is a high-efficiency triode, similar to the popular T.20, and is effective down to 5 metres.

As our illustration shows, the anode is brought out to the top of the envelope, and a standard British 4-pin base is fitted. The material used for the base, through which the grid lead is brought, is such as to ensure the minimum of loss, making the valve easy to drive in standard circuits.

The TZ-08/20 is a particularly attractive valve from the point of view of appearance, and close examination shows it to be extremely well made. Particular care has been taken with electrode support and alignment, and the plate area suggests that its rated dissipation of 20 watts could be exceeded without danger—but do not take it that we advise this!

The following brief data will serve to introduce the TZ-08/20 as a very useful proposition for operation at inputs up to at least 40 watts: Fil., 7.5 volts, 1.1 amps.; Max. anode voltage, 800; Slope, 3.1 mA/V; Amp. factor, 25; Impedance, 8,070 ohms; Anode-grid capacity, 5.5 mmF; Input capacity, 5.5 mmF; Output capacity, 2.2 mmF. Price, 17s. 6d.

The TZ-08/20 having only just been released as we go to press, it is not possible for us to discuss results with it; but it is sufficient to say that a brief test in a 14 Mc PA stage shows that it is quite as good as any other valve of its rating, which would appear to be well on the safe side.



The AA Station of 2DBQ, C. Grant Dixon, Ghyll Bank, Whitehaven, Cumberland. He has a TRF receiver, and the transmitter is a two-stage 6L6 osc.dblr-6L6 PA. A C.R. tube unit is visible on the top shelf.

CLUB ACTIVITIES

ASHTON and District Amateur Radio Society

Secretary: K. GOODING (G3PM), 7, Broadbent Avenue, Ashton-under-Lyne, Lancs.

Formed a few weeks ago, membership numbers fifteen; nine hold radiating permits and several AA's. Membership is open to anyone interested in short-wave radio. Prospective members are invited to attend meetings, held fortnightly at the QRA of the treasurer, M. N. Dunkerton (G3NX), in Commercial Hotel, Old Street, Ashton-under-Lyne. Next three meetings: August 31, September 14 and 28, at 8 p.m. Morse practice is from 8 p.m.—"bring along a pair of 'phones." A Field Day in September is proposed, and it is hoped to launch an ambitious winter programme.

BRADFORD Short-Wave Club

Secretary: S. FISCHER (2BMO), Edenbank, 10, Highfield Avenue, Idle, Bradford, Yorks.

Tests were carried out during the last weekend of July on the 7 Mc band, members using a portable transmitter (G2HT) which G8UP operated. Contact was made with G3KB and QRP tests carried out; amongst those present were 2HT, 8UP, 8JD, 3KB, and 3HA.



Members of the Bradford Short-Wave Club at work on Sunday, July 31, at Shipley Glen, Yorks. This was their first field day after acquiring the call-sign G3NN. We don't know the names, but they look very keen.

The club's transmitter (G3NN) is in operation every Friday from the Clubrooms. Reports should be sent to the Bradford Short-Wave Club, Bradford Moor School, Killinghall Road, Bradford.

Further particulars from the secretary.

BRENTWOOD and District Radio Society

Secretary: J. R. DEANE SALISBURY, Brunook, Chelmsford Road, Shenfield; Essex.

Over thirty people participated in Brentwood's first DF contest (July 24). Cars assembled at Shenfield station from Brentwood, Ilford, Southend, and Romford societies for 10 a.m., but some en-

thusiasts arrived as early as 9.15. The transmitting car, staffed by G2WG, G3CQ, and G8TV, left for Mill Green, near Ingatestone, and started work under the call G8KMP at 11 a.m. Each receiving car was issued with an envelope on which was written the destination at which the party had to commence taking bearings, while inside was the Mill Green location. Listening was begun at points at a radius of about 10 miles round the TX.

