

The

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SHORT-WAVE MAGAZINE

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Experimenter and
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APRIL

1938

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VOLUME II

NUMBER 2

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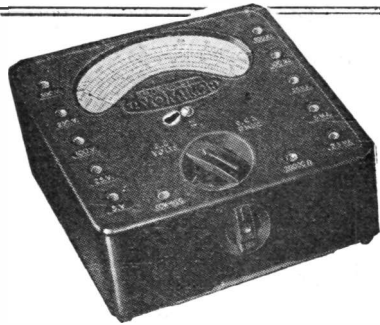
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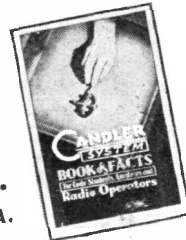
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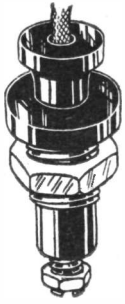
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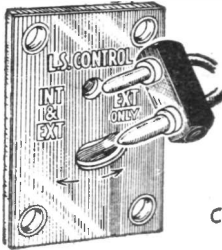
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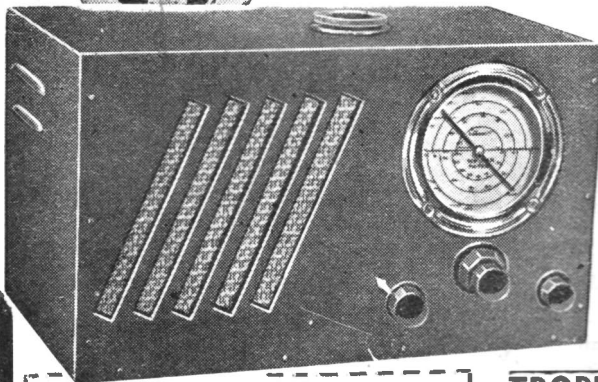
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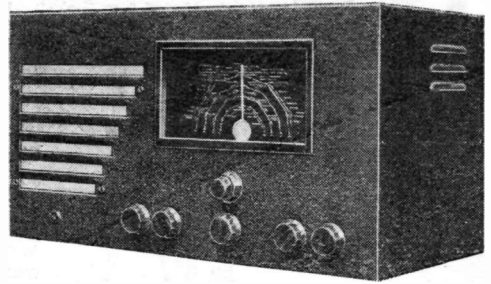
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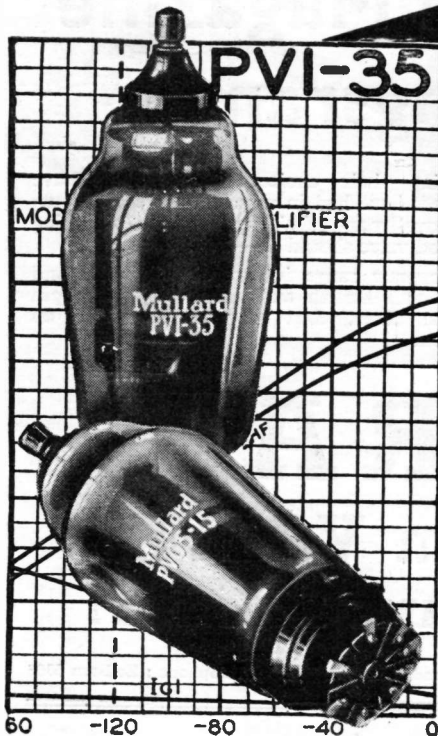
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THE SHORT-WAVE MAGAZINE

Vol. II.

APRIL, 1938

No. 2.

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

Business Manager: C. T. MILDENHALL
Advertisement Manager: A. W. MARRIOTT

SEIZING OUR OPPORTUNITIES

THIS title gives us two openings. First, that of summarising briefly some of the constructional articles we have scheduled for the next few months, and secondly, drawing the attention of experimenters and amateur transmitters to the International 56 Mc Contest.

The main items of interest on the constructional side are a 3-stage battery receiver, easy and cheap to build, yet incorporating those features so necessary for good performance on the short waves; an RF power amplifier for the communication bands, matched to our Exciter Unit, and using a new British 25-watt transmitting pentode; a 56 Mc receiver for straight CW; a tuned HF stage for the famous "Class B" receiver; a S/W converter for general reception; a special 56 Mc transmitter, right up to the minute in design; and a simple two-stage transmitter for the A.A. man about to go on the air.

In addition, there will be all the established SWL features—such as the DX Corner and "Have you Heard?"—which appeal so much to individual readers. The "Transmission for Beginners" series will lead on to plenty of additional articles on aerials, power packs, modulators and so forth, eventually bringing us a complete stage-by-stage rack-and-panel transmitter for (if you want it) QRO working.

Well, there are our ideas; we hope you will like them and also that you will feel your own particular interests are being considered.

As regards the International 56 Mc Contest, sponsored by the R.S.G.B., which started on January 1st and runs through the year till the end of December, it will be evident that with 5-metre activity approaching a peak—as we may assume—there is a unique opportunity for both useful work by amateur transmitters and interesting listening on the receiving side. DX conditions may open any time now, and it is worth putting in an hour or two whenever possible. Even if the band seems dead, transmit! Whatever you hear, log it and report, unless it is a purely local signal.

