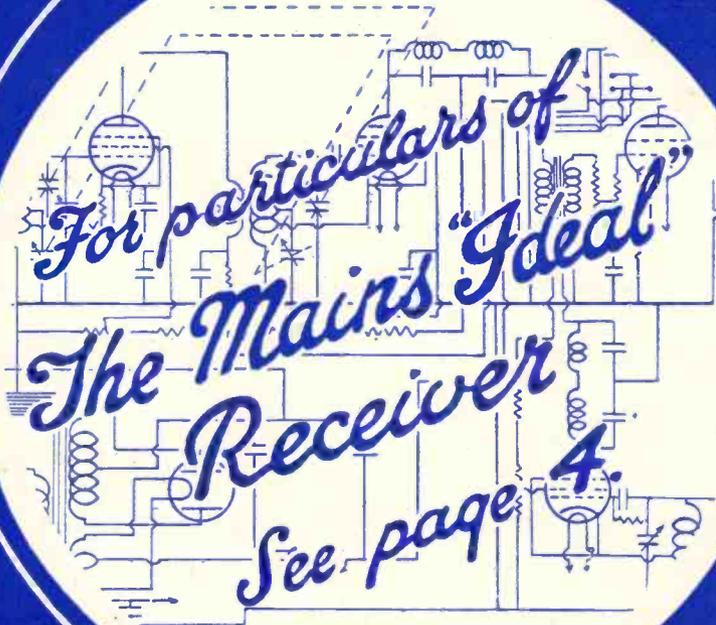


The

6<sup>p</sup>

# SHORT-WAVE MAGAZINE



No. 12

FEBRUARY,

1938

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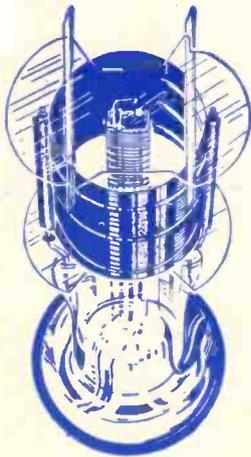
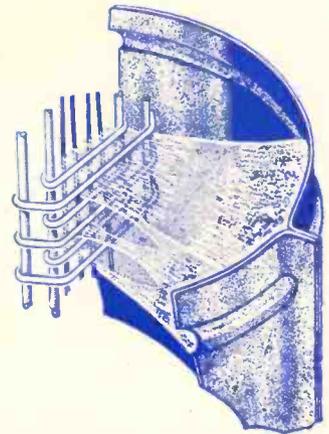


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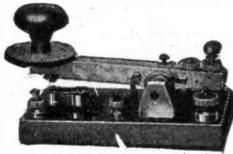
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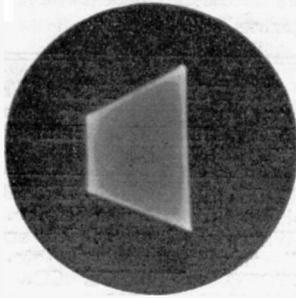
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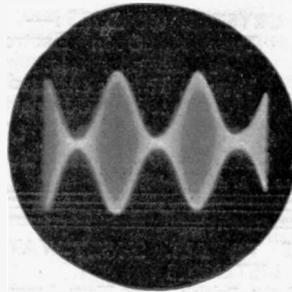
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# THE SHORT-WAVE MAGAZINE

Vol. 1

FEBRUARY 1938

No. 12

Editor: BASIL WARDMAN (G5GQ)

Editorial Asst.: S. W. CLARK (2AMW)

Advertisement Manager: C. T. MILDENHALL

## ONE NEW READER

JUST once in a while we like to talk about the magazine. We deliberately say "the," because we regard it as much yours as ours. This number completes the first year of its life. We started off in March 1937 with the conviction that to be worthwhile the magazine should cater for all short-wave interests; from the beginner to the technician. How simple and how advanced each section should be we had to guess at first; but as readers rallied round us and expressed their opinions we modified and improved until we think we have struck the balance most pleasing to all.

You, the readers, have determined the policy of the magazine. Are you satisfied with the result? Our second year begins next month; now is the time to express your opinion.

We do not want to sit back and say we are satisfied with "The Short-Wave Magazine." We are not! We want to see it get bigger and better every month, but we cannot do this unaided; we must have your help.

Would you like to see the size of the paper increased? The two factors which govern this are circulation and advertising. An increase in circulation means an increase in advertising revenue, which in turn means more money to enlarge the size, and pay for more and better contributions.

If every reader of "The Short-Wave Magazine" would introduce it to one new reader we could immediately increase its size, quality and value at no extra cost to you. That's the proposition we are putting to you; will you help?

And as we say good-bye to our first year, we thank all readers and advertisers for their help and support which have enabled us to make "The Short-Wave Magazine" the finest radio paper in England.

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Contributions for publication in our editorial pages will be given consideration and payment will be made for matter used. Only manuscript accompanied by a stamped, addressed envelope will be returned. Whilst we are willing to advise on suggested articles no guarantee of acceptance can be given.

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# The S.-W.M. "Ideal" Receiver

(Mains Version)

## Preliminary Constructional Data

By AUSTIN FORSYTH (G6FO), S.-W.M. Technician,

in collaboration with BASIL WARDMAN (G5GQ), Editor, S.-W.M.

IDEALS! Those "castles in the air" that never seem to materialise. That subconscious impulse that drives us forward to do better things, and be better men than our neighbours. Ambition, progress, call it what you like, but it is deep down inside all of us.

Take our own hobby, short-wave radio. We want the best receiver we can obtain. "Performance, more performance, still more performance," we cry. Ten years ago we would have put up with any receiver as long as it tuned in some short-wave station. It was a thrill to catch snatches of an American programme; entertainment was a secondary consideration. We were able to tell our friends at the office that we had "heard America"; our stock went up, we became "experts" overnight!

To-day short-wave receivers are commonplace. Short-wave stations have increased a hundredfold. The most poorly constructed, out-of-date set will bring in a few short-wave stations. Under good conditions it may bring in twenty, but what percentage is that of the vast number of stations now working on short waves?

Some listeners hear hundreds of stations. Experts? No, they know that radio has advanced during the last ten years. They've taken advantage of modern improvements; in other words they've got efficient receivers.

### ● The Aim—Efficiency

Efficiency has been the keynote of our "Ideal" receiver campaign. We asked readers to tell us what their ideals were for short-wave sets. Efficiency (performance is the result of it) was the outcome.

Some wanted "straight" sets, some superhets, but all wanted performance. Half were in favour of "straight" receivers, the other half for superhets; some wanted battery operation, others mains. We decided to produce the simpler, cheaper "straight" receivers first, one battery, one mains. The battery "Ideal Straight Receiver" has already been described. The most efficient, three-valve battery receiver ever designed, it has been constructed by hundreds who daily testify to its amazing performance.

Now we present the "Mains Ideal Straight Receiver." All the extra performance that mains valves give is there. Every valve, every circuit designed to extract the very last ounce of efficiency. A set that is selective enough to cut out the high power "local" Americans and Europeans, and bring in the weak, low-power DX station clear of the welter of interference.

Directly you see the receiver you will decide that the circuit is conventional. Of course it is. "Stunt"

circuits are more dead than the dodo. They just won't work on short waves. You would laugh at a stunt car having three and a half cylinders. Apply the same reasoning to your short-wave receiver.

An expensive car has an engine just the same as a cheap one, but it's got better performance. It's the design that counts—both in cars and receivers.

To get back to our receiver. It uses three valves: high frequency, detector, and low frequency. It is completely screened, and therein lies the secret of its performance.

### ● Screening

Unless complete screening is used an h.f. valve will not give its utmost on short waves. Selectivity and amplification suffer. Look at selectivity first. This is accomplished by using a number of tuned circuits. The more there are, the greater the selectivity. Signals, both wanted and interfering, come down the aerial, pass through the h.f. and detector tuning circuits, and in these circuits the unwanted, interfering signals are "ironed out." If they don't pass through these circuits they reach the grid of the detector valve direct. It rectifies both wanted and unwanted signals impartially, and you get interference, poor selectivity. Every signal must pass through these circuits if a receiver is to be any good. If a set can pick up signals without an aerial it means that it is picking them up on the coils direct, probably the detector valve coil or grid. How can you expect selectivity under these conditions? Yet people proudly proclaim that they can hear stations without an aerial! Without an aerial a good receiver should pick up nothing. That means the signals have to pass through every circuit; the receiver is selective.

Complete screening prevents coils, valves or other components from picking up signals. The aerial is the only part allowed to function as a receiver, and if no aerial is connected then no signals come through.

Place your hand near the coil of a short-wave receiver: the tuning alters. You will probably find this effect up to eighteen inches away. Signals are jumping eighteen inches from the coil to your hand; surely it is obvious that they will jump from one component to another in the same way if they are not prevented? Signals will jump from the aerial coil to the detector coil, dodging the h.f. valve. It can't amplify signals which dodge round the "back way." Screening prevents them dodging; they have to pass through all valves and circuits, so the h.f. valve gives real amplification, the tuning circuits ensure selectivity, and we get performance.

## ● R.F. Regeneration

If this were a conventional short-wave receiver going down to about 17 metres we should be able to leave the r.f. stage well screened and designed. But we want to go lower than 17 metres; 10 metres must certainly be covered, lower if possible. Immediately we go below 17 metres the efficiency of the r.f. stage falls off, because the internal capacities of the valve itself are so large in comparison with the frequency that signals can jump straight through them, and therefore will not be amplified. This is a problem with which every type of short-wave set is faced. Many designers switch out the r.f. stage owing to the fact that it makes practically no

We have seen how every care has been taken to get the maximum amplification from the r.f. valve. Once we get the maximum amount possible out, no juggling with circuits, regeneration, etc., will give us more, because you can't get more than the maximum. But below 17 metres we are not getting the maximum, so we can try some juggling to try and get more. Below 17 metres r.f. regeneration is used, and this, combined with the precautions taken in the design, ensure good amplification even down to 9 metres. This control is only intended for use on these waves, and so efficient is the r.f. stage above 17 metres that little difference will be found even if it is used.

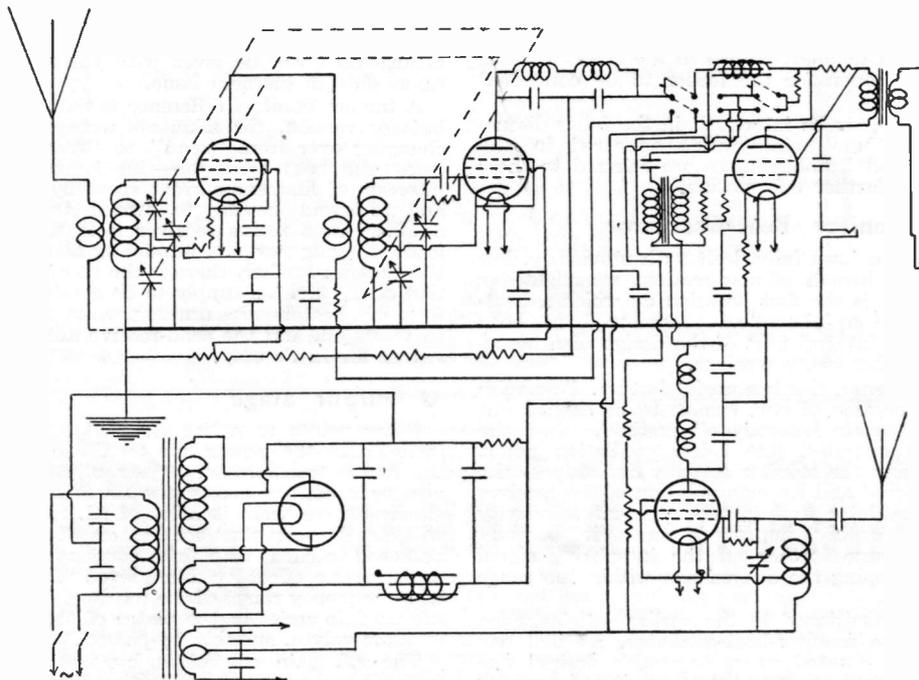


FIG. 1.

**Complete circuit diagram of the Ideal Mains Receiver. The 3-stage r.f. line-up on which the design is based uses two Hivac AC/VPb valves with top grid connection and an AC/Y in the output. The monitor beat-oscillator valve is at the bottom right, and the power pack at the left. A keyed diagram with values and list of parts appears next month.**

difference at all. No amount of screening or design will overcome this loss of efficiency as a pure r.f. amplifier.

Valve manufacturers realise this difficulty and endeavour to reduce these internal capacities by improved design. Electrodes are made smaller, their spacing is increased, and leads are brought out separately to avoid being close together in the glass pinch. Acorn valves are the ultimate of this type of construction, but their price is so high that their use is unjustified on the score of expense. Apart from this, above twenty metres the acorn valve gives less amplification than the more conventional type, so Hivac AC/VPb's special s.w. type with the grid brought out to a separate top cap are used.

## ● General Design

The circuit of the mains version of the "Ideal" receiver is shown in *fig. 1*, and as should be clear by now, is built round a straight t.r.f. 1-v-1. Disregard for the moment the presence of the fourth valve, between detector and i.f. stages, the function of which will be described later.

The h.f. and detector tuning is ganged, both band-setting and band-spreading, the latter being obtained by tapping down the coil. This enables full and practically equal spreading of all the amateur bands from 1.7 to 28 mc., together with sufficiently "slow" tuning for broadcast and other short-wave stations, since the band-spreading operates at any position of

the band setter. The grid circuit tuning of the h.f. stage is ganged accurately with the detector by means of the trimmer condenser, this being very necessary owing to the sharpness of tuning in the h.f. stage due to regeneration on V1. This helps both signal strength and selectivity, and the detector stage gets a bigger input, even on the highest frequencies, than if the h.f. valve was operated in the usual way—tuned, but without either trimming or regeneration.

Both r.f. and detector regeneration is by the cathode-tap method, to which mains valves lend themselves so readily. In the battery model, we had to devise a circuit such that the effect of cathode tapping could be obtained with ordinary filament-type valves.

Any type of aerial can be used, either the ordinary inverted L, in which case the aerial winding is earthed at the low-potential end, as shown in the diagram, or a doublet, for which the aerial winding must be left open for the feeder to be connected across it.

Those who may be interested in the fuller discussion of all these points which appeared in the September and October issues are referred to these numbers for further information.

### ● The Monitor Beat-Oscillator

This also has been fully dealt with previously, but again for the benefit of new readers, we might say here that this is the first occasion on which a beat-oscillator and a 'phone/c.w. monitor have been offered as an integral part of the design of a home-constructed short-wave receiver.

For the listener, this is a useful feature. It enables ordinary reception of c.w. signals to be carried out by the "separate heterodyne" method, when the detector is operated just below oscillation point. The beat from the monitor actually heterodynes the incoming signal and by manipulation of the receiver and beat-oscillator tuning, the apparent selectivity can be noticeably improved, since it becomes possible to tune further off the interfering signal while still keeping the desired one within the range of audibility.

Again, as mentioned in the earlier articles when describing the monitor-beat-oscillator, its dial can be roughly calibrated so as to enable desired stations to be found again or the transmitter frequency checked. It should be noted in this connection, however, that the band-spread and the accuracy of tuning on the monitor are not good enough for any really satisfactory calibration to be obtained; though both these points could easily be improved upon by anyone interested in accurate frequency control.

The monitor is brought in automatically by means of a send-receive switch mounted on the front panel; this cuts h.t. off the h.f. and detector valves, and connects the monitor output to the receiver i.f. stage. The transmitter signal can then be tuned in on the monitor dial, and adjusted for comfortable listening on the receiver audio gain control. For 'phone checking, the regeneration control resistor in the monitor circuit is turned back till the valve ceases to oscillate, quite good 'phone monitoring then being possible. As the receiver is well screened, a separate aerial is usually necessary where low-power is being used; this consists of a foot or two of wire arranged to give the required degree of pick-up.

This monitor stage can also be used as a beat oscillator by throwing a second switch which, as a

study of the circuit diagram shows, arranges matters in such a way that h.t. is applied to the monitor valve with the send-receive switch in the "receive" position. Then, with the detector oscillating and the monitor regeneration control turned up, the beat-note from the latter will be heard heterodyning the detector as the monitor dial is rotated.

### ● Circuit details

While the main features and general arrangement of the circuit naturally follow the battery model already described, there are certain differences of design due to the use of mains valves and a built-in power pack.

Referring to the photographs on p. 25 of the September issue and on p. 21 in October, the power supply is fitted in between the front panel and the screening boxes. With the parts specified, this just gives sufficient room for it. The detail of the arrangement will be given with the other constructional data in the next issue.

A further point of difference is that where, in the battery version, the filaments were switched when changing over from "send" to "receive" or when using the beat oscillator—this being done in the interests of filament current economy for one thing and to avoid having to switch the screens for another—in a mains receiver it is unwise to have leads carrying raw a.c. wandering about underneath the chassis; further, there is the point of the regulation of the a.c. l.t. supply to be considered. Therefore, all heaters are running while the receiver is switched on, and the send-receive and b.o. controls switch the h.t.'s only.

### ● Output Stage

Other points to notice are that a mains filter is included in the power line on the primary side of the mains transformer; a pair of r.f. chokes may also be necessary here if the set is to be used in a station where there is a lot of r.f. in the line! It will also be seen that the heaters of the valves are balanced to earth with fixed condensers, as this has a noticeable effect on hum level. In view of the wide frequency range of the receiver, two r.f. chokes are used in series in the plates of the detector and monitor valves, suitably by-passed.

The r.f. gain control is by means of a series variable resistor combined with a fixed value in the cathode lead, regeneration being adjusted in both h.f. and detector valves by variable potentiometers in the screen leads.

The output stage follows standard practice, and automatic bias is also used here. With a tapped output transformer, any speaker can be matched in, while by using the primary of this transformer as a choke, the output valve balances quite well with a pair of high-impedance 'phones.

The choice of components, as in the case of the battery model, has occasioned us much time and thought. Hivac valves are used throughout, with Erie resistors, Raymart coil forms, Dubilier fixed condensers, Edystone variables and QCC chokes. All these various items can be relied upon for service and consistency and, like all designers, we sincerely hope that constructors will use them for the sake of doing themselves and the receiver justice.

The chassis supplied by E. Paroussi comes ready drilled for all but the fixing of a few components, and if required this firm or Messrs. Scott-Sessions will supply the complete receiver wired and tested.

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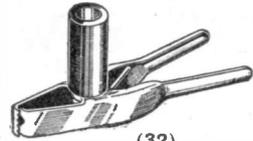


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# A 1.7mc. TRANSMITTER

## Built Specially for THE S.-W.M. TESTS

By G5GQ

ACROSS THE ATLANTIC ON 1.7 MC. What an achievement on ten watts! An achievement which any British ham would be proud of, and one which may be accomplished during our 1.7 mc. tests this month.

G6FO, who is in charge of the tests, has already pointed out that past experience indicates the period chosen to offer maximum chance of success. Thirty G stations have already signified their willingness to participate, and no doubt many more would join in if only they had a 1.7 mc. rig.

We are going to have a shot at getting across ourselves, so here is a description of the rig to be used. It can be built by any ham in a short time, enabling those who are still undecided to get on the air in time for the test.

In designing it, contrary to general amateur practice, we started with the p.a. stage. Many amateurs start off by building a crystal oscillator, and then adding the p.a. Then they find that they have about ten times too much drive, and realise that they could have cut the cost considerably if they had used a smaller c.o.

Looking round for a suitable p.a. valve, we examined triodes, pentodes, and beam tubes. There is very little to choose between them as far as output is concerned. The price of all three types is roughly the same, but with the triode more drive is necessary, and the additional cost of a neutralising condenser has to be met.

If 'phone is to be used either grid or plate modulation will be required for the triode or beam tube. Grid modulation is extremely difficult to adjust for good quality, plate modulation is expensive. The pentode can be suppressor modulated, there are no tricky adjustments, and, at a later date, plate modulation can be added if desired.

Taking all these into consideration, the final choice was a Mullard PZ05/15 r.f. pentode. It has a maximum output of 20 watts, so that with 10 watts input long life is assured; the grid drive necessary is 1/10th of a watt, making for economy in the c.o. stage, and if suppressor modulation is required the audio power necessary for 100% modulation is only 1/30 of a watt.

Any h.t. between 250 and 500 volts is sufficient, and, of course, there is no need for neutralisation.

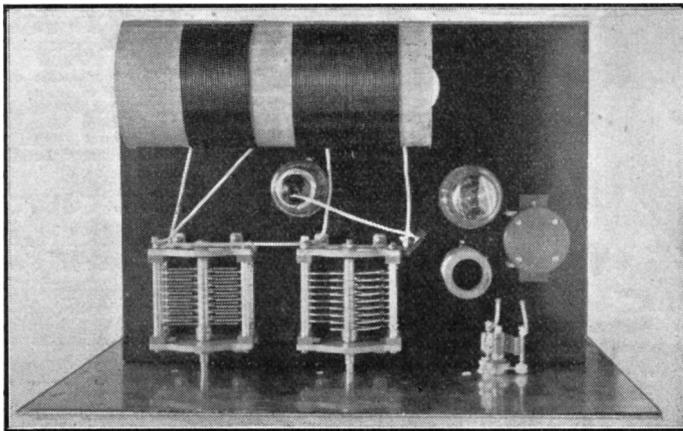
In addition, the transmitter is designed for general purpose work, so that by the insertion of suitable coils and crystals, any band between 1.7 and 14 mc. may be covered.

### ● Crystal Oscillator

Once the p.a. stage has been settled, the c.o. can be decided upon. A triode places more strain on a crystal than any other type valve, so the choice lies between a tetrode and a pentode. As only 1/10th of a watt drive is needed a large valve is not required, and the one selected is a tetrode, the Hivac AC/Z. This valve is capable of giving considerably more than the output required, but by being "under-run" risk of crystal heating is minimised, and long life is assured. In addition the AC/Z is a particularly useful valve for general purpose work, so that when not in use in the transmitter it can be used for modulator or amplifier purposes. This is a point too often forgotten by amateur designers; the types of valve used should be kept as low as possible, so that if one valve should "go," there is always a spare which can be borrowed from equipment not in use.