First to arrive was G6CT from Southend (2.20); Mr. Kelly, from Ilford, was second, and Brentwood and Romford tied for third place at 3.10. At 5 p.m. all parties proceeded to the Rendezvous Cafe in Brentwood for tea and a conversazione. Several well-known hams were present, and short speeches were made by G6UT, who presented the cup (given by G8KM) to the winners, G2KT, the Brentwood President, 2CYW, 6CT, 3CQ, 3FT, and others. There were also six ladies attending, and an eight-months old baby, who behaved very well at what must have been its first Hamfest! Many expressed appreciation of the event, and it was intimated that four Essex societies would probably hold regular contests in the future. The winners' receiving apparatus was then demonstrated by 6CT, and at 7.30 members left for home.

BRIGHTON Branch—World Friendship Society of Radio Amateurs

Secretary: FRED R. JUPP, 2FAD, 35a, Brading Road, Brighton, Sussex.

At a July meeting a welcome visitor was Mr. A. H. Bird (G6AQ), secretary WFSRA. Further talks on AA transmission were given by 2AFO; the club's own AA licence will be obtained in the autumn, and a good programme is being arranged. More members are required and the secretary will be pleased to send details to interested readers. Meetings every fortnight at 8 p.m. on Friday at 2, Cheapside, London Road.

DEPTFORD Men's Institute Short-Wave Radio Club

Secretary: G. EDWARDS, G2UX, 14a, Louisville Road, London, S.W.17.

The Club will resume on September 27, when it is hoped all old members will return in full force, with newcomers. Meetings have been arranged for each Thursday in addition to Tuesdays, the former will cater especially for the more elementary members.

DULWICH Radio Club

Secretary: W. J. BIRD (2BKK), 329a, Upland Road, East Dulwich, S.E.22.

New receivers are under construction and it is hoped some interesting results will be obtained with the various aeriels. The method of learning Morse as described in these columns last month has been tried, and although the average speed is slower than the usual straightforward letter-sending it was agreed this method is the only way to learn receiving at decent speed.

EASTBOURNE and District Radio Society

Secretary: T. G. R. DOWSETT, 48, Grove Road, Eastbourne, Sussex.

A written lecture was held last month authorised by E. H. Page of S. G. Brown, Ltd., on their Type "A" adjustable reed headphones. A thorough explanation of the theory of this type of instrument was given; by use of a DPDT switch a pair of these instruments were favourably compared.

HALIFAX Experimental Radio Society

L. BLAGBOROUGH (2DUX), 15, Crowtrees Crescent, Brighouse, Yorks.

Members are building new receivers; 2ABC is applying for full licence; 2DUX is busy with 56 Mc portable apparatus and with the design of a new directional aerial for this band; 2DGK is doing Army radio work. Meetings are in the Halifax Friendly and Trades Societies' Club (Room 15) every Wednesday evening at 7.30 p.m.

KING'S LYNN Short-Wave Club

Secretary: G. RODGERS, 112a, High Street, King's Lynn.

Mr. G. Jeapes (G2XV) discoursed upon QSLing at the August 3 meeting. The speaker's experience was that after a single telephony transmission he sometimes received sixty cards; most of them were useless! Mr. C. J. Bayes (G2JS) helped to provide discussion by disputing certain statements. The Club's AA has been granted and as a result of communal Morse practice at least one member is anticipating an early pass.

NEWCASTLE and District Short-Wave Club (Formerly Newcastle Radio Society)

Secretary: K. SCOTT, 1, Farquhar Street, Newcastle-on-Tyne, 2.

It has been decided to devote all interests to short-wave work. Mr. G. C. Castle has resigned secretaryship due to other duties; building and testing receivers has occupied recent meetings. A full programme is promised for the winter session, and the next club night is September 4 at the secretary's address, 6 to 9.30 p.m. Membership is free.

NEW MALDEN Radio Society

It is proposed to form a society in this town from the already active "Malden Radio Group" (which is outgrowing itself for private meetings at members' QRA's). Anyone in the district who is interested is invited to write to: J. D. Kingston (2DOP), 51, High Drive, New Malden, Surrey.

PECKHAM District Short-Wave Club

Secretary: L. T. ORANGE, 11, Grenard Road, Peckham, London, S.E.15.

Promises of support from local enthusiasts have proved welcome during the early days and the Club is now well established. A spacious clubroom at "The Windsor Castle," Cator Street, is completely furnished and ready for an influx of enthusiasts every Thursday at 8. The G.P.O. are considering an AA application.