We shall do our part by giving you information and news. You can do yours by using the band and reporting.

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HAVE YOU HEARD...?

Items of interest from the broadcast bands, and reminiscences, compiled and presented by

F. A. BEANE (2CUB)

DESPITE EXCELLENT conditions news has proved very scarce and I cannot claim reception of even one newcomer of Latin-American origin!

From the programme point of view the past four weeks have proved interesting, the highlights being the Farr-Baer fight and the sensational relays made from Germany in connection with the recent political upheavals and the Austrian coup. But let us commence by turning to a distant continent which is unusually pacific in comparison.

● Latin-America

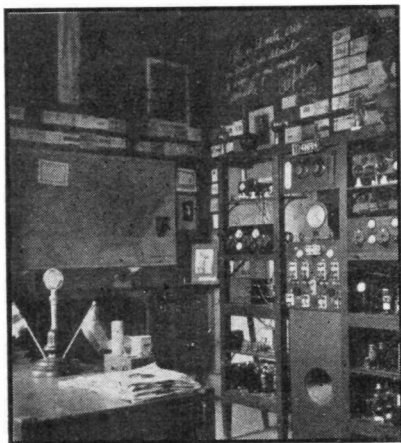
Last month I managed to squeeze in a note about the new XETA; since then I have compiled more data on it and pass it on for what it is worth. The frequency is, as far as can be ascertained, 11,765 kcs, mention is made of "R.C.A. Victor," 5 or 6 chimes are used at each quarter-hour, programmes being derived from medium-wave XET, Monterrey, and the address is: P.O.Box (Apartado) 203.

Star news from Central America is the welcome TI4NRH, Heredia, Costa Rica. As many may

1936 I was both astounded and delighted to hear it, complete with TI prefix and district number added, operating on 9,670 kcs. Its "come-back" was unheralded but I remembered having read of it six years previously and lost little time in mailing my report. The verification sent out is large and handsome, in certificate form, and I was pleased to learn that mine was the first report from Europe on the new transmitter, while Amando Cespedes Marin's subsequent letters proved both entertaining and extremely interesting; amongst other things, I learnt that he was the station director of TIRCC of San Jose. After a while TI4NRH waned into oblivion once more, then a short while ago I read that it has been rebuilt with greater power; I tried for it one recent Sunday at 02.10 and was rewarded by a good R6 signal. The owner-operator was at the microphone giving an interesting talk in English, somewhat after the style of those emanating from TIPG. He spoke of the thousands of letters he had answered and requested listeners to send their reports, accompanied by stamps, under cover. Reply coupons are of no use to him. Incidentally the "Voice of Costa Rica" may be heard with the English programme on Wednesdays, Fridays and Sundays from 02.00 until 03.00, or later, and are well worth attention. Reports should be sent to "Radiodifusora TI4NRH, Apartado 40, Heredia, Costa Rica."

Panama has been particularly well heard through HP5A (although the interference from CB1170 is very pronounced at times), HP5H, Panama City, 49 m., "The Voice of the People," and occasionally HP5J (31.23 m.) and HP5B (49.75 m.), of the same city. HP5H, which employs a chime signal, appears to have a regular English session each Sunday 03.00-04.00.

The outstanding station of the Dominican Republic is HI5N, "La Voz de Moca," operating in the region of 48.8 m. Fortunately it favours us with numerous announcements in English and at 00.25 generally signs off with the Dominican National Anthem. HIH, Higuamo, 44.25 m., has likewise proved remarkable at times and may also be heard with English station announcements, reception being at its best from 00.00. On one occasion I noticed HIN (48.05 m.) announcing as "HIN y HIZ, Broadcasting Nacional," while HIG has adopted a channel near 32.5 m. with the slogan "Radio de la Opinion." Incidentally HI5N, HIH, HIG and HIN have all been known to verify reception, the card of the first named and the latter being very attractive. HIH is, unfortunately, extremely slow in replying and actually took eight or nine months to verify! Other Dominican broadcasters to confirm reception are HIX (now HI1X), HIZ, HI1S, HI1J, HI1D, HI1L, HI1L, HI4V, HI8Q, and HI8A, and although many are "veri-slow," as our American friends would say, I have been particularly fortunate in securing replies from the majority.



The famous TI4NRH, Heredia, Costa Rica.

know, this station first went on the air with a diminutive $7\frac{1}{2}$ watts about 7 years ago, and the owner, Amando Cespedes Marin, pioneer of short waves in Central America, "In the city of flowers in the land of coffee trees," became world famous. Reports were received from many distant points, including Great Britain, and I know of an *amateur transmitter* in this country who is proud of the verification he secured from "little NRH" as the station was then affectionately termed! At that time, I made my debut in the SW sphere and can well remember my vain efforts to log "the Voice of Costa Rica." After a while NRH disappeared, then in

● PSH, Rio de Janeiro, Verifies!