### ● Circuit

The circuit used employs parallel feed. On 1.7 mc. this is far preferable to series feed, as it is possible to mount all tuning condensers, coils, etc., direct to panel or chassis. H.T. is also removed



from them, rendering the transmitter safer to use than the more conventional series-fed type.

The transmitter is built on to a 16½ x 12 x 4 inches light steel chassis, intended for use either as a "table" type transmitter, or mounted in a rack. For rack mounting a 19-inch front panel is necessary, the size of which will depend upon the rack spacing employed, any size between 10 and 12 inches being suitable.

The three holes for the p.a. valve socket, c.o. valve socket, and c.o. tank coil should first be drilled. The p.a. stage can then be completed without the risk of having to remove components due to drilling operations.

The aerial tuning and p.a. tank tuning condensers (C9 and C8) are mounted directly to the chassis by means of the special flanges, integral with this type of condenser.

The coil unit consists of the p.a. tank, 50 turns, and the aerial coil, 30 turns, spaced 1½ inches apart, and wound with 16 s.w.g. enamelled wire on a 4-inch paxolin tube. A hole is drilled at each end and the coil unit is supported on two stand-off insulators. The use of 16 s.w.g. may be commented upon by some amateurs, but while it is admitted that copper tubing will look far more impressive, for 10 watts input it is quite unnecessary, and also foolish because the other conductors in the circuit will cause more loss than the 16 s.w.g.

Fixed to the p.a. tuning condenser can be seen the anode circuit blocking condenser, C7. This is carrying the full h.t. and also passing the r.f. output of the valve, and accordingly a Dubilier type 691, .001 mfd. is used. This is the only high voltage type necessary in the transmitter.

Screen volts of 300 are supplied by the dropping resistor, R5, 20,000 ohms, 5 watt, while for c.w. use the suppressor is connected directly to earth.

The crystal stage is very similar. Parallel feed is again used, the Eddystone Microdenser (100 mmfd. —C1) being bolted to the panel. Immediately behind this is the coil, consisting of 45 turns of enamelled 28 s.w.g. wound on a four-pin former, while to the right is mounted the Q.C.C. enclosed type crystal holder. A 20,000 ohm, 1 watt resistance is placed across the crystal, but any value between 10,000 and 100,000 ohms may be used with but slight power difference.

Cathode bias is applied to the AC/Z valve via a 150 ohm resistance, the value of which may be increased up to 500 ohms if a power reduction from this stage is necessary. The value given, however, allows for any losses due to construction or other factors, and represents the lowest value advisable.

Resistances R3 and R4 may be omitted if a separate 250-volt supply is available. Their purpose is to drop the 500 volts to 250 when only one power supply is to be used.

## ● Tuning

The c.o. stage should be tuned up first. Oscillation will be indicated by a "dip" in a millimeter connected in the c.o. cathode or anode circuit.

The p.a. stage should be biased to well beyond cut-off, a bias of between 120 and 150 volts being suitable. Only a fraction of a watt grid drive is necessary, and so with this bias, only a milliamp or so should be recorded in the grid bias lead.

The h.t. to the p.a. can then be switched on, and the tank condenser varied until minimum milliamps are obtained in this circuit.

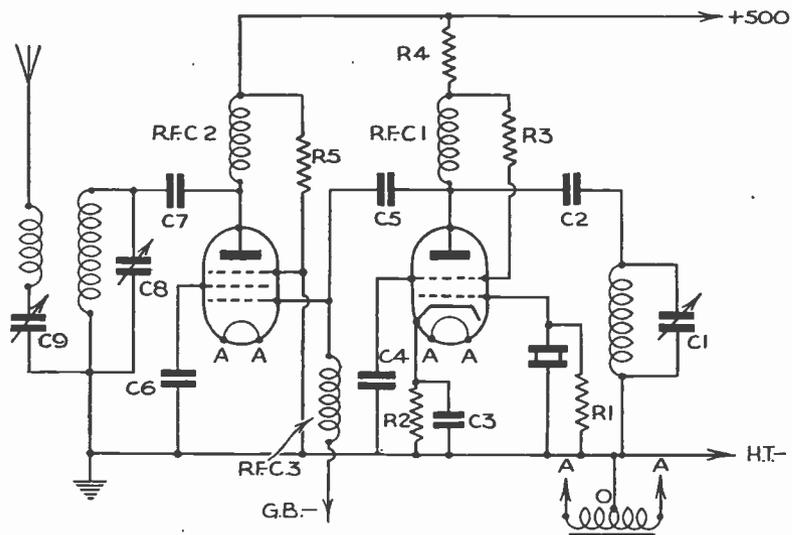
The aerial tuning will probably cause most difficulty. As shown in the circuit it is suitable for the standard 66-foot aerial, but naturally modification may be necessary where different types are employed. The best method is to put up as long and high an aerial as possible, and underneath it use a counterpoise. Try first with the aerial condenser in series, as in the circuit. It may resonate, but if not try the condenser in parallel. With the size of aerial winding suggested it should be possible to tune any type aerial within the limits of the ordinary garden.

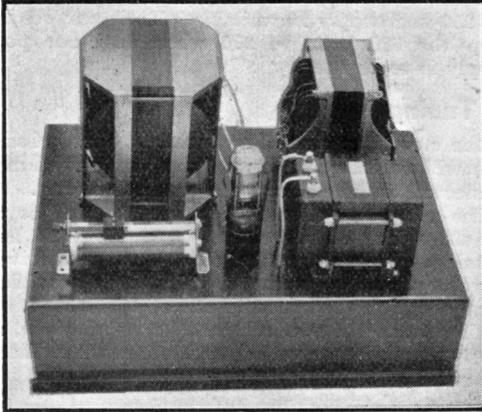
## ● Keying

The usual forms of keying may be used, and also, as the c.o. is indirectly heated, keying may take place in the cathode by breaking the lead between cathode bias resistor and earth.

## ● The Power Supply

The power pack illustrated will be used for the transmitter during tests. However, it was not specially designed for this purpose and has a much more general application, for the smaller trans-





### COMPONENTS FOR THE TRANSMITTER

#### VALVES :

Hivac AC/Z (crystal oscillator).  
Mullard PZ05/15 (amplifier).

#### CRYSTAL AND HOLDER :

1.7, Quartz Crystal Co.

#### COILS :

Aerial : 30 turns; tank : 50 turns. 16 s.w.g. (enamelled) on a 4-i-nch Paxolin former (Electradix). Two Eddystone 916 Insulators.

C.O. : 45 turns 26 s.w.g. (enamelled) wound on an Eddystone 4-pin 935 former.

#### CONDENSERS :

C1—Eddystone 900/100 (100 mmfd.)  
C8 and C9—Eddystone 1078 (.0001 mfd.)  
C2, C3, C4, C5, C6, .001 mfd. (T.C.C. type M.)  
C7, .001 type 691 (Dubilier).

#### R.F. CHOKES :

RFC 1, 2, 3, Quartz Crystal Co., type A.

#### RESISTANCES :

R1, 20,000 ohms, 1 watt (Erie).  
R2, 150 ohms, 10 watt (Bulgin).  
R3, 5,000 ohms, 5 watt (Bulgin).  
R4, 5,000 ohms, 20 watt (Bulgin).  
R5, 20,000 ohms, 5 watt (Bulgin).

#### CHASSIS AND PANEL :

See text. (Scott-Sessions).

COILHOLDER : Clix 4-pin.

VALVEHOLDERS : Clix 7-pin and Bulgin VH24.

former has secondaries that will supply any l.t. voltages. The larger transformer gives 550 volts at 250 mils.

The choke, seen at the right of the Tungram 5T4G rectifier is a Webbs' Radio 30 henry, 200 mil. The heavy duty Bulgin resistance completes the above-chassis list and underneath are two Dubilier 2 mfd. condensers.

Each transformer primary is broken by a switch (on front of chassis), while the filament outputs are at the side.

The circuit with more photographs and details will form the subject of a short article in a later issue.

### ERRATUM

Resistance R5, shown in the circuit between h.t. plus and suppressor grid should be connected to the second (screen grid) instead. It will then be by-passed by C6 to earth. The third grid (suppressor) should be connected to earth as per text.

(Continued from page 12).

The actual values of the components used to start with (they were the first which came to hand) were as follows:—

Resistance—5000 ohms (rather too low really).

Variable Condenser—150 mmfd.

Fixed Condenser—.001 mfd.

Coil—An Eddystone 4-pin, using the primary winding.

Valve—Marconi L210.

### ● Changes noted

With about 80 volts h.t. this gave 15 ma. and a very good note. Now here are the tables from my log showing the results of "swopping things about a bit." I do not suggest that the components listed here are ones chosen with due regard to their suitability. I have imagined that I knew nothing about them, and was treating them all on an equal basis. This has made it easy to demonstrate the way in which the log is used to pick out the good from the bad. (All meter readings were made by a meter in the h.t.—):

At this point it became quite obvious that nothing would be gained by using any valve but the Hivac. Only one further alteration was made: a .0001 mfd. by-pass condenser gave two more milliamps. So I came to this conclusion, the components to be used for this oscillator are as follows:

Valve—Hivac PX 230 SW.

Variable Condenser—(Eddystone) 150 mmfd.

Fixed Condenser—.0001 mfd.

Resistance—5,000 ohms.

Other parts as convenient.

Now, you see, I have a complete list of what is required for a simple battery-driven c.o., should I need one at any time to drive some other stage which was being tested, or for any other reason. You probably have different "junk" at your disposal, but I can assure you that if you follow up my ideas, you will make a most useful collection of notes "to be filed for future reference."

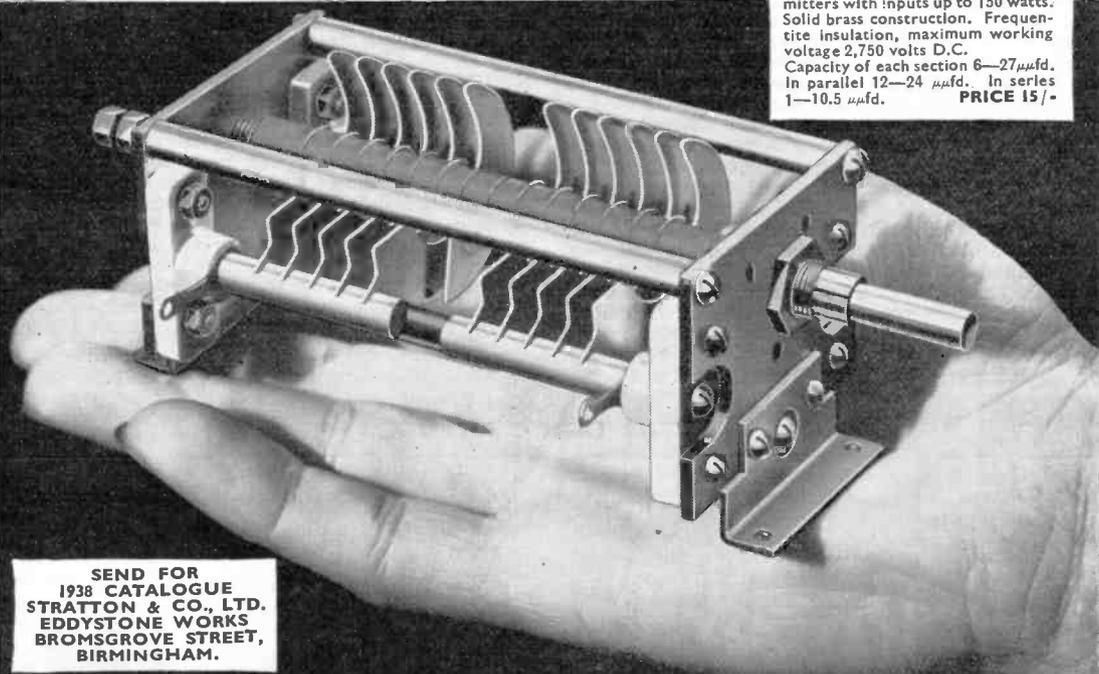


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# From S.W.L. to Full Licence—5.

By CHARLES WHEELER (2AMF)

THE PURPOSE of an experiment is sometimes forgotten half-way through it, because you have become interested in some side issue and enlarged upon it to the ultimate exclusion of the object originally in hand. Now although that may be all very well it is certainly an extremely unscientific way of going on, furthermore you do these experiments with the idea of discovering something and putting by any knowledge gained for use on a future occasion. Now whether that knowledge could have been mugged up out of any text-book or whether you have really been doing some research of your own, surely it is worth noting, and learning. Well, there are sufficient reasons other than the Post Office regulations for keeping a log.

## ● Keeping the Log

If properly kept, the log will provide a most useful and interesting record of your doings during the "A.A." months, and a very valuable reference book. Every detail has a definite place in the log; put down the value and make of each component used, then try out all the different makes, and values within reason, that you have handy or can beg, borrow, or otherwise obtain. Above all note every reading your meters show, because it is figures which will tell what is happening, and so, whether the changes made have been for better or for worse.

However there are other things than figures; it may be worth while listening to see if there is any change in note—quality is something which must not go wrong: when you and I get "on the air" I hope we are going to put out T9X sigs. even if they cannot be R9 plus. Kilowatts are not very closely connected with commercial quality if our Continental friends on 40 metres are anything to go by, but then they were never A.A. stations!

To illustrate my ideas of writing up a log I want to use the simple c.o. which appeared in the second article of this series. That word "illustrate" puts me in mind of a very easy way of livening up the log. Photograph what you do: daylight snaps can

be taken quite easily with any simple camera, although at this time of the year it might be advisable to take a short time exposure in good artificial light: I have taken indoor exposures of about ¼-minute by ordinary room lighting. However, this isn't a photographic mag. and you probably have your own ideas on the subject. Anyway these undeniable records of the use made of the A.A. licence will probably be useful when you explain to the P.O. why it is that you have exhausted the possibilities of the present licence and want a radiating one.

First, let us make a list of the components.

Valve—Any triode can be used, but those designed for the job are best.

Crystal—Probably only one is available.

Crystal-holder—Same thing may apply.

Valve- and Coil-holder—I doubt if you will find that these make much difference.

Coil—Either one you have used in a receiver or one wound specially for the job by your own fair hands.

Variable Condenser—Try what you have got.

Fixed Condenser—Same again.

Resistance—And again.

From here I had better say what I did and let you do the same, or whatever modification of it you think best, so here goes. Having got all the parts together on a board which was handy, and put them out in their approximate positions, that is taking into consideration connections to be made.

Sometimes it is more convenient to make soldered connections than just to twist the wire on. In this case the only place where solder had to be used was in joining the crystal holder to the resistance: it struck me that it was going to be very troublesome if I had to make a fresh soldered connection every time a new resistance was tried, so I hunted round and found an old spare clip holder.

(Continued at foot of page 10.)

## ENTRIES FROM 2AMF's LOG

Valve	Tuning Condenser	By-Pass Condenser	Resistance	Reading	Remarks
Marconi HL210	.00015	.001	5,000	15	
ditto.	.00015	.001	1,000	2	
ditto.	.000025	.001	5,000	No oscillation	
ditto.	.00015	.001	80,000	3	Resistance best—5,000.
Cossor Stentor 2	.00015	.001	5,000	18	A very old valve but some use.
Hivac PX230SW	.00015	.001	5,000	44	A notable difference using a valve designed for an oscillator.

# Adventures of an Op.

No. 2—"Rags"

By N. P. SPOONER (G2NS)

IN THESE PAGES last month we successfully passed our final tests and suddenly realised that eighteen months spent at any training school forges many friendships. It therefore did not surprise us to be escorted by a band of sore-headed revellers to Euston and there, with many farewell wishes of good luck and eternal freedom from telegraphists' cramp, we were pushed into a train en route for Liverpool, Lisbon and "Glory."

## ● Under Way

Creeping down a fog-bound Mersey we soon reached the open sea and made an uneventful journey to Leixoes—a delightful name that very successfully twists the unaccustomed tongue. I have spared the printers the accent and if you really must attempt it yourself then try a phonetic *lay-shoynz*, the "oy" rhyming with "joy."

Here, on the banks of the Douro lies Oporto (giving its name to the world-famous Port wine that originates there), we caught our first glimpse of Portuguese sunshine, vineyards, pretty tiled houses and patient bullock-carts. And so on to Lisbon that welcomed us from its seven hills by the river, with a heat-haze that shimmered over the tiled roofs of coloured houses seemingly built almost one upon the other as they stretched back from the very edge of the sparkling Tagus.

A fussing tug deposited us and our baggage at the quay-side and the chalked hieroglyphic of a custom's officer gave us the freedom of the city. Faces passed us that showed, beneath their tan, traces of mixed Moorish and Iberian blood and occasionally, like night and day, a European's paleness contrasted suddenly with negro features from Portuguese Africa.

## ● Amazement

We gasped as a luxurious touring car, plying hire as a taxi, cut the curb-edge and took a corner on two wheels. Corner-cutting, however, was a sport not confined to taxi-drivers any more than piracy is confined to the present-day amateur bands and suddenly a mule-drawn pirate tram came gaily clattering along in the rear of a haughty modern electric vehicle. With hearty expectation on the part of its driver and voluble curses from its occupants it fiercely forsook the lines, overtook the electric tram and gaily meandered off down a side street where no lines were laid.

To escape a party of bare-footed urchins, beggars and lottery-ticket sellers we took refuge in a café where, to our joy, we found gin and tonic water and were able to prove once again to our satisfaction that there are two things in this world at least that do not require the knowledge of a foreign tongue—getting a drink and making love.

We were tracked to this lair by a local operator who, in fair English and one breath, apologised for having missed the tender, hoped that our voyage had been pleasant, trusted that we found his

country charming and stated that his also would be a gin and tonic. At our new guide's suggestion we then visited five more cafés and landed up at a railway station where he left us to the mercy of a wooden-seated train for fifteen miles. We nearly collapsed each time the guard blew a wailing note on a little tin trumpet and the train violently jerked itself into motion.

## ● Local Customs

It is remarkable how one misses stations on a strange journey and, after we had been duly inspected by all the villagers (who probably agreed that we undoubtedly looked more demented than any previous additions to the staff of the mad English), we were then led back to our destination by an expectorating bullock-cart driver, a habit that we had by that time come to look upon as a sort of national anthem. At the end of a tree-lined avenue, between the railway and the Company's grounds, we met two of the Staff, senior to us by exactly one month, who led us to the Canteen for more gin and tonic.

"Tell me," I enquired plaintively of the Spanish bar-tender, "is this consumption of gin part of the staff duties?" "Undoubtedly," he replied, "it is the spirit that fires the imagination and we are famed to the uttermost ends of the earth for our off-duty ragging. On duty, you will be fettered to the Company's interests, but off duty only Satan holds you in bondage, gentleman. You will be worthily upholding a reputation more devastating, further out East, than that even of the Hong Kong-Shanghai Bank."

A tour of inspection through the Quarters, built around the inevitable courtyard, revealed a library, dance hall, mess and a number of single rooms attended by house-boys. The married staff were scattered throughout the village and district. The grounds extended to the beach, where the cables landed, and between the quarters and the sea lay the station. There, in the operating room, an 8-hour day was worked, the duties consisting of relaying cipher, code and plain language traffic to and from Cornwall, Vigo, Gibraltar, Madeira and the Azores from which stations a further network of cables linked up with the entire world. Contact with Lisbon, fifteen miles away, was kept by local land-line Morse inker and sounder besides the ordinary syphon recorder and automatic Wheatstone transmitter.

## ● Working Conditions

Dress consisted chiefly of flannels and sports shirts with exotic dressing gowns for the artistic temperament on night duty. Smoking was allowed at all times and the shifts in operation were 8 a.m. to 11 a.m. together with 7 p.m. to midnight; 11 a.m. to 7 p.m., midnight to 8 a.m. Day and night, year in and year out, those recorders and transmitters never

(Continued on page 15.)

# On the Amateur Bands

## "Ham" News by G5GQ

"I AM SURPRISED to see cards on your wall," remarked a prominent SWL visitor to my shack, "because I thought only SWL's wanted cards, and that they were far too 'lowbrow' for fully-fledged hams."

### ● Cards and Amateur Stations

This card business is most amusing. We hear the great G6 blank blank declaring loudly to all and sundry that he has no use for cards, and that he wishes listeners would leave him in peace. Next day my 'phone rings with this self-same lad at the other end proudly informing me he has worked Tibet, or some such place, and as soon as the card (yes, *card*) arrives he will have 2,578 countries to his credit!

The average ham starts up with low power and has no idea where his signals are getting: he welcomes with open arms any and all reports from listeners. After a little while on the air he manages to get a permit for higher power, uses double, and gets still more reports from listeners. Then he gets all "highbrow," and because his signals reach VK, just won't QSL local listeners.

CW stations get few SWL reports but 'phone stations get hundreds. My old friend George (150 watts 'phone on 7 mc.) complains bitterly about reports, but if he will use fifteen times as much power as necessary he deserves to be inundated with them, and should be compelled to answer each one as a penance!

Low-power stations rarely get reports. I do a lot of QRP 'phone work and invariably ask for reports, but in three months I have received exactly four. Actually what it boils down to is that as power goes up so responsibilities of the station increase. It is the duty of every ham to help preserve good feeling between listener and transmitter, and if he is willing to incur extra expense in power he should be prepared to face the extra expense that additional publicity brings him.

I know it is most annoying to have a card "Heard you working VK2XYZ. Pse QSL." But as often as not it comes from some schoolboy, pleased to receive anything on the simple receiver he has built from scrounged parts. Quite possibly he has spent the last penny of his week's pocket-money on the stamp, and when he gets no reply what are his feelings? The 100-watt ham should realise these things—a penny stamp won't hurt him, and it will give more than a penn'orth of pleasure to the boy.

### ● Overmodulation

Glad tidings for law-abiding hams! Rumour has it that G.P.O. is checking 'phone operation and removing overmodulated stations. If they would only do this on 7 mc. one Sunday morning the band would be practically empty in no time.