THE ROBERT BLAIR Radio Society

Secretary: A. R. RICHARDSON, 24, Mercers Road, London, N.19.

Meetings on Wednesday and Thursday evenings of each week at 8 p.m. at the Islington Men's Institute, Blundell Street, N.7 (buses 517, 617 and 14 pass the road, and Caledonian Road Station, underground, is near). First meeting for the coming session, September 21.

There are beginners' and advanced groups, and Morse instruction is given. 2DYK is technical adviser (supplied by L.C.C.). Membership is 24.

ROMFORD and District Amateur Radio Society

Secretary: ROWLAND C. E. BEARDOW, G3FT, 3, Geneva Gardens, Chadwell Heath, Essex.

The club has settled down in new headquarters. A team was entered for the DF competition organised by Brentwood Society and obtained third

place. At the last meeting all members joined in a technical "bee" in which questions were asked and answered by members called upon. Meetings on Tuesday evenings at 8.30 p.m. at the Red Triangle Club, North Street, Romford.

SHEFFIELD Short-Wave Club

Secretary: D. H. TOMLIN, 32, Moorsyde Avenue, Walkley, Sheffield, 10.

Fixtures arranged are Aug. 31, Johnson Q Aerial Design (D. H. Tomlin); Sept. 14, Fault Tracing (J. R. Petty); 28, Transformers (A. Stubbs); Oct. 12, talk by G. Jones; Oct. 26, Uses of Cathode Ray Tube (D. H. Tomlin); Nov. 2, AVC discussion. 2BQR is now G3MK (asks for reports). Prospective members are invited to make use of the valuable gear available.

SUSSEX Short-Wave and Television Club

Joint Secretaries: C. J. ROCKALL, "Aubretia," Seafield Road, Rustington; E. C. COSH, "Ansllyn," Mill Road, Angmering.

At an extraordinary meeting of the West Sussex Short-Wave and Television Club, held at Ashling on July 19 it was unanimously decided that the club be disbanded, and a new club formed to assume the assets, liabilities, and membership of the former. Officers were elected as follow: President, Mr. G. Marcuse; chairman, Mr. R. F. Hansford; vice-chairman and social officer, Mr. H. K. Mawer; joint hon. secretaries (above); committee, Messrs. Blake, R. Allen, Mayor, Rowly, Burbidge, Meachen, O'Neill, and Older. The Winter programme promises well and interesting speakers have offered support.

WEST HERTS Amateur Radio Society

Secretary: A. W. BIRT, G3NR, 6, Hempstead Road, Kings Langley.

The August meeting was held at the secretary's station and during the evening a 7 Mc schedule was kept with G3NL. G3NR then demonstrated his 28 and 56 Mc apparatus and also a QRP CO, input .84 watts with which he recently worked G8IT and received a 569 report! G3MI is active on 14 Mc, CW and 'phone, whilst two other members are awaiting full calls.

WEYMOUTH and District Short-Wave Club

Secretary: E. KESTIN (2DPR) 55, St. Mary Street, Weymouth.

The club has been radiating news every Sunday at 10.30 a.m. on 20 metres. A Zepp-fed 20-metre half-wave aerial has been erected. Reports on signals heard from G8WQ will be welcomed. On August 10 members paid a visit to the G.P.O. ultra-short-wave radio telephone link with the Channel Islands, situated at East Shaldon. A relay at the promenade concerts from Alexandra Palace (about 120 miles distant) was heard on 7 metres, using the 5-metre aerials of the beam station which are strongly directional South. A Field Day is to be arranged.

WILLESDEN and District Short-Wave Society

Secretary: G. H. TALBOT, 5, Linden Avenue, Kensal Rise, N.W.10.

Activities have been limited recently, but Morse classes continue, and by the beginning of September it is hoped that full attendances will be recorded. Readers are welcomed at headquarters, 31, Willesden Lane, N.W.6, on any evening except Thursday and Sunday, between 6.30 and 10.30 p.m.

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- 2 A maximum of three 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.

WANTED—Peak Preselector, also mains Communication Rx and Xtal mike. Give full parties, and lowest prices. FOR SALE—Mains Valves.—2 Cliff Rd. Gdns., Hyde Pk., Leeds, 6.