Shortly after writing the March article I received my card from PSH (10,220 kcs), quite an attractive thing in black and yellow but lacking the data so essential to making up a "newsy" article. Other items of interest from S. America include reception of HJ6ABB, "Radio Manizales," Manizales, on 49.10 m. at midnight; XEWW, Mexico City, 31.58 m., with four chime signal and slogan "La Voz de America Latina"; COGF, Matanzas, nearer 25.4 m. than 25.42 m., proving a remarkable transmission as early as 21.30 while its compatriot COCX has been heard even earlier—20.10 to be precise. The YV's and HJ's have all been consistent, while YV6RB, Bolivar, has made a strong reappearance on 45.85 m. Uruguay may now be heard from CXA4, Montevideo, 48.98 m., in addition to CXA2 on about 50 m. The former appears to announce as "Servicio de Electrico de Montevideo" followed by the call-sign at each quarter-hour.

● Mystery Eastern transmission

One Sunday morning, quite recently, I was tuning "down" from the 62 m. Colombian band when on 60 m. I came across VUD, Delhi, India, testing on 60 m., 5,000 kcs. The transmission ended at 01.30 with various announcements and finally a studio clock striking 7. At first I was mystified by its identity as I missed half the announcements due to over-anxiety, but shortly after I received confirmation from a friend in India that it really was VUD. A "mystery" signal was heard on about 6,125 kcs, that is between COCD and HP5H, and was first observed on the same morning at 02.30, the programme consisting of the peculiar music and wailing vocal efforts usually associated with the Orient. At 03.00 it either closed down or was engulfed by the terrific QRM. An announcement was heard, but, unfortunately, it was in a language far beyond my understanding! On the following Sunday it was heard again at the same time but gradually dwindled and disappeared by 03.00. I have no idea what it could have been; VPB, Colombo, operates on 48.7 m., but would hardly wander to 48.96 m.; VUC, Calcutta, 49.10 m., is likewise unlikely to move to that extent, in any case it is said to have closed down!—then there is "Radio Burma," Rangoon, but again it seems extremely unlikely. My Indian friend states quite definitely that there is no Indian station near that wavelength and that there is just a possibility that it could have been Rangoon or Colombo testing, but later dismisses it as being improbable—so what? Needless to say I should greatly welcome any helpful suggestions.

From the Radio Club of Ceylon and South India I have received an interesting letter. They state that the Colombo Broadcasting Service is operated by the Telecommunication Department of the Government of Ceylon who also undertake commercial work, such as ship-to-shore traffic and international time signals and service. Public broadcasting is provided for by a 5 kw station on 428.5 m. The SW transmitter was introduced several years ago and now operates on 48.7 m. with a power of approximately 300 watts. On opening, a tuning signal is provided on a tubophone and the chimes of the Colombo Town clock are relayed several times a day, although occasionally a 6 "pip" time signal is superimposed on the programme. Languages used are English, Sinhalese and Tamil, and the interval signal consists, curiously enough, of our own "Bow Bells"! Programmes are concluded by the playing

of "God Save the King," but I do not yet know the schedule, although transmissions are begun at 11.30 G.M.T., or 5 p.m. Ceylon Time.

● African transmissions

On approximately 42 m. from 19.30 onwards, I have heard a Tetuan station whose call appeared to be EA9AJ—not the well-known EA9AH—with female announcer. Unfortunately the call was given so rapidly in Spanish that I could not fully grasp it, although I know a "hota" from an "ah-tchay" when I hear one! The latest official list published by the "Nationalists" does not mention it.

From the General Post Office, P.O.Box 792, Salisbury, S. Rhodesia, I have received the following information:—ZEA, Salisbury, operates on 51 m., 5,882 kcs, with 325 watts power; ZEC, of the same city, on 440 m., 681.8 kcs, 600 w.; ZEB Bulawayo, 48.8 m., 6,147 kcs, 325 w. and the Bulawayo medium-wave (no call-sign) on 485 m., 618.55 kcs, 570 watts. All transmit simultaneously Mondays, Wednesdays and Fridays 18.15-20.15; Tuesdays and Thursdays 16.00-17.00; Sundays 08.30-10.00, with a Children's Hour each Thursday 15.00-15.45 (what short hours children have these days!). Transmissions are concluded with the appropriate National Anthem. Incidentally the schedule given by the authorities is presumed to be in South African time and accordingly two hours have been deducted for conversion to G.M.T.

The South African Broadcasting Corporation has likewise kindly given some interesting details concerning the stations under their control. Their transmitters broadcast simultaneously at 04.45-05.55 G.M.T., programmes consisting of physical jerks, news and recorded music, with bugle call "Reveille" and "Cookhouse." ZRJ is the station formerly known as ZTJ on 49.2 m., 6,097 kcs, and ZTJ is now the call of the Johannesburg station on 645 kcs. An attempt is being made to find an outlet for ZRJ on a higher wavelength and "identification is not by call-sign as yet." ZUD does not exist, its place being taken by ZRH. Reception of these transmitters, that is ZRH (49.94 m.) and ZRK (49.16 m.) has not been particularly good due to terrific interference from the European mess and the concentration by the "siren-bogy," or "death-ray" as the amateurs call it, on 50 m. Incidentally the "death-ray," whose raucous note must be familiar to all, has not restricted its unwelcome attentions to the propaganda stations but nightly adds considerably to the turmoil of the already chaotic 7 mc. amateur band, generally at the LF end. The fact that it often operates on several frequencies simultaneously, endeavouring to blot out anti-Italian propaganda only, needs no further comment as to its origin. Few English-speaking listeners will mourn the obliteration of some of the distasteful propaganda, but the point is that not only the offending station is removed but half the neighbours as well!