During the month I went on 14 mc. 'phone, using the oscilloscope described in January as a modulation check. First station contacted (a local "G") said signals were undermodulated; 'scope said 95 per cent peaks. Still the "G" said carrier was "R9,

'phone R6, so increase modulation." Modulation was increased to nearly 200 per cent. before he was satisfied that it was full, and then both carrier and 'phone were R9. Another local who was listening to the QSO checked me on his oscilloscope and told me later that he agreed with my figures, and that when the station I was working reported me 100 per cent. modulated, and "perfect quality," there was practically nothing left of my carrier! No wonder we hear so much overmodulation on the bands.

### ● Condx

Listened on 7 mc. for a few minutes on December 27. At 16.30, bang in the middle of the usual locals, I heard W2CNC (RST579) calling CQ. Seven minutes later SU1NG was heard RST 339, and also a G calling VE5MZ. These signals lasted until 17.00, after which no DX was heard. Couldn't locate VE5MZ, but should like to know how he was coming over.

"Twenty" has been dead after 19.00, and around midnight is coming into use for local 'phone. Using a N-S doublet I have been getting R9 from stations 8 miles east or west but cannot contact stations in London, 8 miles due north. Called G8NB several times, and though he was R9 he couldn't read me. Yes, OM, I was the station calling you.

### ● Pirates

Worked XZ2C on 14 mc. 'phone, but didn't get his QRA. Next day WIDZE told me that he had just worked XZ4N, who claimed to be in Sarawak. Ham Whyte tells me that XZ2C is supposed to be in Gibraltar, XZ1S in China, so XZ seems to be the prefix for a pretty large country. I wonder if some pirate will use the call XXX and give his QRA as a brewery? If so I shall only believe him if he sends samples—QSL's won't do!

Speaking seriously, XZ is used genuinely by Burmese stations, but these have two letters following the number.

### ● Mikes

For years I have used condenser mikes and for years I have had trouble with r.f. getting into them. Looking for a low-impedance mike I tried out the old dodge of using a small permanent magnet speaker, and with a 6-ohm one all trace of feedback has vanished on all bands. At first I had a predominance of bass, but with a simple tone corrector I am able to make it either "toppy" or "bassy" at will. At present I am accentuating the top because at a distance signals are inclined to become all bass and unnatural. The idea is that when they leave the station they are unnaturally high, lose it in transit, and when heard at a distance are just about the right pitch! I don't know how it's going to turn out, but this is the scheme I have been using since Christmas, so if you've heard me, you can form an opinion. The tone-correction scheme is

simple, and I hope to give some dope on it when I have completed tests on a number of different type speakers.

### ● Aerials

Erected a doublet for 14 mc., running due north-south and, as expected, signals only got out due east and west. Rigged up a vertical doublet, in addition, to see whether it would be any good as the free end is only eight feet above the ground. Reception is most peculiar; at mid-day Yank 'phones were R3 on the vertical, R9 on the horizontal. Local G5AA was R4 on the horizontal, R8 on the vertical. About 15.00 VK5WR and VK7QZ were R6 on the vertical, R4-5 on the horizontal. Later in the day Yanks changed round, and became better on the vertical. Haven't tried it out on the transmitter yet but it seems as if changing aerials over may make quite a bit of difference.

G8FA has sent me some dope on 14 mc. verticals. With the end four feet from the ground he gets R5-6 from middle U.S.A., but raising it to eight feet puts them over to W5, 6, and 7, when QRK on the East Coast drops to R3. To contact the East Coast he finds it best to bring the aerial down to within a few inches of the ground.

He is using AC/Pen c.o., Pen 4v. f.d., 210 p.a.; maximum input 25 mils. at 300 volts, and has collected 42 countries. He would like reports on his transmissions, frequencies 14,380, 7,190. QRA is: E. J. Napier (G8FA), 44, Cranmer Road, Hayes, Middlesex. CW is used exclusively, so any 'phone heard under this call will be bogus.

### ● Band Switching

A miracle—100% contact with ON4DS on 7 mc. 'phone, Sunday morning! He told me that his transmitter can be used on any of five bands—3.5, 7, 14, 28, 56—without any coil changing. Switching is used throughout and on 3.5, 7 and 14 mc. only two valves are used, while on 28 and 56 mc. an extra valve is switched in. Output is between 50 and 60 watts.

I have seen a good many ham stations in this country, but I have yet to see a band-switched rig. Are there any, because I would rather like to get a few ideas to put in my own rig?

### ● Second Channel

BCL friends of mine have taken pleasure in the past by listening to my 'phone and making rude remarks to me later. Two of them have recently purchased British "all-wavers"; one tells me that I now blot out W8XK, the other hears me best on 13,500 kc. Fortunately they know it's second channel so don't curse me, but there will be quite a spot of fun when this type of receiver comes into more general use. Some of our manufacturers have included pre-selectors but there are still a great number who think that all a broadcast set requires for short waves is a couple of extra coils and a change of intermediate frequency from 110 to 465 kc. Wouldn't mind betting that they don't actually know why 465 kc. should be used; they probably think it's fashionable.

### ● Finale

Award for the best lid of the month is divided equally between W6— and VP—. The W6 called "CQ Europe," the VP answered him, and the W6 went back to him, though there were dozens of Europeans calling him.

"ADVENTURES OF AN OP."—(continued from page 13).

ceased and breakdowns were avoided by duplicate instruments and alternative routing for traffic. It was thus strange, but very useful, to be able to ask London to tell Gibraltar, almost next door, to attend to us.

We grew to prefer night duty as although mid-night usually greeted us with a pile of delayed traffic in the form of slip festooned round the recorders this would have been sent fairly on its way by about 4 a.m. and a couple of ops. on a quieter circuit or a local messenger would knock up coffee and eggs for anyone wanting them.

At 8 a.m. the relieving staff released one for a race down the avenue, a lazy swim, breakfast in the mess and sleep until about 4 p.m. We lolled in the sunshine of the Portuguese "Riviera," sheltered by friendly hills, and while plants in other countries were resting, there in that happy spot that seemed to know no winter the orange, cherry and pear blossomed and gave fruit twice between October and May.

Lisbon (once practically obliterated by a terrific earthquake and since rebuilt on modern lines), however, was the chief candle that attracted the moths and we augmented a section of the staff that was known by reputation, if not personally, to every policeman and bar-tender in Town.

### ● Red Paint

We ragged it and its tolerant inhabitants systematically and our first escapade was the commandeering of an electric tramcar. With motorman and conductor imprisoned inside we drove it furiously round the residential and shopping districts until a point-duty man switched us into a dead-end and we were overwhelmed by a horde of screaming officials.

We interrupted the Coliseum programmes by falling out of boxes into the orchestra and we cleared rival parties of revellers from cafés with soda-water syphons and stale rolls. We fell out of fishing boats in Cascaes Bay and startled peaceful Cintra by charging six mules through the grounds of the Royal palace. Setubal, across the river from Lisbon, most certainly dropped a stitch in its famous lace when we made a public bowling-alley of empty Collares wine-bottles, that had been dispatched during an evening there, and we aroused the undying envy of local Nudists by racing two taxis round the capital, the passengers on top and suitably clad in socks.

We disturbed the even flow of Consular tea-drinking by raiding the neighbourhood and once formed a vigorous complaint from no less a personage than the worthy Bishop of Gibraltar himself when he found that the maudlin ragtime of certain off-duty ops. in the canteen hampered his efforts to save souls in the quarters.

Space now forces me to draw a discreet veil upon further exuberances and prompts me to put it on record that the country of our oldest ally was very hospitable and that its good-natured inhabitants showed much respect and admiration for our great little island and its sons. Those onlookers who became involved in our rags were quite justified in judging us all as completely demented but there is a little madness in every nation and later, in these pages, we shall read of a special Portuguese streak that has not yet been quite cured.

NEXT MONTH - - - "REVOLUTION!"

# HAVE YOU HEARD . . . ?

An abstract of the past month's conditions, as compiled and presented by

F. A. BEANE (2CUB)

NO DOUBT readers will expect me to write about conditions, to say just how deplorable they have been for the past six weeks or so, and how the 20 m., sometimes 10 m., and all the B.C. bands have appeared to be devoid of life at times. For me to do so would involve the use of terms that are generally excluded from the press, and which would certainly not meet with the approval of the Editor! Personally I often find poor conditions exciting, a statement which will require some justification on my part, and so, perhaps, the following example will serve to indicate what I mean.

## ● The unexpected

Just before writing this article I was experiencing considerable difficulty in gathering together sufficient material to make it worth while, due, of course, to the adverse circumstances already referred to, but at the eleventh hour I managed to gather a few items of considerable interest. During the week-end January 15-16, I determined to stage yet one more all-night vigil, but despite encouraging reception on the previous night, things were really hopeless, and at 02.00 I decided to give up, after having fallen into a state of oblivion every few minutes.

Suddenly however I was greeted with the English announcement: "Are you hearing the station Radio Barquisimeto, YV3RB, located in the city of Barquisimeto, Venezuela, South America, transmitting on a frequency of 6,465 kilocycles? We beg our listeners to send us reports. Address your letters to Radio Barquisimeto, Barquisimeto City, Venezuela. Thanks," which is all very self-explanatory. Incidentally the call was repeated in Spanish, English and French, in that order, at each quarter-hour, a gong note being used at irregular intervals.

That was Exciting Incident Number One, unheralded by any publication and just another of the extraordinary things that give short-wave radio its amazing fascination. I dare not state the time of my stealthy climb to bed for fear that it should be observed by the eagle eye of domesticity!

## ● CR7BH, Mozambique, again!

On the evening of the Sunday I was astonished to find a fairly strong signal in the region of 25.6 m. (I wasn't quite sure of this at first as I was calibrating the receiver) and noted frequent mention of Johannesburg, cigarettes, petrol, etc., in programmes reminiscent of those emanating from the U.S.A., and "Radio Normandie." Announcements were in English and given by a female speaker,

with occasional interruptions from a male (domesticity creeps in again!), in a language which at first seemed rather unfamiliar, but eventually turned out to be Portuguese.



How many readers have one of these cards?

Of course it was CR7BH, broadcasting simultaneously with CR7AA, as an announcement, at 18.00 proved, but what puzzled me was the reference to Johannesburg each few minutes, although it was eventually made obvious that the programmes were being sponsored by Johannesburg firms. Thus CR7BH is verily the Luxembourg of South Africa. Incidentally I was touched by the inspiring words of one announcer, "Cultivate that saving spirit now," but unaffected by his appeal ". . . go and buy a few gallons to-day"! That represented Exciting Incident Number Two—and conditions were still deplorable!

Shortly after, I logged ZRK, Klipheuveel, near Capetown, on about 49.16 m., where it was intermingling with the powerful YUA (49.18 m.), with the result that only part of its programme remained audible. On one occasion, in the region of 19.00, ZRK presented a fairly intelligible signal, the news bulletin at 20.00 was quite worthwhile and the recorded dance music, from 20.15 until close down at 21.00, very entertaining. Programmes were concluded by a time announcement (11 p.m.) or the Cape Town city chimes, and the anthems "Die Stem van Suid Afrika" and "God Save the King."

Earlier in the month ZRH was heard on 49.94 m. at fair strength, but has only been audible since under favourable conditions, such as the absence of OLR2A and the "siren-bogey" that has recently taken to victimisation of Moscow. A bugle call identification signal has been heard and also a six "pip" time signal. Reception of this station, situated at Robert's Heights, proved good on the evening of reception of CR7BH.

A letter verification from the South African Broadcasting Corporation, P.O. Box 4559, Johannesburg, states that ZRH had not, at the time of writing, been heard in America, although the 31.5 m. transmissions had been logged very successfully. The schedules for the various stations in their short-wave system are of value and reproduced herewith.

**ZRH, Robert's Heights, near Pretoria, 31.5 m. (9,523 kc.), and 49.94 m. (6,007 kc.)**  
04.45-12.30 on 31.5 m., 15.00-21.00 on 49.94 m. Power 5 kw. On Saturdays programmes are extended to 21.45, while on Sundays broadcasts take place 08.30-09.30 or 09.00-10.00 (Church) and 15.30-17.00 and 17.15-20.15.

**ZRK, Klipheuevel, near Capetown, 31.23 m. (9,606 kc.) and 49.2 m. (6,097 kc.)**  
Weekdays and Saturdays 04.45-16.45 on 31.23 m.; 17.00-21.00 on 49.2 m. Sundays 08.30-09.30 or 09.00-10.00 (Church) and 13.00-16.40 and 17.00-20.20. Power 5 kw.

**ZRJ, Maraisburg, near Johannesburg, 49.2 m. (6,097 kc.)**  
Weekdays 04.45-16.30; Sundays 08.30-9.30 and 09.00-10.00 (Church) and 13.00-16.30, all on 49.2 m. with 200 watts power.

**ZRD, Durban, 48.8 m. (6,150 kc.)**  
Weekdays 04.45-05.45; 08.30-12.30; 14.00-20.45. Saturdays as above but with last session extended to 21.00. Sundays 13.00-16.30 and 17.00-20.00. 10 watts power.

It is extremely unlikely that ZRD will be heard in Great Britain, or even ZRJ, but ZRH and ZRK may be expected to rival VQ7LO for British African supremacy from now on. ZTJ, formerly on 49.2 m., has apparently been superseded by ZRK, which will make its verifications even more valuable than hitherto.

### ● Reception from the East

Unfortunately my locality, or possibly my aerial, is unsuitable for reliable reception of the Far East or Australia and it is only with the utmost difficulty that I manage to log anything of interest from that part of the globe. Of the Japanese European transmissions I have heard but little, although the station on approximately 28.5 m. has been heard on the one or two occasions that I have been successful in slinking away from my place of employment, unobserved, to my den above.

In my article for the January issue of this magazine, I reported reception of a station in the vicinity of 28.79 m., which I took to be XGW, Shanghai, but I have since discovered that it is actually a station in Formosa, the confusion being caused by the announcer's frequent mention of Shanghai in the 14.00-14.17, or so, news bulletin in English.

Two readers have also commented on this, one (L.P.H., Woodbridge) states that it is JFAK, Taihoku, Formosa, the call being given at approximately 14.20 as "This is Formosa calling, Taihoku. It is now 11 p.m. Tokio Time," and followed by news in Chinese and Japanese ((by a male) at 14.30.

L.P.H. agrees with me that the chimes are similar to those of a child's toy xylophone, but differs over the lady announcer; indeed, he even accuses her of having an accent, although an "impeccable" one I am happy to add! This reader also draws my attention to his reception of JDY, Dairen, Manchoukuo, on 30.23 m., between 12.00 and 13.00.

The other reader (C.K., Walton-on-the-Naze) took my advice, listened at 14.00 in the vicinity of the wavelength I mentioned and heard, not Shanghai, but Formosa! Incidentally I understand that the call-sign is JIB, programmes being derived from JFAK. From these reports it certainly appears that reception from the Far East is all that could be desired in East Anglia. However, I do not find it so, as already pointed out, but it may be due to the direction of my aerial, as previously suggested. JIB is generally extremely weak, while nothing has been heard of JDY.

KZRM, Manila, has been audible on one or two occasions prior to 14.00, but for remarkable performance I recommend HS2PJ, Bangkok, 15.77 m., during its Monday afternoon schedule. Reception from Australia has proved extremely disappointing; VLR has been of little programme value during its early morning session (prior to 09.00), while VK2ME might have been non-existent as far as I was concerned. However, the one bright spot was VK3ME, Melbourne, 31.58 m., which appeared on several occasions immediately after 09.00, causing considerable excitement on my part for 3ME is a very rare visitor to my den.

### ● Latin America again

I have already given you one "star" piece of news concerning the fascinating stations that spring up, mushroom fashion, from what is termed Latin-America, but I regret to say that I cannot add much more, except to comment on a few of the more interesting items observed in connection with those already well known to you. Firstly there is "Radio Martinique," which was so brilliant a few weeks back, on about 30.98 m., and which has since been heard off schedule as early as 21.53 with a delightful French version of "You are my heart's delight." You may still hear it, not the song, but the station with its characteristic hum so reminding of any French station, between 23.45 and 00.45.

Then there is PRAA8, "Radio Clube de Pernambuco," on roughly 49.9 m., which is audible any night from 21.00 until well after midnight. This, too, has its familiar carrier hum, although not so pronounced as hitherto, and incidentally, you may note that it has adopted, or rather reverted to its original slogan, "A Voz do Norte" and long, wailing siren. VP3MR, the popular "Voice of British Guiana," has been heard with programme announcements shortly after signing-on at 21.45 while its compatriot, VP3BG (48.94 m.), has stolen a march on it by appearing before 21.30 with a news bulletin and lady announcer.

PSH, Rio de Janeiro, 29.35 m., has proved excellent on many occasions, being heard between 22.00 and 23.00 and 00.00 and 02.00, with the pro-

gramme of PRF4, "Radio Journal do Brasil." Of the Cubans I have heard but little, the same applying to the Dominican Republic, although COGF, Matanzas, 25.42 m., of the former has succeeded in confusing me by referring to HP5H, "La Voz de —," Panama, during the 15 minutes separating the actual station announcement, COGF, these references having been heard from the Cuban around 21.35. HP5A, Panama City, 25.64 m., has been quite good around 23.30, but little has been recorded of either CB1170 or CB1190.

Of the Venezuelans YV4RB (46.01 m.), Valencia; YV1RB (51.28 m.), Maracaibo; YV1RL (50.60 m.), of the same city; YV5RP (47.85 m.), Caracas, employing bugle call; YV5RJ (48 m.), Caracas, "La Voz de Esfera"; YV1RI (48.31 m.), Coro; and YV5RD (48.78 m.), Caracas, have been the most outstanding, while Colombia has been represented chiefly by HJ7ABD (31.13 m.), "Radio Bucaramanga" and HJ1ABP (31.22 m.), Cartagena. HJ1ABE, HJ1ABB, HJ3ABD, and a few others, seeking refuge from the chaos of the 31 and 49 m. bands in the region of 62 m., have absented themselves from my log, but OAX4Z, Lima, Peru (49.37 m.) has partly recompensed by putting in a surprisingly good signal as early as 23.34.

By the way I find that I have done the Colombians an injustice by omitting reference to HJ6ABU (presumed to be the new call of HJ4ABU), 48.78 m., and HJ4ABP, 49.75 m., both of which have been well received. CXA2, Montevideo, Uruguay, continued to put in a worthwhile signal but ZP14 was only recorded on one occasion in the region of 21.30.

### ● North America

W2XE has been extremely good on both 13.94 and 25.36 m., and the religious services of W1XAL (19.6 m.) well received on Sundays from 16.00, but of W2XAF, W1XK, and a number of other popular stations, I have not heard a great deal, possibly due to my habit of concentrating upon the Latin-Americans.

Europe does not present much news of outstanding interest; HVJ has adhered to its new wavelength of roughly 49.4 m. (much to my annoyance!); CSW3, Lisbon, 30.18 m. has reappeared after a short absence; the "siren-bogey" of the ether continues to alight on all anti-Italian propaganda, irrespective of its origin; the German Communist station has reappeared on 30.7 m. and suffered in like manner; 2RO has carried out tests in the 16 and 19 m. bands, around 13.30; Moscow has commandeered 49.54 m. in addition to 50, 31.25 and 39.79 m. to dissipate its propaganda; Spanish war stations have still persisted in their pollution of the 40 m. band, while the Communist "Radio Milano" successfully beat the vigilants of the ether on one occasion, choosing 28.6 m. as the rendezvous for communication with their unseen audience.

Please mention THE SHORT-WAVE MAGAZINE  
when replying to advertisers.

## Adapting the Eddystone "All-World Two" for 28 mc. operation

By G5VU

THE DESCRIPTION of my station in the October issue of this magazine brought a large number of enquiries concerning the use of the Eddystone "All-World Two" for the reception of 28 mc. amateur signals. The alterations made to the receiver were as follows:—

1. A valve with lower inter-electrode capacities was used in place of the S.P.2 The Mazda S.P.215 was found to be entirely satisfactory.

2. An h.f. choke (Eddystone 1010) was inserted in the anode lead of the detector valve as shown in fig. 1.

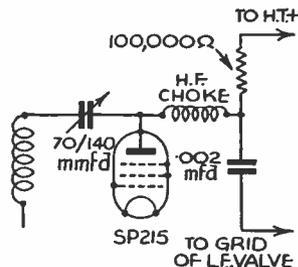


Fig. 1.

3. The special 28 mc. coil was wound on an Eddystone 6-pin (non-threaded) former. Details:—

Grid coil: 2 turns 20 s.w.g. enamelled. Turns spaced  $\frac{3}{8}$ -inch.

Aerial coil: 2 turns 30 s.w.g. d.s.c. interwound with grid coil.

Reaction: 2 turns 20 s.w.g. close wound,  $\frac{3}{8}$ -inch from bottom of grid coil.

Coil details should be taken as a guide and the optimum number of turns found by experiment. The 28 mc. band should be found at about setting No. 1 of the band-set condenser.

4. The tuning condenser supplied with the "All-World Two" is satisfactory for use on 28 mc., but greater ease of tuning can be obtained by using a 15 mmfd. condenser in conjunction with a good slow-motion dial (such as the "Utility" Micro-dial or the "Eddystone" No. 1070).

Next month full details will be published for the conversion of the "All-World Two" to mains operation from 5 to 160 metres. Alteration is simple and, besides the high frequency choke specified above, only a few extra components are necessary.