HALLICRAFTER SUPER-SKYRIDER (1936 Nov.): Crystal, Speaker, AC, £12, or best offer.—113 Red Hill Road, Arnold, Nottingham.

WANTED—DC AVOMINOR. Please state price to J. Lowe, 37 Agnew Avenue, Coatbridge.

4-band AC/DC SW CONVERTER with power pack, really slow-motion, 2/6. 2-band converter, station names on dial, 12/6. Both nearly new.—44 Parkgate Road, Watford.

Bowman MODEL STEAM ENGINE No. M101, new cond., horiz. brass boiler (6 x 3), accessories, cost £1 19s. 6d. Offers or swap.—BSW1319, 95 Chesterfield Road, Bristol, 6.

AMERICAN MAGAZINES, "SW and Television," June 1936 to May 1938. 1,500 pp. SW dope, etc., 8/-.—BSW167, 112 Deacon Road, Kingston-on-Thames.

WHAT OFFERS—15-gn. Philco all-wave bat. superhet. Accept 6 gns. or nearest cash. Postcard to E. Vasse, 26 Parade, St. Helier, Jersey.

POLAR DRIVES, full vision moving scale, 2/6; 2 Osram PT625 valves, 3/- each; all post paid.—G3LK, 28a Brunswick Square, Hove, Sussex.

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SALE OR SWAP—1936 Stentorian chassis-type L.S. WANTED—Mullard MAS6 Superhet, state price to BSW1319, 95 Chesterfield Road, Bristol, 6.

TRANSFORMER—350-0-350/5-0-5, all CT, 5/-; 3 new Lucas Aldis lamp bulbs in lined case, offers.—G3LK, 28a Brunswick Square, Hove, Sussex.

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WANTED—Bulgin IPT's C75, C76; IF coil C43; Wearite "P" coils; Eddystone 1070 dial; 150 mmF cond.—A. Goodall, Cleandon, Sunderland.

R.M.E. DB20 AC PRESELECTOR in maker's carton, used under 10 hours, £9.—Chapman, Redroofs, Cringleford, Norwich.

Wanted—HT ROTARY CONV., 6v DC inp. to 200-250v. 60 mA DC output. State cond.—J. Corston, 60 Falconer Street, Newcastle-on-Tyne, 2.

FOR SALE—RFP15, 10/-; PM24M, 5/-; LS5, 5/-; PX650, 7/6. Wanted, metal receiver cabinet.—G5ZN, 35 Reedley Road, Burnley.

TRANSFORMER, 500-0-500, 300 mA, 0.2% reg, £1; Choke, 20 hy, 150 mA, 7/6; 3.5 Mc Xtal in PO power-type holder, 15/-. Other gear list.—G2WW, 52 Colebourne Road, Birm., 14.

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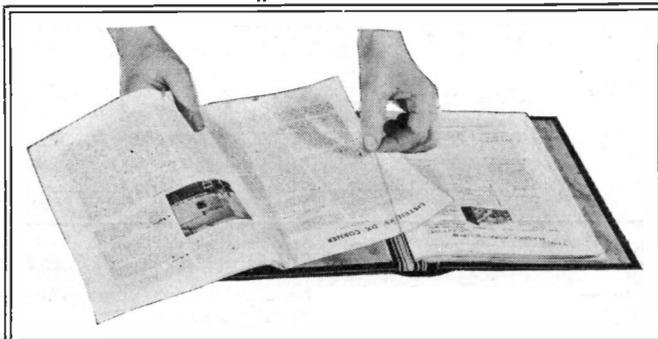
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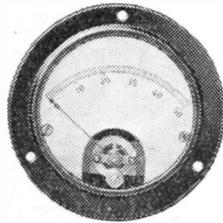
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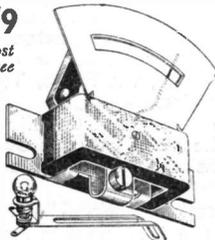
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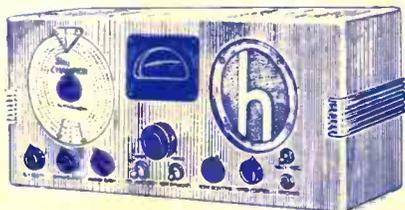
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