● European transmissions

Like European politics, its broadcasters are similarly perplexing. Reception in the 40 m. band, with a receiver of average selectivity, is a nightmare between 19.00 and well past midnight. The offenders are, of course, the Spanish War stations. Why they congregate in that band I cannot say, unless it is because the majority are in reality amateur stations commandeered by the authorities. On the whole, the Government stations appear to be stronger though less numerous. FRI, of the Republic
(Please turn to page 11).

Multi-Electrode Valves as Detectors

Circuits for the Short-Wave Experimenter

By "TESTER," who will contribute to these pages occasionally

THOUGH THE USUAL leaky-grid triode detector gives good results at practically all frequencies, even as high as 100 Mc, there are other detector circuits which are well worth trying.

● SG Valve as Detector

The first departure from the standard is the fairly well-known one of using a screen-grid valve in this position. Now, many people who are otherwise successful on the short waves seem to find considerable difficulty in getting the SG valve to function properly as a detector; so much so, that it is often roundly condemned as being "no good" simply on hearsay. This inability to obtain satisfactory results is, in the writer's experience, generally due to it not being understood that, first, it is better to control reaction by means of a condenser than by varying screen or anode volts—the method often used—while secondly, the correct adjustment depends on reaction turns, reaction condenser setting, anode volts and screen volts, all having "best" values in relation to one another! This sounds a formidable list indeed, but actually it is not quite as complicated as all that.

Fig. 1 shows the best practical circuit arrangement to use with a screen-grid valve as detector. Reaction control is by means of C3, the normal reaction condenser of about .00015 mfd. The values

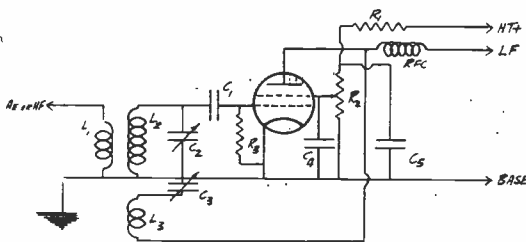


FIG. 1.

Detector circuit using mains or battery S.G. valve. Normal values apply for L1, L2, L3, though the latter may require variation. See text for full details and values.

of the coils L1, L2, L3 depend as usual on the wave-range required, and the only variation from standard which may be necessary in this respect will be in L3, the reaction winding.

The method of operation is to find the setting on R2 which enables smooth oscillation to occur with C3 about half-in. To obtain this, alteration of L3

is often required, as R2 should also be approximately half-scale when C3 is found to give the smoothest control. Since the plate voltage is fixed by the supply, and for best sensitivity there is a relation between this and the screen voltage, it follows that the variables involved are R2, L3 and C3. The conditions for R2 and C3 having been settled by the foregoing remarks, it again follows that in the turns-value of L3 lies the solution to getting just that smoothness of oscillation which makes all the difference to results. A final adjustment is to pick out a weak, steady signal and then vary R2 against C3 till that signal is at its strongest, consistent with smooth reaction. R2 is then maintained at this point for the particular coil used—its best position and the value of L3 are determined for each coil by the same method—and tuning is on C2 and C3 in the usual way; it is very much worth while having slow-motion on the latter.

In a well-adjusted circuit, it will be found that C3 holds practically constant over large variations of tuning on C2, which is an additional advantage, while the over-all performance under these conditions will be found a decided improvement on the triode detector.

The circuit in Fig. 1 is equally applicable to mains or battery working. In the latter case, the Hivac SG220SW can be recommended, as it is of special low-loss construction with the control grid brought to the top cap. Where reception over the wave-range 10-160 metres is required, C1 can be .0001 mfd.; C2 .0002 mfd. with a band-spread condenser of 25 or 50 mmfd. in parallel; C3, .00015 mfd.; C, C5, 0.1 mfd.; R1, 10,000 ohms 1-watt; R2, 50,000 ohms 3-watt potentiometer; R3, 3-4 megohms; RFC, suitable short-wave choke. Existing or manufactured coils can be used for L1, L2, L3, with the possibility already explained that L3 will need altering. The preliminary adjustments described should be made with C2 also about half-mesh.

● Another arrangement

In Fig. 2 is shown another unusual circuit, in which can be used either an HF pentode (with suppressor grid brought out separately) or a screen-grid valve. In this case, it should be noted that indirectly-heated cathodes are more or less obligatory; "more or less" because to use a battery valve would mean chokes in the filament leads, since the essential feature in the operation is that the cathode is above earth potential. And filament choking is rather a messy business constructionally.

The particular advantage possessed by this circuit is that much better stability is obtainable compared

with the conventional form of detector connection; in fact, a slight variation of it—the “electron-coupled” circuit—is used for frequency-meters and drive-oscillators where it is necessary to get the greatest possible frequency stability without having to use a quartz crystal, which “locks” the frequency.