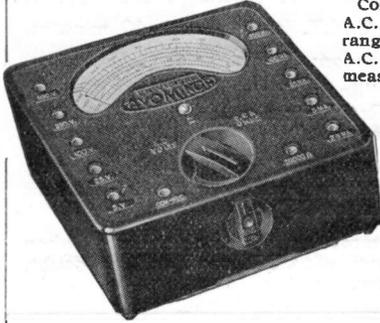
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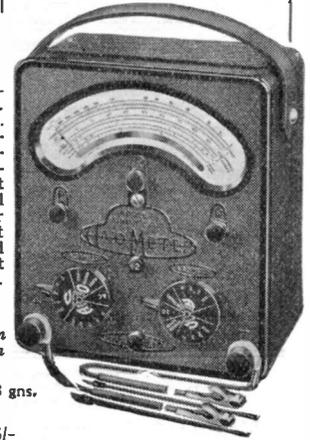
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PZ05-15	15W	500V	20W
PV05-15	15W	500V	20W
PZI-35	35W	1000V	52W
PVI-35	35W	1000V	73W

For technical data, send a postcard to  
**TRANSMITTING DIVISION**  
**The Mullard Wireless Service Co. Ltd.,**  
**225 TOTTENHAM COURT ROAD,**  
**LONDON, W.1.**

# GUIDE TO THE WORLD'S S.W. BROADCASTERS

## MODIFICATIONS AND ADDITIONS

**PSH, Rio de Janeiro, Brazil**, may be heard daily from 22.00—23.00 and 00.00—02.00, relaying PRF4, "Radio Journal do Brasil," on a wavelength of 29.35 m, 10,220 kcs. Reports, which are requested, should be addressed to "Radio Companhia, Internacional do Brasil, P.O. Box 709, Rio de Janeiro, Brazil."

**VP3BC, Georgetown, Br. Guiana**, now employs female announcer in addition to the usual male. In view of this care should be taken to avoid confusion with CR7AA, since the latter also employs a female announcer and VP3BC is now frequently heard as early as 20.00 when the Mozambique station is also operating.

The calls **HJ4ABH** (Armenia) and **HJ4ABB** (Manizales) have been changed to **HJ6ABH** and **HJ6ABB** respectively. **HJ3ABH** (Bogota) and **HJ3ABD** (Bogota) have moved to 4,900 and 4,840 kcs, respectively.

## HI1X, TRUJILLO CITY

(Dominican Republic)

Metres: 47.32. Kilocycles: 6,340. Power: 900 w.

**Operating schedule**: Sundays 12.40—15.40; weekdays 17.10—18.10 and 01.10—03.10.

**Standard time**: G.M.T. less 4 hours, 40 minutes.

**Distance from London**: Approximately 3,600 miles.

**Postal address**: "Radiodifusora HI1X, J. R. Saladin, Director de Radiocomunicaciones, Trujillo City, Dominican Republic."

**Identification characteristics**: Signs on with the Dominican National Anthem and announces as "Radiodifusora HI1X" often.

**Verification of reception reports**: formerly (when HIX) confirmed with QSL card, and, no doubt, will do so now.

## HI1L, SANTIAGO DE LOS CABALLEROS

(Dominican Republic)

Metres: 46.2 approx. Kilocycles: 6,493 approx. Power: Unknown.

**Operating schedule**: Heard from 21.40 to about 02.00.

**Standard time**: G.M.T. less 4 hours, 40 minutes.

**Distance from London**: Approximately 3,600 miles.

**Postal address**: Not definitely known, but "Radiodifusora HI1L, Emisora Nacional el Diario, Santiago de los Caballeros, Dominican Republic" will suffice.

**Identification characteristics**: 4 chimes and call in Spanish "HI1L, Emisora Nacional el Diario, Santiago de los Caballeros, Republica Dominicana" each quarter-hour, i.e. at 21.40, 21.55, 22.10, 22.25, etc. The English call "Short-wave station HI1L at Santiago City, Dominican Republic, West Indies" is also given frequently.

**Verification of reception reports**: It is not yet known whether this station will verify.

## HI2D, TRUJILLO CITY

(Dominican Republic)

Metres: 43.48. Kilocycles: 6,900. Power: 100 w.

**Operating schedule**: Believed to be 11.40—13.40; 15.40—19.40 and 21.40—01.40 daily.

**Standard time**: G.M.T. less 4 hours, 40 minutes.

**Distance from London**: Approximately 3,600 miles.

**Postal address**: "Radiodifusora HI2D, Trujillo City, Dominican Republic."

**Identification characteristics**: Signs on with recording of "Ave Maria" (violin) announcing as "La Voz de la Asociacion Catolica Dominicana." Seldom heard in Gt. Britain.

**Verification of reception reports**: It is not known whether this station verifies.

## HI1S, SANTIAGO DE LOS CABALLEROS

(Dominican Republic)

Metres: 46.72. Kilocycles: 6,420. Power: 20 w.

**Operating schedule**: 16.40—18.40 and 22.40—00.40, or later.

**Standard time**: G.M.T. less 4 hours, 40 minutes.

**Distance from London**: Approximately 3,600 miles.

**Postal address**: "Radiodifusora HI1S, La Voz de la Hispaniola, Santiago de los Caballeros, Dominican Republic."

**Identification characteristics**: Announces in English occasionally and in Spanish as "La Voz de la Hispaniola," also 3 chimes, generally at each quarter-hour, i.e. 22.40, 22.55, etc.

**Verification of reception reports**: Sends QSL card bearing small call-sign.

## HI3C, TRUJILLO CITY

(Dominican Republic)

Metres: 44.58. Kilocycles: 6,730. Power: 50 w.

**Operating schedule**: Sundays 17.10—19.40; weekdays 17.10—19.10 and 23.10—00.40.

**Standard time**: G.M.T. less 4 hours, 40 minutes.

**Distance from London**: Approximately 3,600 miles.

**Postal address**: "Radiodifusora HI3C, Moises Garip and Roberti Palli, Trujillo City, Dominican Republic."

**Identification characteristics**: Call in Spanish "Emisora HI3C, La Voz de la Feria, La Romana, Republica Dominicana." Occasional announcements in English.

**Verification of reception reports**: Apparently difficult to obtain.

## H13U, SANTIAGO DE LOS CABALLEROS

(Dominican Republic)

Metres: 49.88. Kilocycles: 6,015. Power: 200 w.

**Operating schedule:** Sundays 15.40—18.40; weekdays 12.10—13.40 and 21.40—02.40.

**Standard time:** G.M.T. less 4 hours, 40 minutes.

**Distance from London:** Approximately 3,600 miles.

**Postal address:** "Radiodifusora H13U, Apartado 23, Santiago de los Caballeros, Dominican Republic.

**Identification characteristics:** Signs on with organ recording of "Maria My Own" and announces as "Radiodifusora H13U, La Voz del Comercio."

**Verification of reception reports:** Verifies with QSL card.

## H15N, MOCA CITY

(Dominican Republic)

Metres: 48.8. Kilocycles: 6,150.

Power: Believed to be 20 watts.

**Operating schedule:** 11.40—13.40; 15.40—19.40 and 21.40—01.40 daily. Sometimes leaves the air at 00.40.

**Standard time:** G.M.T. less 4 hours, 40 minutes.

**Distance from London:** Approximately 3,600 miles.

**Postal address:** "Radiodifusora H15N, Moca City, Dominican Republic."

**Identification characteristics:** Employs 4 chimes and English announcement "Short-Wave station H15N, in Moca City, Dominican Republic." A similar number of chimes intersperse announcements and advertisements, while the slogan "La Voz de Moca" is frequently used. Concludes broadcasts with the National Anthem of the Republic.

**Verification of reception reports:** Formerly (when H15N, "La Voz del Almacen," of Santiago de los Caballeros) confirmed with attractive card.

## H14D, TRUJILLO CITY

(Dominican Republic)

Metres: 45.81 approx. Kilocycles: 6,555 approx. Power: 25 watts.

**Operating schedule:** Mondays and Saturdays 16.55—18.40 and 21.40—00.40.

**Standard time:** G.M.T. less 4 hours, 40 minutes.

**Distance from London:** Approximately 3,600 miles.

**Postal address:** "Radiodifusora Comercial H14D, Dr. Luis Santamaria, Trujillo City, Dominican Republic."

**Identification characteristics:** Call in Spanish "Emisora H14D, La Voz de Quisqueya," the latter being the native name of the island. English is used occasionally and programmes concluded with an organ recording of the "Goodnight Song."

**Verification of reception reports:** Confirms with somewhat unattractive card.

## H17P, TRUJILLO CITY

(Dominican Republic)

Metres: 44.12. Kilocycles: 6,800.

Power: Believed to be 25 watts.

**Operating schedule:** 18.00—19.00 and 00.00—02.00. In addition it operates 15.00—16.00 on Sundays.

**Standard time:** G.M.T. less 4 hours, 40 minutes.

**Distance from London:** Approximately 3,600 miles.

**Postal address:** "Radiodifusora H17P, Calle Jose Reyes No. 35, Trujillo City, Dominican Republic."

**Identification characteristics:** Announces as "H17P, Emisora Diario del Comercio, en ciudad Trujillo, Republica Dominicana."

**Verification of reception reports:** Confirms with QSL card.

## H14V, SAN FRANCISCO DE MACORIS

(Dominican Republic)

Metres: 46.51. Kilocycles: 6,450. Power: 25 w.

**Operating schedule:** 16.40—18.40 and 22.10—23.40 daily; often heard closing at 02.00, however.

**Standard time:** G.M.T. less 4 hours, 40 minutes.

**Distance from London:** Approximately 3,600 miles.

**Postal address:** "Radiodifusora H14V, San Francisco de Macoris, Provincia Duarte, Dominican Republic."

**Identification characteristics:** Employs four chime signal followed by the call "Broadcasting H14V, La Voz de la Marina, en San Francisco de Macoris, capital de Provincia Duarte, Republica Dominicana," generally at each hour. At other times it is abbreviated to "Emisora H14V."

**Verification of reception reports:** Believed to confirm by QSL card.

## H18A, TRUJILLO CITY

(Dominican Republic)

Metres: 46.30. Kilocycles: 6,479.

Power: Believed to be 200 watts.

**Operating schedule:** 13.40—15.40; 19.40—21.40 and Sundays 02.10—03.40 in addition. Has been known to sign off at 02.40.

**Standard time:** G.M.T. less 4 hours, 40 minutes.

**Distance from London:** Approximately 3,600 miles.

**Postal address:** "Radiodifusora H18A, Jaime A. Rodriguez C., Apartado 1312, Trujillo City, Dominican Republic."

**Identification characteristics:** Announces in English and Spanish often, generally as "H18A, La Fa-Doc en el Aire." A siren, gong notes and bugle call are employed occasionally. Owned by "Fabrica Dominicana de Calzado" (shoe company).

**Verification of reception reports:** Confirms with attractive card of unusual design.

# CORRESPONDENCE

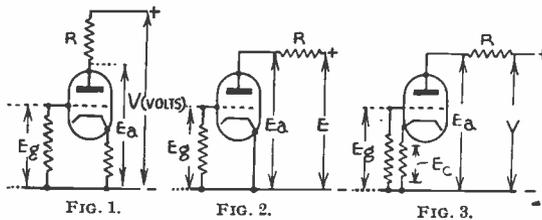
Letters addressed to the Editor must bear the writer's name and address. If anonymity is desired, in the event of publication, please add a nom de plume.

## CATHODE MODULATION

May I reply to G8FP concerning his modulation? If we take the fundamentals of anode modulation we have the following state of affairs (see fig. 1).

Modulation to the anode is injected by virtue of varying the voltage drop across  $R$ —( $R$  may be the secondary of a transformer or the ordinary choke). Thus for anode modulation we have a varying potential on the anode ( $E_a$ ) and  $E_g$  is constant.

Now take grid modulation (fig. 2). For no distortion  $R$  must be as small as possible (d.c. resistance). Therefore if the h.t. supply is properly regulated  $E_a$  remains practically the same as  $E$  and for practical purposes should be considered the same.  $E_g$  is, however, varying.



Thus in both cases the current through the valve is altered, in anode modulation by varying the anode volts and in grid modulation by varying grid volts, and in both cases the other factor remains constant.

Now take 8PF's circuit (fig. 3).  $R$  is negligible and so  $V = E_a$ .  $E_g$  is constant, and  $E_c$  is varying. Therefore the voltage between grid and cathode is varying. The conditions are then: constant anode potential and varying grid bias, i.e., grid modulation.

I was particularly pleased to see 8FP's address as I have often tried unsuccessfully to find a ham at Yeardon or Rawdon, which places I visit periodically. I should like to hear from 8FP.—DONALD H. TOMLIN, 32, Moorsyde Avenue, Sheffield, 10.

May I accept your invitation and express my views on G8FP's modulation system? He makes three points, and I propose to deal with each one separately.

### 1.—Entire absence of h.f. feed-back.

This, I suggest, is due to the fact that one end of the modulation transformer secondary is directly earthed and, thus there is not likely to be any appreciable h.f. voltage about that secondary to the feed-back via the transformer inter-winding capacity. This is often the case with Heising modulation as the impedance of the power supply to h.f. may be sufficiently high to make feed-back possible.

### 2.—Greatly improved quality of transmission.

This seems to be due to the negative audio-frequency feed-back effect, which is apparently present from the diagram given. It is assumed that the positive of the bias supply is returned to the earth line and not to the cathode.

The grid will, then, receive a slight steady bias by virtue of the voltage drop across the modulating transformer secondary and the filament resistances (100 ohms effective), 300 ohms total, and also a.f. variations induced in the modulation transformer secondary by the anode current.

It will be seen that such induced voltages will be in the correct phase for "negative feed-back." This will flatten the overall response curve of the speech system in much the same manner as positive feed-back accentuates peaks.

### 3.—Depth of Modulation is Constant.

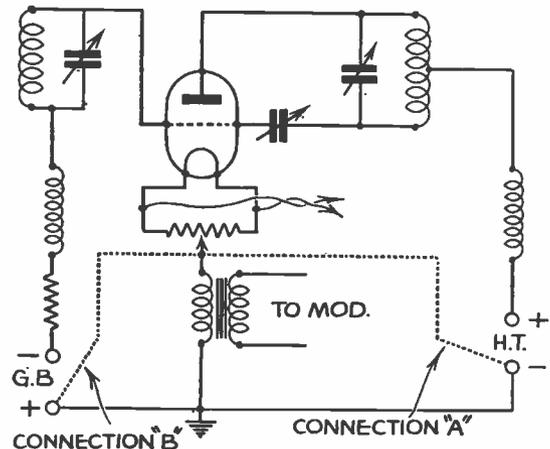
The speech voltage induced in the modulator secondary is applied between grid and cathode and anode and cathode simultaneously. The grid, known as the control electrode will, obviously, have the greater control over the valve h.f. efficiency. Thus the system must be a grid modulation system. The carrier power depends on the characteristics of

the p.a. valve employed (assuming grid feed is approximately constant) for both valves used, whereas the depth of modulation will depend on the ratio of h.f. grid feed to a.f. grid feed, both of these constant. Thus depth of modulation will be constant irrespective of carrier power within limits as G8FP suggests.

In short, the system is refined grid modulation embodying a measure of negative feed-back.—W. C. BIGGS, "Laurelenc," Seymour Road, Lee-on-Solent, Hants.

Referring to the letter from G8FP on "Cathode Modulation," I should like to thank him for taking the trouble to have this information published and to thank you for giving the readers an opportunity to theorize on the subject.

I first considered the system from the figure attached hereto, and in this it will be noticed that if connection "A" is broken and re-wired as indicated by the chain-dotted connection "A" then the system becomes grid modulated. On the other hand, if connection "A" is left as shown by the full line and the connection "B" broken and re-wired as shown dotted, then the system is anode modulated—even though the modulation is injected in an unusual position. Hence it will be seen that the system is a combination of grid and anode modulation but with an interesting feature, namely, that the anode modulation opposes the grid modulation! And for this reason the system should tend to be a stable one.



I will try to show simply how the grid and anode modulation are opposed. First of all it is important to note that the cathode circuit, together with the modulation transformer secondary, are common to both anode and grid circuits. Normally when the voltage on the grid is made positive (that is increased) the anode potential drops due to the anode current increasing and causing a bigger volt drop across the anode impedance, also when the grid is made more negative the anode potential rises. Now in the cathode modulation system when the modulation transformer makes the earth end more negative, that is, makes the grid more negative, it also simultaneously reduces the cathode/anode potential thus, to some extent counterbalancing the increase due to making the grid negative. Also the greater the amplification factor of the valve the less will the counterbalancing be.

This counterbalancing effect will explain the fact that G8FP has found that the modulation percentage seems to remain almost constant.

I do not believe, however, that the system is original, but I do not remember having heard of it being used by amateur stations before.

As soon as I have time I shall make some experiments with the system myself—if only to try to prove my theory. Mank thanks O.M. for the dope, also to the Editor for publishing it.—H. TURNER (G8VN), 7, Lawrence Road, Eastlands, Rugby, Warwickshire.

### INSTALMENT PLAN

May I make a suggestion? I (and possibly many others) would like to see in the "S.-W. Magazine" a description of a ten-watt 'phone tx given section by section each month. It would have to be comparatively cheap to make, i.e., no frills. Jack in the different leads so that one meter could be used to adjust the whole tx. Also provision for using either British or American valves.

Please give us as many transmitting articles as possible. The short-wave listeners are already well catered for, but the budding transmitter is sadly neglected, especially if he lives in a small place where there is no short-wave society.—THOS. J. EVANS, 5, North Parade Terrace, Monmouth, Mon.

### AMERICAN VALVES

I recently borrowed a copy of your magazine from a pal and I find it sure is "tops." Even though I have taken many other magazines at various times . . . I now vow that if I forget to have a copy each month there will be the devil to pay!

Now to the real purpose of this letter. As is my wont, after looking through the mag, I turned to the letter page, and that headed "American valves" immediately took my eye. Now this is a strong point of mine as I have had a fair amount of experience with them, and seeing your comments at the end I decided to let you have my opinion. I have heard the argument many times (put forward by yourself), i.e., that you must have more American tubes to give equivalent performance of British valves. In several cases, where possible, I have been able to disprove this statement practically.

I have been using for the past year a single tube (6E7) as detector and i.f. amplifier (the tube is a triode pentode) and I very much doubt whether a set using the same "junk" parts as mine with British tubes (pardon—valves!) would have the performance of this job. I grant you that Yank tubes are rather less ambitious than our types, but there is one distinct advantage, you can get the exact type that you want for a job instead of having to sacrifice efficiency because there is no type of British valve to suit the position (I know all about the Hivac all-purpose valve, but I am talking of everyday types here). Can you, therefore, say that British valves are more efficient if they do not exactly fulfil the purpose for which they are used. I grant you that you will not always be able to get an American tube to suit your requirements to the last detail, but there must be a limit somewhere, and I think that you will find, in fact I am sure you will find, in 99 cases out of 100 that you can get an American tube nearer your requirements than a British valve. That is, of course, unless you have a valve specially made for a certain job.

I have not gone into the advantages of price among other things here, but there is one point worthy of consideration and that is the greater degree of standardisation in American valves, even in very cheap tubes. This is still kept to within about 5 per cent., so that if one wishes to try out a circuit merely to test with no real idea of adhering to it, and have no use for the tube after trying the circuit, a cheap tube will give a very good idea of the performance of the circuit. I don't advocate this practice, but cite it as an instance of what standardisation can do. Whereas there seems to be no attempt at standardisation in British valves. Even octal-based International valves, modelled on American octal glass tubes, and supposed to be a standard for use in all countries, show surprising divergencies. For instance, I have before me the Osram and the Tungram catalogues. The type KT66 (Osram), 6L6G (Tungram) and 6L6G (RCA) are supposed to be equivalent but even the heater currents are different (Osram=1.27 amps., Tungram=.9 amps., R.C.A.=.7 amps.). This is one of the many differences in characteristics.

Now can we please have a *tuff* (as reputed to be out West!) set using American tubes. I have several ideas well within the average reader's pocket for a set covering 3 to 160 or so metres, and would be willing to shoot along some dope.—FRED B. ATHERSYCH (BRS 2896), 69, Alexandra Road, Parkstone, Dorset.

MORE CORRESPONDENCE ON PAGE 38

(from DX Listeners)

## AROUND THE HAM SHACKS

### 5-G18GK

OUR STATION DESCRIPTION this month comes from Northern Ireland. Mr. S. R. Watson, the operator at G18GK, commences with a distinct advantage in that he can use c.w. or 'phone at any time without BCL interference. However, to offset this advantage he has to admit unintentional broadcasts occasionally as the transmitter is situated in the kitchenette, and in consequence such topics as cooking, etc., may be heard from YL visitors!

Towards the middle of last year this station worked G5FA every Saturday night at 23.15 for six months, conducting experiments on signal strength under varying conditions.

The transmitter is built in rack fashion with a crystal oscillator (P625) in the lower position; a power amplifier is next and uses a P650; while the top tier contains a two-stage amplifier with two P650's.

#### ● Aerial and Power

The aerial is an end-on half-wave Hertz and runs N/S, fed at the south which is 30 feet high, the north end being ten feet higher. Thirteen feet of the aerial is inside the house and passes through a window, then running parallel and six inches from the ceiling.

A 6-volt car battery and 220v. d.c. mains provide the power; the input for 7 megacycles is eight watts. Grid modulation is used and the carrier has to be reduced to 4 watts to obtain 75 per cent. modulation, and reports of R7/8 have been received from London and other G stations. The microphone is of the single button type.

For 14 mc. the p.a. stage is used as a doubler with the aerial tapped straight on to the doubler coil. Some good DX has resulted from this arrangement and with 7/8 watts input reports from W1, 2 and 3 have been 569; VU's have given 559, VK's 569 and XE 569.

#### ● Future Plans

Original receiver was an 0-v-1 constructed from junk parts but now a t.r.f.-det.-2l.f. with pentode output has been made and placed in a metal cabinet.

With the advent of a.c. mains G18GK is looking forward to using a new rig. His plans are to use a 6A6 as c.o. and doubler and a 6A6 in the p.a. stage—ten watts interest him in that he would like to see what can be done with this power. The power pack will be 400-0-400 at 150 milliamps, but the modulator has yet to receive consideration.

QRA: 11, Salisbury Gardens, Antrim Road, Belfast, N.I.

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**· INFORMATION ON PAGE 37,**

**TOGETHER WITH**

**"READERS' BARGAINS"**

# On 'Phone in the West Indies

By BOB EVERARD

OF THE WEST INDIAN 'phones about the most well known, although not heard nearly so often in the last year or so, is the famous K4SA, owned by Dick Bartholomew, Garrochales, Porto Rico. I have often heard him, two or three years ago, working station after station the whole night through; he will QSL and uses 400 watts and upwards. Another well-known Porto Rican 'phone is K4DDH, of University of Porto Rico, he uses 100 w. carrier and, as K4SA, is on 14 mc. K4DDH has also been heard on 28 mc. K4EPO, of Hato Rey, is mostly on 28 mc. and QSL's. Another K4, this time from the Virgin Isles, is ENY—14 mc. with 200 w.