Fig. 2 is therefore eminently suitable and most desirable for a short-wave receiver with mains valves, and it can confidently be recommended for this purpose. The reaction control is by means of the

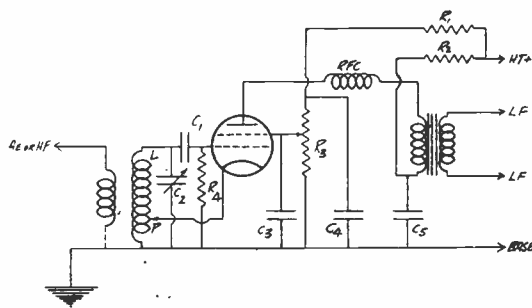


FIG. 2.

Detector circuit using cathode-tap for reaction. Band-spread can be obtained with a small condenser in parallel with C2, or as in Fig. 3. See coil table for values of L and tapping point P. An indirectly-heated valve should be used.

potentiometer R3, the tapping point P being fixed for each coil L used. Best results will usually be obtained with a very small amount of inductance between P and earth, and suitable values are given in the coil table.

This circuit also lends itself to the tapping method of getting full band-spread on all ranges—as opposed to the usual method of simply putting a small condenser in parallel with a large, which may give satisfactory spread on the high frequencies but is little more than a vernier at the LF end of the tuning range—as shown in Fig. 3, where C6 is the band-spread condenser, which should be about .0001 mfd. in this particular case. If the ordinary parallel connection is used, however, the band-spreader should be as given for Fig. 1.

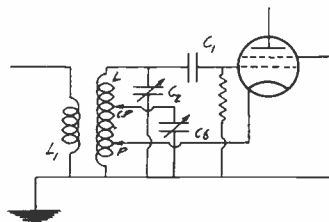


FIG. 3.

Band - spreading with condenser tap. C6 should not be less than 75 mmF in this circuit. See table for coil data. This tuning system is equally applicable to any circuit where full band-spread is wanted.

The set of coils to cover the desired wave-ranges could be wound on 6-pin formers, as given by the data in the coil table. The band-spread tap is likely to require some adjustment to get the fullest spread, but this is a matter of individual need. It is not possible to specify these taps absolutely accurately, as they are somewhat affected by constructional variations, different valves and so forth, and this is a point giving scope for a good deal of experiment.

● Values for Fig. 2.

With regard to values, C2 should be .0002 mF; C1, C5, .0001 mF; C3, C4, 0.1 mF; R1, R2, 10,000 ohms 1-watt de-coupling resistors; R3, 3-watt 50,000 ohm potentiometer; R4, 4 megohms, and RFC a suitable short-wave choke. The valve used should be operated, at the highest possible voltage (within its rating, of course), as it is never any use reducing the voltage to a valve designed for 250 volts to, say, 90 volts, in order to get smooth reaction. If reaction is not what it ought to be at the correct operating voltage, the trouble is in the cathode tap, and this should be varied accordingly.

Tuning is by means of condenser C2 (in conjunction with C6, if used), and the reaction control with resistor R3, which should be a good one and, if possible, noiseless. If there is trouble in this respect, a large condenser of 1 or 2 mF in parallel with C3 will help matters. A screen-grid valve is to be preferred to an HF pentode, which may be found unsatisfactory in this circuit due to the suppressor grid being connected internally to the cathode; if an HF pentode is available with the suppressor brought out to a separate pin, it should go straight to earth, and will probably give better results under these conditions than an ordinary screen-grid valve.

COIL TABLE.

Range in Kc.	L	P	CP	L1	Range in M.
1500-3500	45	5	30	15	200-86.
3000-7000	21	2	10	12	100-43.
6500-14000	11	1½	5	5	46-22.
12000-25000	6	1	2	3	25-12.
20000-40000	3	¾	1	1	15-7.

All coils are wound on 1½-in. diameter formers with No. 26 enamelled wire. Turns of coil L should be spaced to cover about 1½-in. winding length in each case. L1 is close-wound at “earthy” end. Taps are counted from the earth end, and some variation may be necessary, particularly at the h.f. end of the tuning range. If the circuit of Fig. 2 is used—with the band-spread condenser in parallel with C2—tap CP is of course not required.

WE HEAR THAT . . .

A well-known amateur is now working DX with a pint bottle driving two flagons in push-pull.

* * * *

Someone suggested he should complete the rig with an aerial made of wet string.

* * * *

The keramot-insulated S/W tuning condensers, and the midget twin-gang type, manufactured by Messrs. Jackson Bros., Ltd., 72, St. Thomas Street, London, S.E.1, can now be obtained to special order double-spaced for transmitting; only a trifling price-increase is involved.

* * * *

Messrs. Webbs have a quantity of excellent smoothing chokes, rated 20 henrys at 120 mA for disposal at 5s. 6d. each only.

On the Amateur Bands

By "THE OLD TIMER"

TIMES CHANGE; so does the radio amateur. This thought has been prompted by an interesting letter which has arrived at the office from an old amateur friend, Don. B. Knock, VK2NO of Sydney, N.S.W. Most of us know his history, but in case you have forgotten, he used to be an early "G" operating G6XG, and some of his remarks bring back thoughts so dear to the Old Timers of to-day.

● Junk shops

Do you remember Thompson's junk store at Greenwich? This closed its doors in 1923, but the stuff they sold was very useful for the amateur of those days. No modern beam power pentodes, no s.s. superhets; in fact nothing could be purchased or made that would be of much use in a modern station; at least, that is how the newcomers will think!

Ingenuity was the password then; no text books with easy circuits to copy, which it is not necessary to understand to get results, but just our few willing amateur friends to help us and to *explain* how the circuit worked. It must be agreed that the Hartley or T.P.T.G. rigs were not difficult to make, but it required the art of a technician to produce a clean, stable note on 45 metres. Earlier still, 440 metres required knowledge all of its own, little being understood about aërials, but we'll wager that many of the 440- and 200-metre "radiating systems" of those days, with their fan counterpoises, were a great deal more efficient than the modern counterpart on 1.7 Mc.

● Sausage aërials

Do you remember the "sausage" or "cage" aërials, weighing tons, suspended as high as possible? The idea was that the more wire energised, the greater the radiation. They did not know until later that a single wire produced as good, if not better, results and weighed much less. In those days an earth system *was* an earth system. No water or gas pipes, but scrap metal, like buckets and bedsteads, buried under the aërials and soldered together to make one common ground connection. These were really efficient!

● Modern Radioese

Although 'phone was pretty rough and ready, it was understandable (which is more than can be said of much that happens on 7 Mc to-day) and we were not asked to "take it away," or to "come in," but just "over," still used to-day in His Majesty's Forces by preference and tradition. We "stood by" for calls then; now we enquire, "what sa' somebody please, K." We repeat, "K." Has 10 to 15 years really produced such a change in our speech on the air? Is this strange talk we hear really our language of ancient tradition? Can we not preserve it in this wonderful hobby of ours, or must we, the younger generation, imitate the methods adopted in countries so far removed that their amateur stations were not receivable on telephony ten years ago? We have even heard such travesties of speech as, "Test twanny" and, "your

signals coming in very fine business." Now what, we old timers ask, does the public really think of us? *Possibly* they imagine that these extraordinary phrases imply some deep learning, very much connected with a complicated and technical science only understood by those who wish to delve into it. Or do they? From remarks heard, it would appear that the amateur of to-day is largely looked upon as a nuisance and a small boy trying to show off because he is "broadcasting."

● Modern components

We feel that the number of stations now on the air is largely due to the ease with which parts can be bought and assembled. DX listening is simple for those who can afford an expensive American communication receiver; worst of all is the man who buys his station, complete in every detail, and has it set up for him by the firm that supplies it. Yes, we know; this man will reply at once that he is studying propagation of radio waves and has no time to build anything. No time? Nonsense. No desire, or no ability, is nearer the mark. That type of amateur would not be with us to-day if this were 1925 instead of 1938, because then we had to build everything, except our valves and HT batteries.

We are not decrying modern technical advancement, which has been marvellous, and amateur radio to-day could not exist without the modern receivers and components, which produce, or should produce, such clean notes and good telephony, and such receiver selectivity; but don't you think that the radio amateur is changing? What is an amateur to-day? What was he a decade ago? The difference lies in the fact that then he wanted to know how the thing worked, whereas to-day, he wants to work everything.

We are generalising of course. The old type of "ham" is being born every day; the man who will probe the mysteries of the ultra-high frequencies for months, who will try dozens of combinations of aërials, who studies the modern theories, and tries to prove them and countless other things; this is the true amateur, always has been, and always will be.

● The Australian amateur

In Australia, it is not possible to buy American communication receivers, owing to custom regulations, so if a VK wishes to be modern he must build his own s.s. super or suffer the QRM. It is most noticeable that all the well known VK 14 Mc 'phones use home-made supers. The ones you cannot raise are probably using straight receivers. If this condition exists in Australia, and VK2NO tells us it does, then surely the Federal Government are wise without knowing why? We are told that one VK2 had to pay £23 duty on a well-known make of American receiver before he could take delivery from the Customs! We have always applauded the VK's for their splendid signals, both from the point of view of quality and strength with low power; now we begin to understand. Because he cannot buy his gear "off the shelf" he has to build it all,

and thereby understands its operation. There was a time when the G's had the same enviable reputation.

● Test calls

Don Knock again raises the old question, "Why do British stations call 'test'?" He deprecates the sending of test calls, as it is cumbersome, and not infrequently mis-sent in the form of "NST" or even "TEV." Most British stations appreciate the fact that their licence conditions require that "test" should be sent, because a DX station knows at once that a "G" is calling, thereby incidentally giving him an advantage over all other users of "CQ."

The reason that we call "test" in this country is because we are classed as "experimental" stations, and as such are supposed to test our equipment only and not invite replies to our tests. If a reply is received, then that is merely incidental, because we have not called the world at large, but just informed it that we are conducting our own little test. Don Knock thinks that calling "test" sounds to him as if the station is apologetically on the air, and thinks it just one of our dear old British conventions! Malta is another country where this method of calling is required, and we believe (according to VP6MR) that the same regulation exists in Barbados, where their licences are drafted after the same pattern as ours; however, as we all know, "CQ" is used exclusively in that Colony. We think that "test" has a rhythm peculiar to itself and, if sent well, is easily recognisable to the rest of the world. Just another old British custom from the early days!