## ● Cuba

Coming now to Cuba, the largest district is CO2, embracing Habana, and in which there are many 'phones, well heard here though a number are using 50 w. or less. The best known are CO2HY (100 w.), CO2WZ, CO2AN (who sends a unique QSL), CO2JM (with the low power of 28 w.), CO2RA (a pigmy QSL, size 3 in. x 4 in.), CO2WW (50 w., sends unusual QSL of XYL descending in wrath on the OM with a rolling pin!)

No CO3 or CO4 'phones exist. CO5 is certainly the scarcest Cuban district, I have only one QSL, that of CO5RY, on 7 mc. with 75 w., but CO5RY has also been heard on 14 mc. CO2RA has been also heard on 7 mc. and CO2AU on 28 mc.

The 6th district of Cuba is also a hard one, but possesses one outstanding 'phone—that of CO6OM, formerly CM6XS, etc., and owned by the famous Frank H. Jones. A QSL dated October 29, 1934, from CM6XS gives 25 watts in the antenna, but I understand that his present tx is more powerful.

CO7 District is heard more. CO7CX sends a nice photo QSL; 7HF also QSL's. CO8 District is the most commonly heard after CO2. I have QSL's from 8YB, the best known CO8 on 3.5 and 14 mc., he used 150 w. 8WQ sends a fine QSL in orange and black filagree work and was on 14,122 kc. CO8EC uses 100 w. on 14,032 kc., and CO8VZ 30 w. on 14 mc. and sends fine "Rueda Del Oeste" type of QSL.

No amateur has actually been heard on 'phone though CO9GC-COKG has been heard working commercially.

## ● Dominican Republic

Proceeding to the Dominican Republic we hear several very well known 'phones, notably that of HI7G, whom in his QSL to me of August 5, 1934, says my report sent on July 2 of that year was his first 'phone report from outside America and that he was using only 20 watts. I have QSL's from HI7G on 3.5 mc. and 7 mc. 'phone when his output was 100 w. I have no HI3 or 4 QSL—they seem very elusive.

HI2K sends a fine photo QSL and uses 35 w. output; HI5X, 100 w. output on 14,090 kc.; HI6O,

fine litho QSL—he and 5X have also been heard on 7 mc. HI9R—the "ham" side of HI4D—sends fine photo QSL and uses 50 w. output on 14 mc.; finally, HI7G has also been heard on 28 mc.

On to Haiti, and HH2B, Mrs. Gertrude A. Bleo, whose voice is very well known to the s.w.l. She used 100 w. output. HH5PA used 50 w. input on 14 mc. and sends two different QSL's.

Before proceeding I would say that Dominican Republic, etc., possess commercial 'phones to be found on 14 mc., but these are not known to verify reception reports.

## ● British West Indies

VP2CD, St. John's, Antigua, and fairly well heard when conditions are good, used 65 w. on 14 mc., and has been heard on 7 mc. also. VP2KM, St. Kitts, sends very fine photo QSL on my 7 and 14 mc. reception. VP3 District has two 'phones—MR and BG—but they will not QSL on 14 mc.

VP4, Trinidad. I have VP4TC's 7 mc. QSL (he was, at the time I heard him, playing a game of chess with VP6TA). VP5PZ, Jamaica, very well heard both on 28 mc. and 14 mc., is a real old timer; I have his QSL but he says he does not require further s.w.l. reports.

VP6, Barbados, perhaps the best heard of all, I have his QSL on 7 mc. reception (7,072 kc.), he was relaying cricket matches (during tour of M.C.C. in 1935) to neighbouring islands and used 80 watts input. I also have his 14 mc. photo QSL—75 w. on 14,312 kc. VP6NW on 14 mc. VP6TR on 7 mc. used 50 w. in a chess game with VP4TC. Finally, VP6FO on 14 mc.

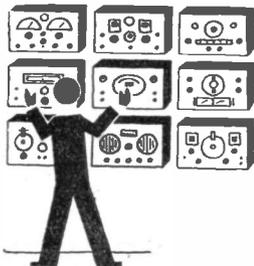
VP7 District, and rarely heard. NA sends a fine photo QSL and uses 40 w. input on 14 mc.

VP9, very well heard at certain times. VP9R, 14 mc., QSL's. VP9Q, 40 w. on 14,144 kc. and VP9G (heard on 14 and 28 mc.). Bermuda also possesses commercial phones—ZFD and ZFB, on 28 metres, and ZFA—but these do not verify (unless relaying broadcast programmes) which does not come under the scope of this article.

## QUERIES

Answers to any fair problems relating to short-wave radio are offered free to any of our readers; we do not, however, undertake to supply circuits of superhet receivers, etc., but shall be pleased to entertain any design queries that do not entail the drawing of elaborate circuits.

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# Practical Aerials for the Average Location

## PART II.

By P. PENNELL (G2PL) and R. W. ADDIE (G8LT)

FOR THOSE who have large lofts, satisfactory results may be obtained from either half- or full-wave radiators fed by twisted flex. On 28 mc. a piece of wire 16 feet long tapped on to the tank coil has been found to put a satisfactory signal into the whole of the U.S.A. using power inputs of around 50 watts. It cannot be claimed that an indoor radiator is as efficient as an outdoor one, but at least this should show that there are possibilities even for those situated in the most unpromising of locations.

### ● Doublet Aerials

For single-band operation the doublet stands as one of the most effective arrangements yet tried. While in an ordinary Hertz energy is fed into the system at a voltage node, here the array is fed in the centre at a high current and voltage anti-node. It is essentially a balanced arrangement and it is because of this fact that it is so successful. Hence care must be exercised to ensure that this balance is maintained in operation.

The radiator consists of a horizontal half-wave length of wire ( $\frac{0.95\lambda}{2}$ ) which is split at the centre, making two quarter-wave sections. The energy may be fed here via a suitable impedance-matching arrangement. Tests conducted at G8LT using open wire and twisted pair (EO1) feeders indicate that for normal lengths and with the inputs usually employed in this country the extra trouble and expense entailed in constructing open lines is not justified. Furthermore the twisted pair is more suited to being led round corners than the other. The impedance of such twisted cable is approximately 72 ohms which matches the average impedance at the centre of a half-wave aerial and though dielectrics are higher than with open lines the radiation from it is very much less.

Theoretically the impedance at the centre of a half-wave radiator varies sinusoidally about this value as the height in wavelength above ground and the amplitude of the curve decreases at each cycle, thus it is good practice to fan out the feeders into an equilateral triangle of 12 inches or so for 14 mc., 24 inches for 7 mc. and so on.

Since we are feeding at a point of maximum current and minimum voltage the breakdown voltage of the line can be comparatively small and for this reason great care must be taken to avoid standing waves on such a feeder, since voltage nodes appear and may lead to a failure of the line insulation.

The following method has always been employed in the aforementioned tests to determine the presence or not of standing waves on a twisted pair feeder. Cut a separate length of flex equal in length to a quarter wave as given by the Hertz formula. Next attach four flash-lamp bulbs of equal rating to the ends of the wire now formed and connect the other side of one pair of bulbs to the feeder and the other to a one or two turn coupling coil into the

transmitter as shown in *fig. 11*. If there is an even distribution of current throughout the line both pairs of bulbs should glow evenly, while the presence

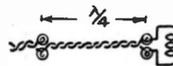


FIG. 11.

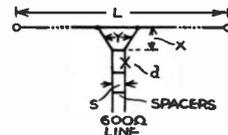


FIG. 12.

of standing waves will be shown by one pair glowing brightly while the other is barely alight. The cure is to add on or cut off a length of feeder approximately equal to one eighth of wavelength.

If the feeder length is measured before erection this trouble can be avoided by ensuring that it is not an even number of quarter waves long. In the above tests it may be observed that there is not an even glow in two bulbs of a pair and while experiments have indicated that this is tolerable to a certain degree it shows that the array is not perfectly balanced and a slight alteration in the length of one half of the top may help but not until the coupling coil has been symmetrically adjusted in the tank coil.

Before passing on to the operation and results obtained with such a system it is proposed to mention briefly the construction of a 600-ohm open-wire line. As a much wider fanning is used it is convenient to tap the feeders on to a complete half wavelength of wire as shown in the figure. The spreaders can consist of waxed wooden dowel or glass rod, and at G8LT the outer ebonite cases of waxed lead-in tubes were used, these were obtained at one of those famous stores where anything from "biscuits to bootblack" can be bought very inexpensively! These are very light and strong. The values of the unknowns in *fig. 12* can be obtained from the formulæ:—

$$Y \text{ feet} = \frac{492,000}{f} K$$

$$X \text{ feet} = \frac{147,600}{F}$$

$$S \text{ inches} = 75d \text{ where } d \text{ is inches.}$$

Where K is 0.25 for freq. less than 3,000 kc.

" 0.24 " " 3,000 to 28,000 kc.

" 0.23 " " greater than 28,000 kc.

In the above remarks the system is assumed to be horizontal.



FIGS. 13, 14, 15, 16.

The polar diagram for any half-wave horizontal aerial consists of two lobes (*fig. 13*) and it is here

that we must consider how best to utilise the lobes of maximum radiation which are at right angles to the aerial. In the experiments at Woking it was decided to place the doublet in such a way that one lobe pointed towards the American continent, firstly because there are a larger number of stations active in that direction and consequently reports might be obtained comparatively easily (remembering the small input of ten watts), secondly, should a slight miscalculation in the placing of the aerial be made then, since the target was so large, one could hardly avoid hitting it off in some direction or other. The direction chosen for erection was NNE-SSW. By force of circumstances the radiator had to have its SSW end at a height of 50 feet while the NNE was only at 40 feet but suitable corrections were made to compensate for this.

Because this system is for single band operation the 14 mc. band was chosen as being the easiest on which to obtain long-distance reports without the uncertainty of 28 mc. conditions or the constant battle on 7 mc. to receive a report without discovering that the reporting station had been suddenly enveloped in inferior quality 'phone interference.

At first there was little difference in signal strength reports between the new system and the old single wire fed Hertz. Very soon reports from the east coast of America indicated that a more reliable if not louder signal was being radiated. Later it was discovered that the west coast of America could be worked easily with an average report of R5-6. Results in N. Asia, S. Africa and Australasia were however not so pleasing.

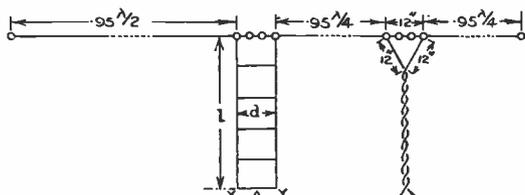


FIG. 17.

A slight readjustment of the Y impedance match produced an improvement but there was reason to believe that the lobes covered a much wider area than was necessary. Hence attention was turned towards the possibilities of a more directive system to see just how much could be done on low power with a good aerial. Accordingly it was decided to erect in the same span and next to the present aerial a similar one also fed with twisted pair feeders. The idea of this was to arrange the two feeders so that the two aerials might be run in or out of phase. When in phase the radiator should theoretically have a diagram as in *fig. 16* while out of phase it should be as in *fig. 15*. In this way it would be possible to turn the two half waves in phase into an effective full wave Hertz by a simple switch in the station. Because of lack of space the length of the second feeder (B) had to be 15 feet longer than the first feeder (A).

The first unusual result occurred when America was called repeatedly without success when the half waves were in phase. The second shock was a report of extra strong signal strength from French Morocco and North Canada! Referring to the great circle map of the world centred on London it was seen that the two lobes had twisted about a vertical axis through some 15 to 20 degrees on the addition

of the second aerial. On removal of the latter results were as before.

The inference drawn from this was that the discrepancy in the lengths of the feeders had caused B aerial to lag A aerial in phase by an appreciable amount. Since it was not easy to make the two feeders equal it was decided to try complete 'in-phase' operation by substitution of a single half-wave aerial for B and inserting a phasing stub of the correct length between the two aerials. The arrangement shown in *fig. 17* was accordingly erected. The adjustment of the  $\frac{1}{2}$ -stub should be carried out with some care and it should be remembered that it is not sufficient to adjust current values with the aerial at ground level because this will upset the values and give entirely erroneous readings.

The adjustment is best carried out in the following manner: Firstly, ensure that the doublet is working correctly and is balanced, next erect the  $\frac{1}{2}$ -wave of wire but without the stub and see that this does not alter the characteristic of the first aerial. Cut the stub length  $l$  to be  $\frac{1}{2}$ -wave or a bit over. The distance  $d$  is conveniently made 7 inches, employing the spreaders described before. XY is a shorting bar. Insert a hot-wire ammeter at A, if it is impossible to employ such an instrument a bulb of suitable rating may replace it. At Woking the ammeter was placed at A, the aerial hoisted up and its reading noted with some difficulty with the aid of a telescope from an upper window of the house! A small amount of energy is fed to the system sufficient to produce a good reading at A. The length is then shortened by an inch or so and another reading taken. This should be repeated once or twice, taking care not to leave loose ends of the stub hanging below XY; a good plan is to twist the wire back up the stub.

If a graph be plotted with length  $l$  on a horizontal axis and an ammeter reading on the vertical axis a curve will be obtained which rises to a maximum and then falls again. We read off the length  $l$  at the current peak, this will give the stub length accurately and is worth the extra trouble involved. When the stub has been suitably adjusted it should be kept from swinging about too much by attaching a small weight to the bottom. One method which has been successfully employed is to tie one end of a piece of cord to the stub and run it through a metal ring in the side of an 8-foot vertical post. A weight is now attached to the string about 3 feet above the ground, and the ring acts as a guide for the string as the whole moves up and down. In the case described fall trees were used to support the system and consequently elaborate precautions had to be taken in this position and at the ends to allow for the sway which can amount to 10 or 12 feet in the 80-foot span when a gale is blowing! Having concluded the outside work the feeders were coupled to the transmitter via a small coupling coil and moved until the final amplifier drew the required current. The following tests were to determine the exact breadth of the two lobes of maximum radiation, since the theoretical should be *fig. 16*.

The first very marked difference noted was the increase in field strength observed in the American continent, especially U.S.A. Average reports from E. and mid-W. America gave R6-7 while further westwards (W6 and 7) reports were R7-8; WTAMX gave R9 steady with the same small input to the transmitter. This showed conclusively that the system had a good low angle of radiation, a highly

desirable element. Furthermore very strong reports had been received from French Morocco and N. Canada but now these were no more than normal. S. Africa, especially the east coast also reported loud signals and similarly New Zealand. Reports from Australia however failed to show a marked increase and this will be obvious if the great circle map be studied. India likewise gave R5 on more than one occasion.

The possibilities of low-power 'phone can be seen from the several contacts with America using 8 watts input to a suppressor-grid modulated RK25—R7 to 8 reports were obtained. When plotting a chart of field strengths it was apparent that the major lobes were confining themselves to a spread of approximately 60 degrees, this is extremely satisfactory in view of the simplicity of the array, while space does not permit of further enlargement upon this interesting side of the subject.

We might suggest for the benefit of those who are interested that further phased radiators can be added not only above and below the present system but also in the same line. A comparison of the effect of a stack of reflectors behind the whole would be extremely illuminating since experiments are at present continuing on these lines the writers would be pleased to hear from any who are following the same idea in order that the fullest information may be available.

### ● The Rhombic Aerial

A detailed description of this highly successful aerial cannot be embarked upon here for not only have the authors lacked space to erect one but it assumed that few who read this will have any better facilities. It is sufficient to say that the overall length for success has to be at least 8 wavelengths and the enthusiast is referred to the many excellent standard works and articles that have been written from time to time.

In conclusion there is one important observation to be made, that in all the arrays herein described enamelled wire of at least 14 s.w.g. must be used. Much trouble has been caused by the use of stranded wire (producing skin effect) or bare copper wire which lends itself to corrosion.

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Road Schools; all are welcome. A small subscription will be levied to cover the cost of the room.

It has been decided to make a big membership drive in the Home Counties Division commencing with this meeting.

**I.F. STATE AND N.I.:** The divisional representative will in future be known as the Irish Divisional Representative. Irish notepaper and verification forms can be obtained at reasonable charges from the Irish divisional representative, Mr. J. G. White, 18, St. David's Terrace, N.C.R., Dublin, I.F.S. Duty charges necessitate this arrangement. District and county representatives are required, also new members.

For the information of new and prospective members full details of the divisional plan and names and addresses of divisional representatives appeared in the last issue of the Lancs. News Sheet and **THE SHORT-WAVE MAGAZINE**.

All applications for membership must be sent to Headquarters together with P.O. for 1/- and a stamped addressed envelope.

## NATIONAL RADIO SOCIETY

By C. F. BIGGS

I HAVE to again express thanks for the large number of letters received, but I must draw attention to the fact that when a reply is necessary a stamped addressed envelope must be included.

You will understand that my report will be very brief this month owing to the fact that the divisional representatives have not had sufficient time to study the Divisional Plan, as outlined last month, and send in a detailed report, but by the time this appears an Executive Committee will have met and decided: (a) the future of the National Radio Society and **THE SHORT-WAVE MAGAZINE**; (b) new rules; (c) details of membership cards and certificates; (d) a proposed questionnaire to all members.

### ● Constitution

The temporary constitution is as follows; it is proposed that this should remain until the general meeting (end of June), when every member will have an opportunity of voting a new executive and committee:—

General Secretary, Mr. C. F. Biggs, 86, Lordship Lane, Tottenham, N.17 (Gen. Headquarters).

Assistant Secretary, Mr. F. Stringer, 62, Bedford Road, E.17.

Treasurer, Mr. C. J. L. Goldsworthy, 24, Penrith Street, S.W.

Organising Secretary, Mr. J. Pearce, 13, Semley Road, Norbury, S.W.

Executive Committee, Messrs. W. E. Barber, F. Chapman, C. Constable, J. F. Cunningham, R. Gershon, K. Lowe, E. J. Sprange, R. C. Taylor, E. W. J. Field, R. S. Stevens and J. Woolecote.

I have received complaints from divisional representatives that they cannot obtain **THE SHORT-WAVE MAGAZINE** until late in the month; this delays their reports to headquarters. Will all representatives and members who experience difficulty in obtaining the magazine please write direct to the Editor in order that he may deal with this matter. By this means investigation will be made and a remedy applied.

Congratulations to N.R.S.159, J. Lomax, Accrington, on obtaining his A.A. call, 2DAD; likewise N.R.S.427, G. B. Routledge, Middlesex (2DDV).

### ● Activities

**N.W. DIVISION AND HOME COUNTIES:** Full particulars apply to the divisional representatives, Mr. A. Park, 14, Fairfax Street, Prestwich, Manchester, Lancs., or Mr. R. F. Stevens, 43, Pettits Lane, Romford, Essex, respectively.

The Essex County representatives should read as follows: Messrs. J. F. Cunningham and R. Gershon.

As from January the Essex News Sheet will be taken over by the joint Essex County representatives. Apply to Mr. J. F. Cunningham, 32, Park Street, Chelmsford, Essex.

**EAST LONDON:** Mr. G. Storey, 105, Ranelagh Road, E.6, has been appointed district representative for East Ham. Fortnightly meetings, commencing February 2, will be held at the Brampton

(Continued at foot of column 1).

# "RADIOQUEST"

## Armchair Understanding of Radio Riddles

By RAY CORTON

IN OUR LAST article we mentioned the term "feeders." It is a subject which is always cropping up in short-wave work, and is confusing because it is not met with in ordinary broadcast reception.

To the listener feeders should be synonymous with reduction of man-made static. Fully half the queries sent to the Query Department deal with local noises which ruin reception, so if you are one of the many who suffer from these don't be frightened by the term "feeder" because it is very simple to understand and may help you out of your trouble.

### ● Feeders avoid losses

You have probably heard the term "low loss." Short-wave receivers and components are constructed on low-loss principles because as the wavelength decreases the losses of a given component increase. As an example of this take the case of an aerial on broadcast waves. You may bring the lead-in through the house for quite a fair distance without noticing any difference; but if you do so on short-waves down goes signal strength and up goes the local background noise. Another example is the tuning condenser. On broadcast waves it has plenty of insulation, while for short waves the very minimum of insulation is used. Short waves just don't like insulation; it causes losses.

To get back to feeders. We have seen that on a broadcast receiver we cannot erect a long enough aerial to tune to the wavelength, so we compensate for it by "loading" it up to the required wavelength by means of a coil inside the receiver.

In a transmitter working on a medium or long wavelength an enormous length of wire was required to make an aerial which would tune to the wavelength. It could be shorter and loaded up to tune with a coil inside the transmitter, but then it would not radiate power as efficiently, so the ideal was to get as much wire up as possible. Masts of 500 feet height, or over, might be used and the total length of wire, including the lead-in, would nearly tune to the required wave.

### ● Connecting Aerial and Receiver

When transmitters began to use low waves it was easy to erect the short length of wire necessary to tune to the wavelength. Now if a transmitter is working on 20 metres the length necessary is one-half this, or 10 metres, approximately 33 feet. This meant that the maximum height of the aerial could not be more than 33 feet, and owing to absorption by trees, buildings, hills, etc., the aerial was not very efficient. The higher an aerial the better it radiates, but if we raise its height how are we going to connect it to the transmitter? If we could raise the transmitter in the air as well so that it was next to the aerial there would be no need for long lead-in wires, and the problem would be solved.

We could not raise the transmitter in the air, so we made it think it was up in the air next to the aerial! We connected it to the aerial by means of feeders.

Let's have a look at the aerial for a moment. A half-wave aerial can be connected to a transmitter or a receiver in several different ways. It can be connected at the centre, part of the way along, or at the end. At each of these places it has a different impedance. Don't be alarmed by this word, because you come across it in every receiver. If you add an extension speaker to a set you are told to use one of 6 ohms, or 2,000 ohms impedance. If you use a 2,000-ohm speaker, and have only a 6-ohm one handy, you buy a matching transformer which matches the 2,000 ohms of the receiver to the 6 ohms of the speaker. The set has to be matched by the speaker, likewise the aerial must be matched to the transmitter or receiver.

A half-wave aerial has not got a fixed impedance like a speaker. At the centre its impedance is 75 ohms, and it rises gradually until at the ends it is 2,200 ohms. These figures are constant, but it must be remembered that the impedance differs from the centre to either end.

If we are going to connect the transmitter to the centre of the aerial it will have to be matched to 75 ohms, and if we have the transmitter next to the aerial all we do is put in a transformer matching the set to 75 ohms.

### ● 75 ohm Feeders

At last we get to feeders. Two parallel wires have an impedance, according to the diameter of the wires and the distance between them. We can so arrange them that their impedance is 75 ohms, which is the impedance of the centre of the aerial. It does not matter how long these wires are, their impedance will still be 75 ohms. If we connect them to the transmitter, or the receiver, it will then be matched to the aerial centre.

We connect these feeders to the transmitter and nothing happens: if we connect two wires to a battery nothing happens. But if we put a bulb across the other end of the wires power is drawn from the battery and the bulb lights up. If we connect the free end of the feeders to the centre of the aerial (the feeders are 75 ohms, the centre of the aerial is 75 ohms) it draws power from the transmitter and begins to radiate. We have got an impedance match right through to the aerial, and the result is the same as if the transmitter were raised in the air next to the aerial. The feeders can be a thousand feet or so long, but there will be no measurable loss. We can place our aerial in any convenient place, above and away from absorbing objects, and put power into it just as well as if it were next to the transmitter.

Once we have grasped the principle of feeders in transmitting, we can understand their use in receiving. Signals picked up in an aerial high above the

ground, or away from trees, etc., can be transferred to the receiver without loss. Only the aerial acts as a "pick-up," the feeders do not pick up signals. At least they do pick them up, but there are two wires in the feeders and signals picked up in one are cancelled out by the same signal picked up in the other, owing to the two wires being what is called "out of phase."

Man-made static, such as car interference, neon signs, etc., only cause trouble near the ground. If the aerial is more than 35 feet above the ground it will be free from this type of interference. In the ordinary type aerial it may be more than 35 feet above ground and still pick up interference. This is because the lead-in is part of the aerial and as this passes through the interference zone it picks up the interference which the aerial has dodged. When a feeder system is used the aerial is above the interference level, but the feeder passing through the interference zone will not pick it up, so man-made static is obviated!

Most of the anti-static aerials now in use work on this principle and use 75 ohm feeder. The spacing between the two wires for an impedance of 75 ohms is roughly the same as that of ordinary twisted flex, so a cable resembling it is used. It is specially treated to resist the weather, and the insulation used is designed for short-wave use.

### ● 600 ohm Feeders

As the distance between the two wires of the feeders is increased the impedance increases. Thus we have two types of feeder in general use, the twisted pair type (75 ohms) and the open pair type, the impedance of which is 600 ohms. With 14 s.w.g. wire the distance apart should be about 5 inches for 600 ohms, and so they cannot be twisted together as are the 75 ohm types, and are therefore called "open type" feeders. The nearest we can get to twisting is by transposing them every few feet, and this is done by means of transposition blocks, often seen with this type of feeder.

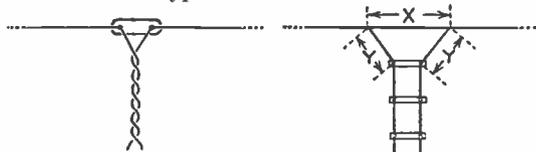


FIG. 1.

FIG. 2.

Note that with 75 ohm feeder the aerial is cut in the centre (fig. 1) and the cable inserted, while with 600 ohm feeders they are connected across a portion of the aerial which is not cut (fig. 2). The feeders are connected to points on the aerial which are 500 ohms, and this point is calculated by the formula:

$$X = \frac{492,000}{f} X 0.24$$

$$Y = \frac{147,000}{f}$$

f = frequency.

(X and f expressed in feet.)

### ● Which to use

The 75 ohm feeders and the 600 ohm ones carry the same power, but the 75 ohm ones carry more

current at less voltage than do the 600 ohm ones. The lower the voltage, the less are losses due to insulation and proximity to surrounding objects. Hence 75 ohm cable, which owing to its construction can be twisted and heavily insulated, is less liable to losses from leakage to nearby objects, and so can be taken round the corners of houses, under window sills, and even buried without any adverse effects.

600 ohms open type feeders are carrying a relatively high voltage, must not have any sharp bends, and must be carefully insulated from nearby objects. In addition if the wires swing to and fro relative to each other the impedance of the feeder will change; there will be a varying mis-match of impedance between aerial, feeder, and receiver, and signals will fade as the feeder swings. Hence the choice is purely for mechanical considerations. If you are able to run the feeder straight down to the receiving room and prevent it from swinging the 600 open type is indicated, particularly on the score of efficiency. If you want to run the feeder round the corner of the house, down a passage and across the room, use 75 ohm cable.

There is no necessity to indulge in a lot of needless expense. For experiment get a few yards of ordinary lighting flex. It will be near enough 75 ohms to match, and if you find a reduction of noise you can replace it with special low loss, weather-proof cable. The spare flex will always come in useful for speaker extensions, or odd lighting jobs round the house. At twopence per yard two or three shillings should be ample to cover the cost of this experiment; it is foolish to buy the much higher priced special cable until you are sure it is going to be an improvement.

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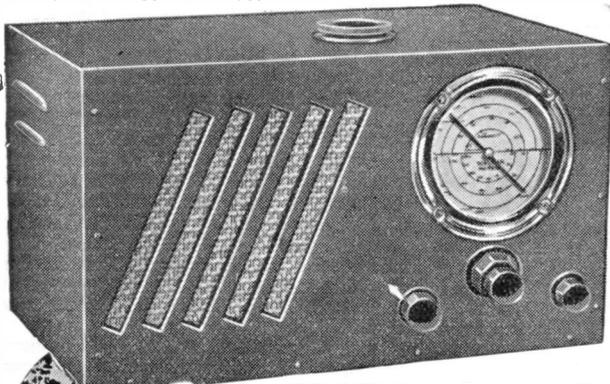
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# February Programmes

All times quoted are G.M.T. unless otherwise stated.

THE SEARCHLIGHT of publicity has recently been lavishly played on the B.B.C.'s efforts to find out what the listener wants while the critics, all chorusing that the listener does not know what he wants, have devoted columns to tell him how to complete the questionnaire.

To further bewilder the poor listener and to prove that they (the critics and not the B.B.C.) are never wrong, they forecast that the result will not be a true indication as it is not being done on a large enough scale, adding just to make quite sure, that the B.B.C. officials will not deviate in the slightest from their fixed programme notions.

Listeners are not dead from the neck up and programmes of popular science talks and news reviews always command the interest even when one seeks relaxation, especially when served in armchair doses. Here is a selection of America's contribution of *weekly* items of this description.

- Sun. 5.30 p.m., University of Chicago Round Table Discussion W2XAD, 19.56 m.  
 Tues. 9.50 p.m. News of the Science Laboratories WIXAL, 25.4 m.  
 „ 11 p.m. Science in the News W2XAD 19.56 m. and W2XAF, 31.48 m.  
 Wed. 11 p.m. The Monitor Views the News WIXAL 25.4 m.  
 „ 12.30 a.m. The World of Science WIXAL, 49.6 m.  
 Thurs. 1.30 a.m. The March of Time W8XK, 25.26 m.  
 Sat. 10 p.m. Stories of Industry W2XE, 25.36 m.

Equally as much importance is paid to the educational and cultural aspect of broadcast programmes in the States as in this country—as evidenced by the recent appointment of Dr. James Rowland Angell, ex-president of Yale University to the post



Stars as they are. The celebrated Amos 'n' Andy as they are in real life when Amos is Freeman F. Gosden 'n' Andy, Charles J. Correll. The former is, by the way, a ham; maybe you have heard him. This long-established partnership is to be heard from W2XAD and W2XAF each week at 12 midnight on Wednesday and Thursday.

of educational counsellor to the N.B.C.—but there it is put over in a popular and pleasing manner.

## ● VP3THE

With reference to the Holden Expedition mentioned last month, we neglected to give the call and wavelength—VP3THE, 21.8 metres. Thanks to Mr. R. T. Dealey (G6DT) who writes: "I learned in the course of a 20-metre fone QSO with the Expedition's station at noon on the 9th January that they would be closing down during this week, and most of the members would be returning to the U.S.A." This is the only QSO I have heard of with the Holden Expedition, maybe some listeners heard them. Reports of reception should be sent to The Holden British Guiana Expedition (VP3THE), c/o The National Broadcasting Co., R.C.A. Buildings, Radio City, New York.

Turning to Europe, pleasant, politically unbiased programmes are radiated from Praha on the following wave-lengths:

- OLR2A 49.92 metres.
- OLR2B 49.75 „
- OLR3A 31.41 „
- OLR5A 19.70 „
- OLR5B 19.58 „

English programmes are given daily while special transmissions to America commencing at 20.00 E.S.T. are given every Monday, Wednesday and Friday.

Other Europeans such as TPA2, 3 and 4, and 2RO continue during February with good, if not spectacular, material, frequently starring their nationals of international fame. Rome's popular "American hour" is now also broadcast on 30.52 m. from IRF as well as on 31.13 m. from 2RO-3 to ensure good listening to their overseas audiences, and a wide variety of programmes is billed for this month.

On the 17th an unusual item will be a talk on the "Quadrara," Italy's movie city just outside Rome where practically all Italian motion picture production is concentrated. Before the Great War, Italy was one of the leaders in the production of cinema films (America was then completely in the background) yet who remembers "Quo Vadis"?—considered the greatest ever when it was first made and other classic Italian milestones in motion picture history?

## ● Dance Music

Listeners who are dance band fans, have reason to grumble at the rarity of good dance music in the home programmes, at least at reasonable listening hours. With a few exceptions, this is unfortunately true of the leading American bands. For those with sufficient enthusiasm, Cab Calloway, Glen Gray and his Casa Loma Orchestra, Buddy Rogers, Tommy Dorsey and Bing Crosby and his Orchestra, are available from W2XE on 25.36 m. every day in the South American transmissions from 4 a.m. What a shame the sun doesn't travel the other way round! There is, however, a large crumb of comfort for them at 10.30 Sunday nights when a half-hour by Guy Lombardo is to be heard from the same station.

# Reflected Waves and Side-splash

## in other words—All Sorts of Things

AT FIRST I was rather surprised at the interest aroused by the first two paragraphs of last month's "Reflected Waves," but perhaps it is only natural that s.w. listeners should be interested in each other as they do not get an opportunity of meeting on the air. So here are a few words about another "pillar" of the "DX Corner," Mr. Leslie Levitt, N.R.S.53, whose enthusiasm can best be judged by the list of calls heard he submits each month.

Being restricted to battery receivers, and after trying many, his choice fell on THE SHORT-WAVE MAGAZINE Class B which has satisfied him from its first appearance to date, and that speaks volumes for a home constructor! Just about that time he reported his first amateur station; his first 50 reports brought only 10 veri's. However, a little experience changed that and he soon learned how to give that information the amateur requires: reporting candidly on signal strength, etc., a practice he himself will in turn appreciate when he has his own transmitter—and that may not be long.

Mr. Levitt finds mention of general conditions and districts coming in at that time appreciated by amateurs and has recently had a reply by return from a VE whom he reported R3, bad quality. Like most other s.w. fans he finds that alteration to his aerial system brings in groups previously unheard, a thing which a great many listeners who, like N.R.S.53, graduated from broadcast set construction, seem reluctant to appreciate. He has tried many other hobbies but only that of cabinet-making has survived, but this is more or less limited to radio requirements.

### ● Municipal Publicity

A statistically-minded reader writes to point out that proportionately Croydon has the most hams and short-wave listeners in England. Gets his figures from the call-book and points out that there are three clubs in the County Borough—and one just outside! He thinks the local council should do something about it. Perhaps they will include a couple of zig-zag lines, representing short waves, in their coat-of-arms.

I remember the Blackpool Corporation supplying QSL and reporting cards (a small picture in each corner) to their residents some time ago, and nowadays the Rhyl Publicity Association are offering fully-printed cards to hams, all and sundry, with a picture on the back. Now then, Croydon!

### ● Listeners, be candid!

It is noteworthy that a short-wave club asks for reports from listeners, on a test they are carrying out this month, especially from B.R.S. and B.S.W.L., N.R.S., etc. members. This, I think, expresses what many hams feel but don't actually say. A report card gives the listener "standing," sets out the information required in a form useful for quick reference and being more or less of uniform dimensions is handier, as it can be readily filed for future reference.

It is annoying to receive incomplete reports on odd scraps of paper and one cannot wonder that many hams have long since determined not to

acknowledge uninformative reports. Take a leaf from listener Leslie Levitt's book and report with candour. Too many times I have heard hams enquire "Why do they always give us R9?"

### ● Hero worship—writ sarcastic

With this issue THE SHORT-WAVE MAGAZINE completes its first year and during that period no photographs of the Editor or Austin Forsyth, our designers, holding the latest of their creations, have yet adorned its pages. For that matter, no picture of any of the editorial staff, with one notable exception, have yet appeared. That exception was when 2AMW "stood-in" for a picture wanted in a hurry. He did it so modestly, showing as little of the front of himself as the pose needed, that I had some difficulty in convincing people who know him well that it really was him!

I am not offering prizes for readers who discover the picture in question, maybe we shall have a portrait gallery one day if enough readers ask for it. In the meantime I am offering postcard photographs of myself. Just send 12 coupons from consecutive issues and thirty-bob to cover cost of postage, packing and insurance. Hi!

### ● Ingenuity let loose

Just lately I have noticed an epidemic of "side-swipe" Morse keys consisting of a hack-saw-blade arm wagged between two 'phone-pin type terminals enabling rapid adjustment of the short pieces of brass rod forming the gap. Many learners seem to pick up the code with greater facility with these than a straight key. These "side-swipes" take many ingenious forms but they all seem to be based on the hack-saw blade, which because of its springiness is ideally suitable.

A friend I went to see recently had wound a few turns of insulated wire around each of his power transformer bobbins and was using the extra current for pilot warning lights (behind ruby glass) on the power supply, and for illuminating dials and meters. I made a quip about his shack looking like the outside of a cinema when it was all lit up, which wasn't received too warmly; but for those who would copy the idea I would mention the number of turns must be found by experiment; it might be anything from 4 to 8 turns per volt depending, of course, on the size of the transformer.

Another original idea seen recently was for high-speed charging. 6-volt 80 amp. car batteries were used and these take a long time to replenish by trickle-charging although a ten amp. charge is not harmful. A charging rate of that order is not easily obtained but this ham runs the battery up from a car dynamo driven by an electric fan motor, suitably gearing the dynamo speed to give a 10 amp. output.

Please don't write and tell me the story about the man who made a Morse recorder out of the spring motor from a clock-work train and fourpence-farthing's-worth of other pieces. Firstly, I've heard it and secondly I don't believe it!

*Genevieve Yap.*

# LISTENERS' DX CORNER

By The DX Scribe

WE SHOULD OMIT DX from the title this month; it's been about as rare as strawberries this time of year. The period December-January is usually pretty dud, but none of us expected it to turn out practically devoid of signals. Right through 1937, up till September stations have been rocking in, any old hook-up would bring in the rarest DX, and now it has all vanished.

Poor conditions are annoying, but they are the test of a good receiver. Owners of super-hot receivers have been chipped all the summer because DX has been so common, but now that conditions are so bad, it's the decent receiver which is raking signals in, while the hook-up owner complains bitterly that he can hear nothing.

Don't make a dive for your pens to slay me for boosting big sets—I'm not. The decent receiver is the one which is properly built. Each valve is doing its stuff, not behaving as a passenger. I have seen dozens of sets which bring in DX when conditions are good, and which are useless during spells like the present one.

## ● An r.f. Hint

Most typical is the straight three, r.f.-det.-i.f. The constructor thinks he can go one better than the designer, economises by cutting out all screening and by substituting inferior components, and then blames conditions. Instead of coupling the aerial to the r.f. valve try coupling it to the detector. Nine times out of ten signals are stronger! A properly designed and built r.f. stage will bring signals up from R3 to R9, and the r.f. tuning should be practically as sharp as the detector.

Commercial sets are usually better than the majority of home-built receivers because they are made well in the first place. You wouldn't tolerate a bought set which required a knock to make it work, or one in which connections were always coming adrift, but faults like this obtain in many amateur-built rigs. Commercial receivers cannot be made to give the same efficiency as home-made ones, because individual attention cannot be given to them (excluding those hand-made models over the £50 mark).

Looks like I'm rambling away from the point, but when conditions are bad, make sure that your receiver is not throwing away 90 per cent of the signals.

14 mc. has been very constant this month. Dead in the early morning, Yank 'phones tearing in around lunch time, a few weak VK's in the afternoon, an occasional W6 or W7 after tea, sometimes some South Africans, but always complete fade out at 10.00 G.M.T.

## ● Learn the Code

I always think that those who can't read code waste a lot of time. They hear one or two weak 'phones, and may carry on for hours without hearing anything really DX. The code man will switch on, hear W7AMX coming through on key, and then know that W7's should be coming through on 'phone. A large number of the DX stations on code are using high power, in conjunction with beam

aerials, and can be heard long before the 'phone stations in their locality get across. This month I have heard complaints about the lack of W6, W7, W5, and VK signals. There have been plenty on, but they have only been coming in for a few minutes at a time. W6 and W7 for example, have been heard between 18.20 and 18.50 only, and hearing one or two on c.w., or hearing European stations calling them, gives the tip to search at the correct time.

Forty opened up a bit just before Christmas, but its early promise seems to have died away. One or two mornings things have been bright, but in general it has been unproductive of DX both morning and evening. Another week or so and it should be alive once again, so by the time this is in print I expect you will find the band full of stations from 22.00 till 08.00.

Weather prophets forecast a late winter, so maybe the return to good conditions will be delayed. When they do return we shall be able to compare the date with that of previous years.

## ● Ten

The star band of the month has again been 28 mc. Although signals have not been as frequent as during the past few months, there have been plenty coming through, and at far better strength than on any other band; Asia has been the weak continent, and no reports have arrived on Asiatic signals during the past month.

Australia also appears to be missing, but actually, as I have remarked before, the VK's are mainly on c.w., and so those unable to read code have not had much success with them on ten metres.

## ● Logs

"Best log the month" title goes to GORDON BARRON. Pity he could not manage all U.S.A. districts (W7 missing), but he makes up for it by variety in the number of countries logged. Not only has he turned in a fine log on ten and twenty, but he has also spent some time on eighty, and, as his log shows, there is DX to be heard on this band.

He says he hopes all those who wrote to him about the "junk box" receiver he is using on ten were successful in making one as cheaply. We shall have to start a competition for the best DX on the cheapest RX!

L. LEVITT (Leeds), writes that he is not sending a log this month, but sends instead a simply terrific list of the DX QSL's he has received during the past five months.

A class B one valver is used, and L. Levitt's logs should be sufficient proof to all who are dubious about the performance of this little receiver. He sent a report to VK2MH on his 'phone signals, and got a long letter back expressing amazement at them being picked up on a single valve job. VK2MH uses a three-valve transmitter, ending up in a 210, modulated by a pair of 42's, so his power cannot be more than 40 watts.

BOB EVERARD says that conditions on ten have not been as good as during the corresponding period last year, but his log doesn't seem to be affected.

adversely. He has received a cutting from *The Milwaukee Journal* mentioning his reception of W9XLS, police 'phone at Racine, Wisconsin, 25 watts on 9 metres. He has logged 24 South African 'phones, and recent QSL's received include those from: ZS1K 50 watts, ZS2N 50 watts, ZU51, ZU6C 45 watts, VK3ZB 30 watts, VK3HR, VK3ZJ 25 watts, YN1OP, VP6YB, and W6OXA. Congrats, Bob; you still keep "the most consistent" title.

R. F. WIBBERLEY (Godalming) joins the corner this month with a "five continent" log. Try around 14.00, you will probably rake in those elusive VK's. They have been coming in on 14 mc. from 12.00 until 16.00 almost every day.

H. LUDLOW (Gantry, I.F.S.) found the first week of December very bad. The second week conditions greatly improved, coming up to average, but the third week they went off again, until on the 15th short skip was noticed. From the 18th until the 21st there was thick fog, and he noticed that signals seemed to fade out. He has noticed this effect several times before, so it would be interesting to hear the comments of other members of the corner about fog/condx.

First log from the Channel Islands comes from E. W. VAUDIN (Guernsey). Welcome to the Corner, OM. Conditions seem pretty good your way, and I bet you don't get the man-made static we do over here.

An unusual log comes from a London reader who wishes to remain anonymous. He has sent me his log extending from September, 1936. It is a beautifully-kept record of all stations heard, together with frequency, station contacted, location, weather, condx, and any other useful notes. Each sheet and station is numbered, so that he can check up immediately whether he has heard it before. The importance of keeping a detailed log cannot be over-estimated; you can turn back and check conditions last year, last month; see if districts are coming through in the same "groups"; and forecast the probable conditions for the next few months. I have kept logs for the past fifteen years, and I find that they help me no end to predict times and conditions for best reception.

His letter appears at the end of the section. Incidentally, I have a feeling that many readers of the Corner are not keen on technicalities, so I have persuaded the Editor to let us have a page to ourselves, entirely for our own correspondence. Let me know how you like it, because unless I can prove

to him that it really is demanded, he will probably "pinch" it back next month. Drop a card saying "we want our own correspondence page," and if I receive enough he will be too frightened to try and take it away!

### ● Shack photo

Shack photo this month is that of IVOR HILTON (Leeds). He uses an all-mains 1-v-1, line-up 6D6-6D6-41, which he says it almost hum free. He complains that he has difficulty in getting VK's, and wonders whether other Leeds readers experience the same difficulty. Well, OM, what about L. Levitt? He is in the Leeds district, and gets dozens, so why not get together?