● Handles

Before we leave "Modern Times," it is felt that some mention might be made of the growing habit of "handles." We appreciate that "OM" has lasted a long time, but is there any real need to ask every station worked, "Say, old man, what's the handle there?" It is just possible that the person being worked is a very serious-minded elderly gentleman, who may not like being called by his "handle," especially by a young "squirt" who has just obtained his licence. Anyway, why *should* we announce our Christian names to the public at large? We are sure that this does not lend much belief to the fact that we are supposed to be experimenters.

And also, why "handle"?

Home-constructed Morse Recorders

Several enquiries have come in on this subject, and if any further interest results from this note on the matter, we will see what can be done.

Here again, we should like to have the opinion of any readers who are actually using morse recording apparatus they have themselves constructed.

In case we are to be immersed in a flood of correspondence from others merely anxious to have some means of "taping" telegraphy signals, let us say that it is still possible to purchase very fine instruments, complete and at a reasonable price, as may be seen by advertisements appearing from time to time by Electradix and others.

"HAVE YOU HEARD?"—continued from p. 7.

lican Fleet, Cartagena, has provided one or two thrilling episodes, notably the interrupted description of the sinking of the rebel cruiser "Balears," and another broadcast during which a Fascist was ejected!

The "Nationalist" stations have been heard extremely well, but generally prove more monotonous than entertaining, particularly when the voice of General Quiapo de Llano is heard at every few degrees of the dial. The latest official list of their stations is given below. I must confess that it makes one feel like saying things when the layman, or outsider, endeavours to convert wavelength in metres to frequency in kilocycles! The list is presented as received, in order of wavelength.

M.	Kcs.	
21.42	14,000	"Radio Malaga," Malaga, testing.
21.75	13,992	EA9AH, Tetuan, 500 w.
28.93	10,370	"Radio Tenerife," Tenerife "El Tablero," 23 kw.
40.00	7,500	EA1BH, Pontevedra, 6 w.
40.00	7,500	"Radio Pizarreles," Salamanca, 1.5 kw.
40.14	7,474	FET7, Tenerife, 100 w.
40.81	7,350	FET5, Burgos, 600 w.
41.40	7,246	"Radio Espana," Bilbao, 200 w.
41.41	7,230	EASAS, Tenerife, 210 w.
41.43	7,240	FET22, Oviedo, 50 w.
41.59	7,212	EA1BL, Pontevedra, 75 w.
41.65	7,203	"Radio Espana," San Sebastian, 1 kw.
41.65	7,202	FET8, Melilla, 85 w.
41.66	7,200	EA9ME, Melilla, 20 w.
41.66	7,200	EA8AE, Las Palmas, 100 w.
41.80	7,177	"Radio Ferrol," Ferrol, 150 w.
41.8	7,177	EA2BH, Jaca, 200 w.
41.85	7,168	FET6, Palma de Mallorca, 145 w.
41.97	7,147	FET-, Las Palmas, 40 w.
42.00	7,142	EA7BA, Cadiz, 40 w.
42.00	7,142	FET20, Heulva, 65 w.
42.05	7,134	FET21, Ceuta, 100 w.
42.10	7,125	FET6, Palma de Mallorca, 145 w.
42.12	7,121	EA9JB, Alcazarquivir, 350 w.
42.1	7,117	EA7BB, Cordoba, 85 w.
42.40	7,060	"Radio Espana," Madrid (Frente), 260 w.
42.43	7,070	EA1BO, Salamanca, 74 w.
42.65	7,000	"Radio Malaga," Malaga, testing.
42.69	7,027	FET10, Vitoria, 160 w.
42.82	7,006	FET1, Valladolid, 400 w.
42.83	7,003	FET-, Las Palmas, 40 w.
42.84	7,002	EA2AA, Saragossa, 150 w.
44.40	6,750	"Radio Nacional AZ," Madrid (Frente), 500 w.

● Other news

2RO, Rome, now broadcasts over IQY (25.21 m.) and IRF (30.52 m.) in addition to the 31.13 m. channel, and may be heard on approximately 16.7 and 16.95 m. around 13.00.

Latest information from "Radio Nations," Geneva, states that a new schedule comes into force this month, and also mentions that reception reports from readers will be particularly welcome. The sessions are:—Sundays 15.45-16.30 over HBH, 16.23 m., 18,480 kcs, and from 18.45 till 19.30 two channels will be employed, namely HBJ, 20.64 m., 14,535 kcs, and HBQ, 44.94 m., 6,675 kcs. Each transmission will include an account of the latest League of Nations activities, besides a short musical introduction. Broadcasts are to be made in English as follows:—Sundays 15.45-16.30 over HBH; 18.45-19.30 over HBJ and HBQ; Mondays 00.00-00.45 and 07.00-07.15 over HBO, 26.31 m., 11,402 kcs, and 07.30-07.45 over HBJ. Reception in Europe should prove good on Sundays from HBQ.

Read "The Short-Wave Magazine" regularly for the latest news

RADIOQUEST AND SIDE-SPLASH

By "CENTRE TAP"

AT ODD INTERVALS we hear stories of wonderful reception without the use of an aerial on the receiver, and only a few months ago a much advertised DX-listener-reporter apparently tried to flatter the designer of a home-constructed receiver (described in the journal for which he wrote) by saying that he heard a fair loudspeaker signal from a very distant SW broadcaster. He was greatly impressed a minute later when he found the aerial lead-in had come adrift!