Don't forget that the blocks of all photos used in this column are sent to the reader free. You can then have your photo printed on your cards at no extra cost, so if you want to have a "posh" card, send along.

### ● 1.7 mc.

Time to say 73 now, but if you want to try for some hard DX, listen during the 1.7 tests this month. No 'phone will be used, only key, but it will be a hot test for any receiver. Tests begin at 05.00 so I had better start getting in my beauty sleep now—I shan't have much time then.

### CALLS HEARD

**Gordon Barron**, 39 Birley Road, Whetstone, London, N.20.

10 metre phone (Junk Box 0-v-1), 29:11:37—15:1:38.

YV5AK. HK3JA. YV5AA. CN8AJ. SV1 CA. H17G. T12FG. K4 EMG. EIL. VE 1DR. 1BR. 2KY. 3ANF. G6 WU. 5KH. 2AI. 8FZ. 6CL. AG. 5ZC. 6GR. 2BY.

W1 AA. AJZ. APQ. ALB. AWZ. AML. APU. BJE. BVL. BGT. BOK. BBX. BBA. CJL. COO. DQK. DJK. DSV. DPJ. EZS. EUG. EKN. EER. FLZ. GGV. GDY. GJZ. GBE. HZS. HUI. HHH. HNY. IYE. IXP. IXI. IGD. IAS. JTG. JIL. JBV. JGN. JHM. JNP. KIJ. KLD. KKL. KJE. KUJ. KTF. KRW. KPN. KQF. KUD. KNB. NB. QM. WR. WK.

W2 AOG. AMF. ADJ. AGM. AHS. AMJ. AJF. ATC. BFI. BGC. BAA. CHU. CDL. CHY. CSN. CPA. CZD. DOY. DVM. DOZ. ALK. EPD. EBT. FWK. GFH. GTG. GMR. HGU. HVQ. HVI. HPD. HTG. HVK. IVO. IEL. IXT. IUP.

ICA. IRY. IQF. ILO. ISY. IZG. JCY. JQX. JQJ. JYK. JIL. JXI. JRV. JSJ. JHX. ACZ. VH. YA. KHR. KCY. KAX. KKB.

W3 AUC. AKX. AKE. BVE. BYP. BZJ. BBI. BGP. CKT. CRY. CBT. CWG. DPN. EOX. ESD. FXU. FTR. FDG. FCJ. FN. FIL. FMO. FBG. FPU. GUF (part). GQK. GMV. GZC. GKN. GHS. GQS. GUW. GZN. GIS. GOX. GDK. GTL. GIF. KCX. PC. W4 ARB. AUU. AZB. BYU. CPT. CPB. CVU. DXM. DRZ. EWY. BEV. EDD. EQN. EKI. EC. FT. FWK. GB. NN. PD. TT. YC. W5 ALK. BJO. DLC. DFE. EHM. GGX. FDE. YHC. ZA. W6 FDM. JJU. NLS.

W8 AHS. ARH. ARA. BTK. CCO (part). CLS. CHQ. CTN. CFD. DST. DJM. DQK. DW. EBS. FYT. GLY. GWZ. HSF. HCR. HHZ. HHH. IHT. ISC. IWC. IHM. JVI. JXI. JLQ. JIN. JFC. KRW. KVV. KQ. LXJ. LAC. LIJ. LQ. LGO. MMF. NK. NOH. NBO. OTK. PPA. PNJ. PWA. PAZ. PTN.

PHD. QVR. QUA. QXT. OKI. QUL. W9 AGO. ARK. BHT. BLU. BBU. BOY. BOF. CHI. CCI. DKU. EYM. EMB. EYL. GEG. GII. HPZ. IXI. KTZ. LBB. MHM. OS. OQN. PZI. PZA. QHS. RZM. TMP. TLO. WOA. WGC. YLV. YQN. YLP. YR. ZOR. ZHB. ZCF.

10 metre c.w.

W2 AYB. AKT. W3EPV. W4DQ. W8 BJC. DYE. W9RSJ. VE1FG. G6ZO. WN. G8MH.

80 metre 'phone. 4-valve superhet.

W1 ABY. FCE. FMP. FBJ. EOZ. W2 GSC. HPD. HS. GEE. MC. AU. FKL. EOA. W3 FJU. BJ. W4 IS. AHU. W8 IH. BW. LFB. VE1 GN. BF. IN. EH.

20 metre 'phone. 4-valve superhet.

VO1GP. VP9G. VE4DU. FA3 QV. JY. VU2CQ. U3FB. KALME. FT4AR. ZD4AA. SU1RK. ZE1JA. ZS6AJ. K4FAY. H13N. V8THE. YV5ABF. LU7AG. 4KA. VK3KX. CE2BR. FR8VX. K4EJF.

**Bob Everard**, Sawbridgeworth, Herts.  
15:12:37—15:1:38.

10 metre 'phone.

W1 IXP, ADM, DAY, BLO, IAO, GIZ, COO, AEP, BEF, BJE, JUJ, WV, JGN, IWU, SE, KBT, EZS, KJJ, JLK, HHU, CAV, CAA, KUD, DOK, ILQ, DSV, ELR, IFD, AUT, BVL, JRZ, W2 AMM, KAX, JCY, JIL, AOG, ICA, HYJ, JYS, FWK, FOD, GFH, JXI, BAA, KHR, COT, ALK, KLV, FGB, JRV, GMR, JOX, JIH, AHX, GUM, DVV, GSO.

W3 PC, AKX, CBT, GSU, GIO, GZJ, GZG, AIR, FXU, GPM, GEX, HDA, FMQ, GUF, GSV, FVO, CKT, AXU, FAR, DO, GHS, EOZ, W4 GB, CYU, ZF, EKI, EDQ, FT, DV, NN, YC, PD, EKR, DDT, CPB, EEV, AQ, BUD, DRZ, AZB, UC, CJN, ECF, CYT, ECI, W5 EGU, GGX, ZA, GKZ, FDE, EME, FMY, EHM, ESI, WR, BMM, FPZ, BAT, CHG, VO, W6 CKR, ERT, NLS, MDN, GCX, CGY, DZH, LUB, W7 GGG, EMP, FDL.

W8 HCR, JLW, AQT, QLK, CFU, IWC, OGZ, PHB, MID, PNJ, NOH, JFC, LAC, REU, OTG, MRK, CYT, AUW, IHM, EBS, NK, NMU, ARA, BTO, PPA, NMM, DST, OOE, BVP, GWZ, FMN, KYY, BWB, MAP, OIK, PEN, HHZ, BQ, ALT, CHO, QKI, RIS, EUK, JVI, QYI, KWI, CFD, JYV, CKY, QOV, QXT, HSP, CLS, OQG, AV, RAE, OG, OQW, PZX, LSL, CLG, QBO, QVR, POP, EPM, ANO, LGO, OE, CIR, W9 PZI, WNO, GGY, QUB, YDC, ZNA, EW, WOA, FAA, YWN, BBU, VFZ, KQE, UDO, TFF, HDZ, ACO, ARN, TMP, LZP, MMM, WOH, WTG, ZKD, UOV, NKX, OQN, ILQ, GWM, EYI, YKX, WAL, ZHB, BHT, BBR, UOJ, ZGA, VOF, ARK, QI, RUK, VFB, TFK, VTD, QHS, GEG, UYD, ROQ, TII, ZWW, YHQ, RRX, AYW, BOY, USI, VOJ, JKK, PQH, GQP, UVV, UGR, LIG, AKJ, DHK, TEJ, AZE, CCI, PBY, DKU, CLH, CHI, WC, RZM, WIF, ZYR, EMB, DWU, JBO, ZUZ, WBW, TMH, AVS.

VO, 11, J, 2Z, 3X, VE1 EA, DR, BR, IW, JA, V12 HC, KX, ID, VE3 QI, BV, AIW, ANF, NH, AQ, TY, VE4 SN, AW, OK, ADV, KX, T12 RC, FG, VP6YB, XEIGE, CO 7CX, 8RO, H17G, K4 ESH, EMG, FAX, EZR, DDH, EPO, EIL, YV5 AK, AA, ZS 2N, 6AJ, ZT6J, ZU6 P, N, ZE1 JR, JJ, JY.

DX CORRESPONDENCE

ON PAGE 38.

Police and Experimental Phones and B.C. Stations. Approx. 9-11 m.

Hartford Police; W1 XHC, XDT, 2XES, XFA, XEM, XIJ, 3XAR, 4XCE, 8XCX, XLU, 9X1, XLS, XEH, XJL, XDD, XAZ, 6XKX, 3XEY, 8XAI, 2XGC.

20 metre 'phone.

ZS IK, AX, 2N, 3F, 6AA, AK, ZT 1M, R, 6AK, AI, AM, ZU5L, FR8VX, FB8 AB, AD, AF, AH, VO4 CRE, KTB, ZE1JA, ZU 5Z, 6N, P, KA 1ME, YL, VO 6D, JQ, VP3PHE, CT2 AB, BC, PY7LC, ZB1 E, H, L, PK1 GL, MX, HH2B, YV5AK, OQ5AA, HI 3N, IC, CO60M, VO4Y, VE3XX, PY5AQ, K4FAY, VS2AK.

**L. A. Green**, 59 Marquess Road, Canonbury, London, N.1.  
"Invicta" 310. All i.s.

20 metre 'phone.

SUIRK, LUIDA, ZU6P, VO6D, VP3 THE, 6TR (40 m.), ZE1JA, ZU6P, W1 ENU, CGY, 2CWC, AZ, 3BLI, 8CNA.

**Ivon Hilton**, 17 Buller Crescent, Leeds, 9. 1-v-1.

28 mc. fone.

W1 ELR, KLD, HQM, DOK, APO, W2 JCY, BG (50 watts), JUJ, ADJ, JXS (50 watts), HEL, P1N, IAT, W3 CBT, CQS, AIR, GZN, WY, GHS, FAY, GSV, FGW, GSB, AKX, CPT, EIR, MGW, W4 AHH, DRZ, DID, GB, W5 FSF, PFS, W6 ODW, NAP, ERT, W7 KC, W8 QW, HHH, JLO, KY, LG, FY, W9 HDV, 2GA (80 watts), OFL, PVI, GNO, DUM, GAR, ADM, YHQ, SPV, AGO, HI7G, YV5AK, K4 EMG, ZU, JR, ZU 6P, SP, OC, ZT 1I, 6J, VE, DR.

14 mc. fone.

LU5AI, FT3HC, VE5MO, HI 3N (100 watts), 5X, VP3AG, VO6D, YV5ABF, CO 2HY, 7CX, VE2BG (60 watts), K4EIL.

**G. F. Keen**, 50 Wilbury Crescent, Hove, 4, Sussex. 0-v-2, 20 m. doublet.

14 mc. 'phone.

FR8VK, ZU 6P, M, ZS 1J, AX, 2F, YI2BA, PK1ZZ, VO4CRE, VP 3THE, 6PR, W5EHM, K4ENY, NY2AE, VE3XX, VO 6J, D, 2Z, 1Y, CO60M, LU1EX, CE1AO, YV5AA.

14 mc. c.w.

ZB1J, ZE1 JV, JI, FB8AA, CR7 AU, AY, ZS 1AH, 2E, 3F, 5AH, 6EO, EQ, ZT6AC, ZUIT, OQ5AE, PY1 AZ, BD.

**Hector Ludlow**, 8 St. Canices Terrace, Santry, Co. Dublin, Ireland. December.

14 megacycles.

W5 SMO, AXS, EYV, EDW, DEW, GUT, BEW, W6CUR, VO 1I, X, J, Y, C, 2N, 6D, JO, J, B, CO 2JJ, DY, RA, HY, LR, LY, 6OM, 7EV, VP, CX, LU 1DA, 4BL, KA, 7AG, VP 2TG, 3MR, 2HE, 6MK, 9R, G, HK 1PA, 5AK, HH 2B, 5PA, YV 5AA, AK, ZU 6P, AN, VE 1CF, QD, BB, GD, BR, EI, GC, FO, AX, 2BG, DV, AQ, JR, NI, BB, CA, JM, HY, 3XX, MP, AGO, AGS, AFB, AFK, O, LL, JV, ARB, AHN, ZM, VU, IX, II, 4DU, IF, BF, BW, ZS 3F, 6AJ, ZTIM, VU2CQ, OQ5AA, PY5AQ, K4DDH.

**E. W. Vandin**, 16 Paris Street, Guernsey. 17:10:37-21:11:37.

28 mc. 'phone.

ZT 1AM, 6J, ZE1JR, ZU 6E, P, VU2CQ, HI7G, T12FG, YV 5AK, AR, AA, VP6YB, VE3AIW, W1 JGN, HVH, KKR, DBE, GED, APO, SZ, DDX, BGT, DJK, DPP, AUT, KUJ, W2 ISY, HJK, DOY, AHX, FWK, W3 CBT, FGN, EFG, EET, CAD, AIR, GYP, XBP, W4 FO, DID, ECK, EQN, EEV, FT, W5 VV, EHM, ZS, EK, F, W6 JJU, LUB, JRM, MSQ, MLF, BDD, MWD, W8 KYY, FGB, IHM, LIR, CHO, KFG, CLS, QWE, FYC, CFD, GWZ, MMN, W9 BMY, YV, ZMS, JHB, AGO.

14 mc. 'phone.

VK 3ZZ, 2QR, XU, 3XX, VS2AK, LUB9E, YV5AK, CE 4AI, 1AR, CO 2LY, 8JX, W5 FNK, FNH, VO 6P, 1P.

**R. F. Wibberley**, "Hazels," Tuesley Lane, Godalming, Surrey. Home-made t.r.f.-v-1.

20 metre 'phone.

W1 JFG, BIC, NW, DAX, JUG, GED, ALW, GUY, DYA, CAV, DMV, AUC, DCI, COY, AXA, CMD, DET, KKP, MV, FLH, KJ, KIV, DDO, BLO, W2 DOA, CQL, FPB, CDO, CVB, HS, IKV, ACO, IXY, GIV, AXY, SVI, IGM, HFI, FPD, GI, XUQ, IDQ, AZ, JDF, HTO, GIZ, IXZ, ZSA, W3 EOZ, LCS, CQL, GO, LM, DYF, ZB, MD, ZIR, AFG, JC, ZD, FN, MB, ASG, EMM, ICI, FII, IX, EWN, DYD, EIC, FCJ, AFG, W4 DAA, CAU, AKW, DLH, CFC, GZS, CDG, APA, SJU, CVU, BYY, CDO, LN, W8 KML, MOR, KG, AMJ, MEY, CHF, CMA, DPZ, MPX, GIC, MPE, W9 CBA, BLG, TOM, FDI, SCX, GFQ, BG, VE 1CI, DQ, 2HK, 3FB, 6GR, VK3BZ, VO6J, VU2CQ, ZT1R, CO 1CR, 2LY, 7CX, HK5AR, LU4PA.

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Dept. SM2.

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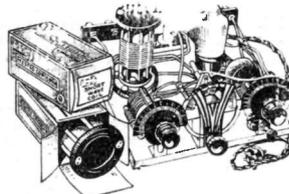
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# "DX CORNER" CORRESPONDENCE

## COMMISERATE WITH HIM!

As it is now mid-winter (11-1-38) and the worst time of the year for reception on the greater part of the short waves, I thought you might like a report of reception just as I have found conditions in my district.

I am using a 5v. Philips All-Waver, and my aerial is 35 ft. high, outdoor, inverted L, N.-S. in direction, and an "Electron" all-wave aerial is in use. Pretty hopeless trying for DX on a super? It wasn't during the dreamy summer days—but it jolly well is now! Before I draw up my short report, let me just say that it has been exactly (a) since Dec. 2, since I last logged a W4; (b) since Sept. 21, since W5 was heard, and (c) the last gallant W6 somehow crawled through my l.s. on October 19!

### Loudspeaker DX

"What a fool to use l.s. for h.f. DX," you are saying. No doubt you are right; but I have had very good results from the ordinary Yank h.f. BC's, and on one occasion I logged two W6's in one morning for about three-quarters of an hour (between them)! The beasts haven't replied to my report, though. As regards conditions, I've logged the two W2XA's very consistently until about two months ago, but now all has changed. Until recently the well-known JZK came through, well, like some of the m.w. fellows, but now the only Easterner which I can raise from the gloom is PMN and YDC on Saturday and Sunday afternoons; occasionally, if I'm lucky with the condx at 11 p.m. I'm wrong . . . I said that only Java comes through now, didn't I? Well, I can also say that KZRM, Manila, is getting to be quite an old friend of mine when I tune him in from 2-3 p.m. Saturdays and Sundays.

That's about the only cheerful thing I can find at the moment. W9XF, which used to be a budding source of DX, is now swamped firstly by W3XAL until 6 a.m., and then by the wretched YUA from 6 onwards! Someone must get paid jolly well for working things like this, you know! 71.0, which used to come through reasonably last Spring, never comes through now at all well; I can hear him, but what with the usual 49 "war" and the apparently-permanently poor condx, and the fact that the chaps obstinately won't raise the power higher than 0.5 kw., can you expect anything else from the poor station? 4XB was supposed to have been on the air years ago but I still haven't found it.

W3XAL on 16 used to be a real "pal" to me in the summer, but nowadays if I can catch him at decent strength at all after 7 I can think myself lucky. The 49m. station, on the other hand, is seldom below R8 when I try for him once a week at 4 or 5 a.m.

### A VK Query

I should like to report very, very poor reception of some of the Daventry transmitters and also of CJRX (25m.). I have, of course, got a veri from that station, but I think the condx must have been something wonderful in comparison with at present. TFJ gave me a little rest for my weary head at twenty to eight Sundays, and so did 2ME twelve hours earlier; by the way, talking of Australia, HFR and 2ME have noticeably declined in strength of late. Condx, my set, aerial, ears, or what? What, I should think! The only things that come in really well are the Latins. But as nobody in this esteemed house knows a word of Spanish, they don't hold much for me. Hence the consistent good S. America conditions.

I have also devoted much time and worry to the 20 ham band: of course, I expected something like a cloud to descend over it during the winter nights, but nothing quite as bad as that which I have been, and am, going through! It has been long before Santa Claus even began to forget the little boy since I last said goodbye (unknowingly, of course) to W5 and 6. W2 and 3's come through now about one day a week, being around noon or one or Sunday lunch-time, and the rest of the day, and the week, usually, is a perfect blank.

I've never heard Aussies, nor-ZU or ZL. I have had one or two confirmations from W6, but of course W1 is very "stand-offish." I find that Egypt has a knack of bursting-in suddenly when you least expect it. About three months ago I was on the verge of killing myself as by one a.m. not a thing worth-while had turned up on 20, when lo and behold

suddenly up turned SU— which of course made all the difference. Then, the Sunday before last I was very surprised to find SU— coming through at R6 on the l.s. shortly after 12 noon. I've heard one or two Cubans and, during the end of August and September, W8's and W4's, but, as I've said before, both are just names to me now.—RAYMOND HARRAVES, "Corona," 49 Downton Avenue, Streatham Hill, London, S.W.2.

### A "SILENT LISTENER" SPEAKS

Having been a radio fan for some considerable time now, this is the first time I have written to a periodical, so, Mr. Editor, with your permission, I should like to take a little valuable space to say a few words. Having read so long and many times of a craving for a proper short-wave magazine it would be all to the good to remind readers that now we have got what we want we must not sit back and be satisfied but tell our radio friends of this wonderful sixpennyworth; by doing this little act we shall have helped in making the publication always certain—it would be a calamity if this magazine had to cease publication.

Regarding QSL's, I believe there is too much selfishness to this craze. It is not a bit of use to an operator to log a station, send a report and I.R.C. and express a desire for a veri, far better to try and log the same station a few times in the course of a week or so, then send a report which is going to do some good (with the exception of course to some rare catch which possibly will never be repeated). I am in no way against collectors. A veri obtained this way gives far more satisfaction, as one has had to work for it. In the last two years conditions and sets are exceptionally easy, and stations simply roll in, so a report of a single transmission is useless, unless specially requested.

### Only one "Veri"

As for myself I do not collect veri's, having only one from India, I pick out certain stations from my log which I consider have been poor and could be improved upon, ending my report with "Silent Listener, near Harrow, Middlesex."

I find it very annoying when reading listeners' logs—they always omit the most important part, namely, the name and type of set used. This is most useful both by comparison and experiment; I always get more kick out of reading a log from a single- or two-valver with no "adders" than I do from a big set. By the way, a few logs from a S.S.S. would be very interesting.

Perhaps you may be interested to know something of my logs and receiving den? Here goes: an upstairs room fitted out with maps, charts and data, etc., four benches and tools; sets: Midwest, Pilot, Beethoven, and Phillips 6 a.w. (Battery), three short-wave sets and one converter/adaptor; three speakers, six pairs of 'phones, two Milnes Units (120, 150 v.); Two aerials from one forty-foot pole, one Peto-Scott a.w. running N.E. to S., one 33 ft. running N.W. to S.

### The past year

I should like to submit a twelve months' log (Converter). This log was specially made in view of so many fans being against this type of receiver because of double channel, but to balance that we have in favour no hand capacity right down to 5 metres and speaker reception from R0 to R9+. No bandspreading was used, normal hours kept, over 6,000 stations were logged between 5-180 metres, 1,230 stations being different, no commercials or broadcast included, 50 different countries. What I could not get with a converter was obtainable with another set. W7's, far Asiatics and South Africans very elusive here. G2's, 101. G5's, 132. G6's, 112. G8's, 118. W1's, 107. W2's, 122. W3's, 93. W4's, 51. W5's, 25. W6's, 21. W7's, 2. W8's, 67. W9's, 40. W10's, 2. K6's, 5. VE's, 15. VK's, 9, and 43 other countries. My best catches G8BY (6m.), W7EKA (10m.), VK2's, K6's, XE3ZB (20m.), CE3DW (20m.), and YR5AA (10m.).

This year I am going to work the S.-W.M. Class B 1-Valve and hope to send in a log that will hold its own with the bigger sets. In conclusion I should like to say that I am in no way connected with any radio firms or your staff, just a fan proud of your Magazine and my receiving den and work. May I take this opportunity of wishing your not-too-much-advertisement-and-deep-technical-dope, but dope-that-we-all-want magazine lasting success.—"Silent Listener," near Harrow, Middlesex.

# THROUGH THE WINDOW

## A NEW RADIOMART HANDBOOK

From Messrs. Raymart, Birmingham we have received a copy of their latest manual. As well as being a comprehensive catalogue of the many short-wave components, receivers, and transmitters marketed by this firm, the booklet also contains a wealth of information of value to all short-wave enthusiasts.

There are full circuit diagrams of receivers, transmitters, modulators; a list of country prefixes, the "Q" code, the "QSA-R" and "RST" codes, a metre-kilocycle conversion chart, and a full list of American transmitting and receiving valves. Obtainable for sixpence, from Raymart, Ltd., 44, Holloway Head, Birmingham, 1.

## MULLARD LIST FOR HAMS

Amateurs will find much to interest them in the latest catalogue of the Mullard Company (Transmitting Division). The full range of transmitting valves, from 3-watt r.f. pentodes to 300-watt triodes, modulators giving up to 500 watts in class B, and rectifiers for every type of amateur transmitter are listed.

The fullest details of operating conditions, load, etc. are given, and the catalogue should prove an invaluable reference book to all "hams." It's free. Send to The Mullard Wireless Service Co., Ltd., Transmitting Division, Mullard House, Tottenham Court Road, W.1.

## Q.C.C. COMPONENTS

Apart from their well-known crystal products, the Quartz Crystal Company also supply a large variety of amateur requirements. Their latest list includes all types of transmitting coils, r.f. chokes, meters, mains transformers, i.f. chokes, neutralising condensers, insulators, etc., while they are also in a position to supply from stock National, Pyrex, and Thordarson products.

The list is free to amateurs, and the address is: The Quartz Crystal Company, Ltd., 63, Kingston Road, New Malden, Surrey.

## MAC STRAIGHT KEY

Ted McElroy is the world's champion Morse operator, so naturally we expected a key designed by him to be rather out of the ordinary. We were not disappointed with the new straight key as supplied by G2NO (Webbs Radio); it is one of the nicest we have ever handled, irrespective of price. From 5 to 25 words per minute it was absolutely effortless and smooth, while, owing to its unusually heavy construction it can be placed on the operating table without bolting down, and there is no tendency to "jump about."

Fitted with heavy contacts for transmitter use the key sells at 10s. 6d. from: Webbs Radio, 14, Soho Street, Soho Square, W.1.

## EDDYSTONE CORRECTION

Last month we inadvertently gave incorrect details of a new neutralising condenser (1088) marketed by Eddystone. The condenser is suitable for u.h.f. circuits with low capacity triodes and has a capacity of 1.8 mmfd. and maximum working voltage is 2,000 d.c.

The split stator condenser, also a new arrival, has been designed for 5, 10 and 20-metre transmitters with up to 150 watts input, while maximum d.c.

working voltage is 2,750. Capacities are: 6-27 mmfd. for each section; 12-24 mmfd. in parallel; and 1-10.5 mmfd. in series. The price is 15s. and it is catalogued as No. 1087.

## H.A.C. KIT

A short-wave receiver for 12s. 6d.! Those of our readers contemplating construction cannot do better than commence by investing in a kit of parts, thus avoiding the problem of selection of matched parts. The H.A.C. Kit supplied by A. L. Bacchus, 109, Hartington Road, S.W.19 at the above figure represents good value; and the components are standard, so may be used should the constructor make future experiments.

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# CLUB ACTIVITIES

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## CITY OF BELFAST Y.M.C.A. Radio Club

Secretary: FRANK A. ROBB (G16TK), 60, Victoria Avenue, Sydenham, Belfast, N.I.

Again active after a complete rebuild, this included the installation of a.c. current into the club room; all the transmitting apparatus is now run from the a.c. supply and the converter has been put aside. Morse classes have been well attended and the club has now no less than 17 G.P.O. licensed operators. The transmitter (a c.o.-f.d.-p.a. for 14 mc., using a 47, 6L6, and a T20 in the final; for 7 mc. the c.o. section of the 20 m. transmitter is used to drive a p.a.) is in operation for c.w., but it is hoped to use fone soon. The present antenna system is a 66 foot end-fed Hertz but later a Johnson Q is to be erected.

It is proposed to devote two nights per week to Morse and also lamp signalling; the latter instruction is being given by one of the club members, Mr. W. C. Haddick (G16HI).

### Seventy Members work the Key!

Seventy members have been enrolled, these include a number of prominent GI transmitting amateurs, also many AA and BRS members. This club is open to any member of the Y.M.C.A. association (any branch) and the subscription is 5s. for those over 18 and 3s. 6d. for those under 18. A key is supplied to all members; this admits them to the club room at any time. However, the club is open from 8.30 a.m. till 10.30 p.m. every day except Sunday. Those desiring to join may have full particulars and entry form from the hon. secretary.

## BLACKPOOL and FYLDE Short-Wave Radio Society

Secretary: H. FENTON (G8GG), 25, Abbey Road, Blackpool, S.S.

The settling down process at the new meeting place continues, due to Christmas and New Year interruptions, but the Thursday meetings are resuming normal course. It is hoped to demonstrate a "Super Pro" and "Super Skyrider" during February.

### Busy individuals

Individuals are fairly busy. G6VQ is rebuilding into a steel rack and putting a 6L6G into the doubler in place of the 46; G5MS is off the air for a time; G8AK busy with R.N.W.A.R. and doing a bit of "ham work at intervals; G8GG, chiefly on 1.7 mc., but preparing for the 14 mc. DX season; 2CKD has built a "Tobe" super. Three new AA's are 2DBL, 2BKL and 2AIV.

The society proposes to construct field day gear as instructional equipment during the Spring session.

**BRENTWOOD Amateur Radio Society**

Secretary: J. R. DEANE SAINSBURY (2CYW),  
 "Brunook," Crossways, Shenfield, Essex.

The second annual general meeting was held on January 9. The secretary's report showed that the society was sound financially and that the membership had increased considerably during the past year. A technical sub-committee, under the chairmanship of G8KM, was set up to consider the design of a transmitter.

The following officers were elected for the ensuing year. Chairman: Mr. C. F. Turner (2ATU); vice-chairman, Mr. W. C. Goult (G2WG); hon. secretary, Mr. J. R. Deane Sainsbury (2CYW, BSWL 352); hon. publicity secretary, Mr. N. K. Read (2BNK). Members elected to serve on committee: Mr. S. Duniam Jones (G8KM) and Mr. J. F. Holloway; hon. auditor, Mr. E. D. Hellyer.

**Eleven call-signs**

Mr. A. J. Hallet, an active member, has been granted a transmitting licence under the call sign G3CQ. There are now four members with full licences and seven have artificial aerial permits.

All readers of THE SHORT-WAVE MAGAZINE in the Brentwood district are invited to apply for details.

**BRIGHTON Branch: World Friendship Society of Radio Amateurs**

Secretary: F. R. JUPP, 12, Brading Road,  
 Brighton, 7.

This recently formed club's membership is rather small, but it is hoped to increase shortly. All members present at the December 31 meeting expressed regret when it was announced that Mr. N. Owen (2AFO) was leaving the town. Mr. F. R. Jupp was elected hon. secretary in his place. A c.w. class was held and appreciated by all.

Another enjoyable meeting was that of January 7. The evening commenced with the c.w. class, followed by the reading of an interesting article on "Ultra Short Waves" prepared by Mr. S. Gordon Taylor, managing editor of "Radio News," and kindly loaned by Mr. E. H. Rickett, 2BZY). The evening closed with a general talk and suggestions.

**BRITISH SHORT-WAVE LEAGUE**

Secretary: F. A. BEANE, Ridgewell, Halstead,  
 Essex.

Reorganization is nearing completion and the "Review" will remain the official organ as hitherto, although in a modified form. The subscription is 7s. 6d. per annum (or 2s. for 3 months' "trial," or 3s. 9d. per half year) but value offered has been increased; in fact the League now offers a 40-page monthly radio magazine, 4-page supplement (exclusive to members), membership number, certificate of membership, free technical advice, friendship of hundreds of fellow members from all over the world, access to the popular "Heard-All-Continents" certificates, QSL Distributing Bureau, etc.

There is, behind the League, material goodwill and a real desire amongst members to get together, and this bond of friendship, unaffected by religious views, politics, and so on, has to be experienced to be fully understood. New members are always welcomed, particularly if interested in DX, either "ham" or BC, desirous of co-operating to the mutual benefit of their fellows, or fraternising to stimulate international goodwill amongst the world's listeners. For full particulars write to the Secretary; twopence in stamps will bring a specimen copy of the new "Review" and a full answer to queries.

**CHADWELL HEATH & District Radio Society**

Secretary: R. BEARDOW (2BZB), 3 Geneva Gardens,  
 Chadwell Heath.

Now that Christmas and New Year distractions are past we appeal to readers in this district to rally round 2BZB and help to make the club's headquarters the meeting place for all G's, A.A.'s and short-wave listeners. Already G5KA, G8TV, G2RW and 2AKW have promised support in the formation of a policy that should make the society a North London mecca.

Headquarters are at Ralph's Cafe, Tram Terminus, Chadwell Heath and Tuesdays, at 8 p.m. is the time for new members to get acquainted. Secretary Beardow is always pleased to receive callers seeking information at his home address.

**EALING and District Short-Wave Club**

Secretary: W. COLCLOUGH (2CKL), 31, Lancaster Gardens, Ealing, W.13.

The club has now four A.A. licence holders (2CKL, 2CRW, 2CCK and 2APP). Meetings are held at the shack of the secretary every Sunday and Wednesday at 10.30-13.00 and 18.30-22.00 respectively. At the last meeting great enthusiasm was shown in connection with a 0-v-2 portable receiver which has been built by 2CKL for club use. It is hoped to carry out some extensive outdoor work shortly.

On January 5 2CCK demonstrated his new "Sky Buddy." More members are urgently needed to make the acquisition of a larger club room and a more extensive programme possible.

**EASTBOURNE and District Radio Society**

Secretary: J. P. GLICKMAN, Kersal, Brodrick Road, Hampden Park, Eastbourne.

The annual general meeting took place on January 7. The election of officers was the chief business. Mr. S. M. Thorpe, who has been honorary secretary almost since formation some fifteen years ago, now relinquishes the post to become chairman. He is succeeded as honorary secretary by Mr. J. P. Glickman; the vice-chairman is Mr. T. G. R. Dowsett; honorary treasurer, Mr. J. Harris. A keen ballot for committee resulted in the election of Messrs. J. A. Penfold, R. Davis, A. Clayden and W. Morgan.

An exhibition of radio apparatus such as was used by Lodge, Fleming and Hughes in their early experiments in wireless communication excited considerable interest. It is hoped to retrace the steps taken by these pioneers by repeating their experiments during the season.

**EAST DORSET and WEST HANTS. Radio Club**

Sec.: DAVID M. WILLIAMS (BSWL832), "Amberley,"  
 Cornwell Road, Poole, Dorset.

The inaugural meeting was held on January 12 at "Lintlaw Lodge," Wimborne Road, Poole, when 17 members chose a committee. It was decided to hold the next meeting (February 2) at the same address and Mr. H. L. Hunt volunteered to demonstrate his home-made short-waver at that meeting.

The response to preliminary announcements was pleasing but further applications for membership would be welcomed by the secretary.

**EDGWARE Short-Wave Society**

Secretary: E. YALE, 40, Raeburn Road, Edgware.

Officers and committees were elected at the annual general meeting held at All Saints' Church Hall, on January 6. Chairman, Mr. Thursgood; hon. secretary, Mr. E. Yale; hon. treasurer, Mr. Joyce. Mr.

**QUERY COUPON**  
 S.-W.M. 2/38.

Harris (2AHF) and Mayhead (2AZA) received committee appointments.

The club transmitter (2DDK) is now working on 40-metre 'phone. Recent demonstrations have been a Vidor all-waver and a Stentorian loudspeaker.

#### **HALIFAX Experimental Radio Society**

Secretary: J. S. KILPATRICK (G5QS), Lynn Cottage, Lightcliffe, near Halifax.

Activity in this area is all on the higher frequency bands and members are turning to the 56 and 28 mc. amateur bands. Quite a number of signals have been heard below ten metres which have proved upon investigation to be American police signals—easily received in this country on a two-valve set. The annual general meeting took place on December 29, and the programme for 1938 was discussed. A series of exchange visits with other clubs is contemplated; will secretaries interested please get in touch with Mr. J. S. Kilpatrick.

#### **Two-metre experiments**

G5QS and 2CYM are experimenting with u.h.f. oscillators and find that pentodes make better 5 m. oscillators by removing the vulcanite bases and wiring the valves upside down.

Small triodes have been made to go down to 2½ and 2 metres, but it is necessary to use a low h.f. voltage; using Hivac Midgets in the same way even lower wavelengths have been measured.

G8CB has recently moved but is getting busy again. 2ABC is using t.r.f. stages in his 14 mc. receiver. 2BHI is rebuilding to a t.p.t.g. 2CMP finds much to keep him interested in his Colpitts oscillator. 2CYM assists G5QS as listening operator for u.h.f. experiments. 2AKO reports building new RX for all bands.

Meetings are held in the Halifax Friendly and Trade Societies' Club every Wednesday evening at 7.30. Particulars may be had from the secretary.

#### **KINGSTON & District Amateur Radio Society**

Secretary: D. N. BRIGGS (G6BI), 44, Pooley Green Road, Egham, Surrey.

On January 5 the Society held another successful meeting, commencing with a keenly appreciated demonstration by Messrs. Premier Supply Stores of their amplifiers and transmitters.

Messrs. Radio Reproducers are providing a demonstration of their 56 mc. superhet and other apparatus at the next meeting, to be held on February 2, at 8 p.m. at the Three Fishes Hotel, Richmond Road, Kingston. An interesting evening is assured and visitors are most cordially invited.

#### **MAIDSTONE Amateur Radio Society**

Secretary: P. M. S. HEDGELAND (2DBA), 8, Hayle Road, Maidstone.

The Society has now been granted affiliation to the Incorporated Radio Society of Great Britain. The first annual general meeting was held in the Club-room, 244, Upper Fant Road, Maidstone, on January 11, with a record attendance of twenty-four. Mr. D. W. Carr (G8UC) continued with the Morse practice from 7.45 to 8.30 p.m. when the formal meeting began.

The secretary then gave the secretarial report, during which he briefly outlined the history of the Society, and the hon. treasurer (Mr. R. Brooker (2BFW)) gave his financial statement, which showed that the society has a balance in hand of £4 5s. 0d. The committee for 1938 was elected, the result being:—Chairman, Mr. A. J. Page; vice-chairman, Mr. D. W. Carr (G8UC); hon. secretary, Mr. P. M. S. Hedgeland (2DBA); hon. treasurer, Mr. R. Brooker (2BFW); ex-officio, Mr. J. Dodd and Mr. E. T.

Sands (2BXW); the president is, of course, still Mr. Harold W. Goldsmith.

New members will be very welcome, and are invited to attend the meeting or, if they so desire, to get in touch with the honorary secretary.

#### **THORNTON HEATH, The Short-Wave Radio and Television Society**

Secretary: J. T. WEBBER, 368, Brigstock Road, Thornton Heath.

The February 15 meeting will take an unusual form when the majority of members will stay at home to hear and report on test transmissions from headquarters at St. Paul's Hall, Norfolk Road. 40 m. fone and c.w. will be transmitted from 8.30 p.m. to 10 p.m., and co-operation with transmitters is desired. Reports from B.R.S. and B.S.W.L., N.R.S. etc., members will be welcomed and, of course, acknowledged (call: G2GY).

"We would remind readers that ours is a round-the-calendar club so they should not wait for the next 'session' to start before joining us."

#### **WELLINGBOROUGH and District Radio and Television Society**

Secretary: L. F. PARKER (G5LP), 22, Second Avenue, Wellingborough, Northants.

#### **Gas Radio**

The fortnightly meeting last reported was held at the Exchange Hotel, Wellingborough, when a lecture was given by Mr. Glanfield of Romford, who gave an interesting report of experiments conducted by Mr. Milnes which enabled the battery user to utilise an ordinary gas supply for the provision of power for his battery receiver. The unit that made this possible was an old dream coming true and its action was one that had long been known to science, being that known as the thermo-junction in which, if two dissimilar metals were brought into contact and heat applied at the junction, a current of electricity would flow in the metal and this current could be then used to charge up an accumulator that would in turn supply the power to a high tension unit.

Mr. Glanfield went on to say that much of the development of the Thermo-Charger was due to the personal experiment and research of Mr. Milnes himself, and it had taken him four years to produce the unit that was such an attraction at Olympia. The amount of gas consumed by the Thermo-Charger was very small and worked out in actual cost, in the original model, of one-sixth of a penny per hour and it was confidently expected that the newly developed model would be cheap to run in comparison with the heavy expense that has been the experience of the battery user.

Mr. Glanfield then went on to describe the construction of the nickel cadmium battery known as the Milnes unit in which the action was that current was supplied from a six-volt accumulator to the unit for charging purposes and then by means of an ingenious switching arrangement of the cells in the battery, a high voltage could be obtained to work the user's battery receiver.

#### **WHITSTABLE Radio Amateurs**

Secretary: W. CROSSLAND (G5CI), 13, Queen Road, Whitstable.

At the January 8 meeting, held as usual at G5CI, Mr. F. Seath (2CMI) delivered an interesting talk on "Modulation in the Amateur's Transmitter." The next meeting will be held on March 5, at 7.30 p.m. A full evening has been arranged and any readers are invited to attend.

Visitors to Herne Bay or Whitstable during the forthcoming summer are invited to visit local amateurs and attend meetings. Full details from G5CI.

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Receivers, designed and built for communication purposes and where exacting requirements must be met, are built in but one way—INDIVIDUALLY

Not only is it necessary to put component parts such as resistors, condensers, coils and controls through individual laboratory-tests before "wiring in," but the completely wired receiver must undergo severe inspection to make sure that the job is well done and thorough.

Component parts are important. They are so important, in fact, that no one manufacturer can hope to organise the required engineering force now employed by hundreds of specialised laboratories to do the job as it should be done. **FLEXIBILITY** to change in a field of constantly improved developments must be the backbone of an organisation catering primarily to the radio amateur and the progressive user of communication equipment. Specialised radio engineers make to-day's high-class receivers possible. Crystals, condensers, tubes, gang switches, volume controls, resistors, meters—all items which must be made under the closest supervision—eventually find their way into the best equipment, when chosen with care.

RME, to keep up to date, maintains flexibility in manufacturing its merchandise—flexibility to meet improvements without mediocre make-shifts. The RME-69, for example, uses a cast aluminium chassis frame, the only one of its kind used in radio receivers. It is costly, BUT it lends extreme stability to the circuits mounted thereon. Yet as developments are made, this same chassis design may be altered for revised mounting of component parts without fear that an expensive die has not been paid for.

All coils used in RME equipment are designed, wound, checked, and completely assembled under close supervision in our own plant. Many parts are specially designed and built for our own use. In consequence, not a single receiver leaves our plant without a written record in our files of its performance.

#### The Meter

##### INDICATING CARRIER LEVELS

The circuit connecting the carrier level meter causes only the radio frequency energy to affect it. Modulation of the carrier does not vary the reading, unless frequency modulation occurs.

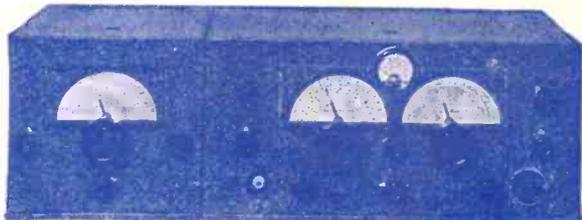
The R values indicated on the meter therefore give relative information concerning the strength of signals being received from another station, irrespective of modulation percentages.

The meter is a positive indicator, calibrated in definite standards, always in the circuit ready to do the job the way you want it done.

#### The Controls

##### GIVING FINGER-TIP HAIRLINE TUNING

Using a two and one-half inch heavy tuning knob coupled to a planetary and interlocking gear device, the resultant drive eliminates all back-lash and permits tuning through mere finger-touch.



RME-69 L.S.1 (NOISE SILENCER MODEL) WITH DB-20



RME-69. NOISE SILENCER UNIT

#### The Filter

##### USING A NEW QUARTZ CRYSTAL

The crystal filter circuit is just as important on phone as on CW. Being able to narrow down the band or widen it through the proper use of the phasing control causes interfering signals to drop into the background. Not only is a series position provided, but the parallel position crystal has its advantages under conditions where certain heterodyne signals tend to make reception anything but pleasant.

#### The Band Spread

##### AS A DISTINCT FEATURE

Two dials with single control tuning, electrical band-spread, high visibility, optimum range—all put together in one receiver. **EASY! CONVENIENT!** With a ratio of 10 to 1 over a scale travel of better than seven inches, spread of 100 degrees on the active 10 metre, 20 metre, and 40 metre amateur bands is obtained—correspondingly more on the lower frequency bands.

#### The Suppressor

##### TO MINIMIZE BOTHERSOME INTERFERENCE

The circuit adapted to the RME-69 is practical, especially on the 10 to 20 metre bands, when coping with Ignition and similar types of disturbances which are so annoying whenever signals are suddenly interrupted. The noise suppressor is optional on all RME-69 receivers, but MUST be built into the receiver at the factory.

#### Why Change Models?

ARE brand new models justified every year just because the calendar has changed?

Should a communication receiver be depreciated in value because of new cabinets, new paint, or new gadgets of no intrinsic value?

We believe not. The RME-69 is not only one of the most up-to-date instruments to-day, but will remain so within the scope of radio receiver developments as they occur.

#### PRICES OF RME RECEIVERS

All 230-volt Input with Crystal Gate.

RME-69	.....	.....	£38 0 0
RME-69 L.S.1	.....	.....	£41 10 0
DB-20	.....	.....	£12 10 0

HIRE PURCHASE FACILITIES AVAILABLE ON ALL MODELS.

## WEBB'S RADIO

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