I often wonder what the designer thought when he read that! It is a sign of bad performance for signals to be received without an aerial connected to the set. It means that the signals are reaching the detector without passing through the tuning circuits [Not always.—ED.], and the latter might as well not be there.

It is a far greater compliment to be able to say of a receiver that when used without an aerial it is possible to turn it all out and not be able to hear *any* signals. If you ever indulge in "fishermen's stories" and want to boast of the terrific amplification of a set don't forget to point out you have to attach a small aerial.

● Screening

This brings us back to the old question of how and where screening should be used. Like most other good things screening should be employed with care. Indiscriminate shielding can do as much harm as good. In receivers with more than one stage, screening becomes essential to isolate the various stages, but in small sets all that is normally needed is a metal panel and chassis—the former chiefly for overcoming hand-capacity effects and the latter affording greater stability.

To be of real value screening must be done properly; a simple metal plate between stages will often actually couple them together, the reverse of what we want. The moral is: Don't attempt to design a big receiver unless you know just what pitfalls to avoid and even then the carefully thought out design on the drawing-board will require patient experiment.

● Condensers, Old and New

Many constructors build and re-build *ad infinitum* with tuning condensers of patterns popular many years ago, some even using "cut-downs" of broadcast types, which may or may not serve quite well, say, on 40 metres, but are hopeless on coming down below "Ten," where the question of condenser design becomes of much greater importance.

Care must be exercised in the choice of tuning condensers and here are two of the chief points to look for. First, large insulation surfaces must be avoided. Note the minimum possible amount used in modern variables of reputable make and the care taken to keep that minimum outside the field of the condenser. Secondly, the bearings at both ends must be designed to allow free movement and maintain a good electrical contact in all positions and during rotation. This is frequently the source of

more noise than bad connections. The latter can easily be tightened but an inherently badly designed condenser can only be scrapped.

● Not so old

It is on record that Sir Harry Lauder once replied to the welcoming cries of "Good old Harry!" with "Not so much of the old." Veteranship among radio men appears to be a highly rated asset and this month's funny story concerns a certain self-styled old timer. He was allotted his full call in very recent years and I remember he was immensely thrilled about his first contact which, by a strange twist of fate, happened to be with a real old timer about a mile away.

You can imagine the surprise of the genuine OT when, looking out of the window ten minutes later, he saw the former (who by his own miscalculation became an old timer in a fortnight, so to speak) pedalling his bicycle furiously up the road to collect his first QSL card. Still, what does it matter as long as we keep abreast of radio developments and not be content merely to be old timers.

● What Watt-er?

One of the problems most frequently met with by constructors is calculating the wattage rating of resistances, and yet I have often noticed people well versed in radio matters a little dim about ohm's law, which to them appeared alternately so simple and then exasperating in the school-room. Voltage and current can easily be measured but to ascertain the wattage dissipation of a resistance requires calculation. The formula is I^2R which simply means: the current times itself multiplied by the value of the resistance.

A simple example would be the power rating of the resistor in the anode circuit of a detector valve taking 5 milliamperes, flowing through a 20,000 ohm resistance. What would have to be the wattage rating? 5 squared is 25, which multiplied by 20,000, gives us 500,000. As we are calculating in milliamperes we must divide the result by one million, giving us .5 watts. Thus a half-watt resistor would carry the current but, of course, the employment of one of somewhat higher rating than absolutely necessary is advisable.

One or two examples for those a little hazy on this point. Work them out for yourselves, it gives you confidence.

Resistance	Current	Watts
5,000	10 mA	.5
50,000	8 mA	3.2
600	35 mA	1.155

Low tension resistance ratings are calculated in a similar manner. Thus, the watts dissipated by a 2 ohm resistance carrying 3 amperes would be $3 \times 3 = 9$; this multiplied by the resistance value (2) is 18 and therefore a resistor capable of handling 18 watts comfortably should be used. The nearest standard size, 20 watts, would serve but a 25 watt-er is still safer.

LETTERS TO THE EDITOR

CALIBRATING ON 56 Mc.

With reference to the article "Getting Going on 56 Mc" in the March issue, I notice your contributor A. J. Devon mentions the possibility of finding the band by counting harmonics from, say, 14 Mc. Whilst this would be, as he explains, a somewhat awkward matter for the amateur with simple gear, I should like to show how the television transmissions, where receivable, can be used for the purpose of calibrating in conjunction with a crystal oscillator working on 7 Mc.

First, the USW receiver must tune from about 7 to 4 metres, to cover both television channels and the 5-metre amateur band. With the CO working on 42 metres, a strong harmonic, the 6th, will be heard just below the sound channel, on about 7 metres. Tuning the 5-metre set still lower in wavelength and passing the vision signal, will bring in the 7th harmonic of the CO, at 6 metres. The next two beats will be the 8th and 9th on approximately $5\frac{1}{2}$ and $4\frac{1}{2}$ metres respectively. The 5-metre amateur band is from 5.00 to 5.36 metres, hence the 8th and 9th harmonics from any 7 Mc CO will fall near enough to locate it roughly. Moreover, from a consideration of the frequency relationships between the various amateur bands, it will be evident that the 8th harmonic from a 7 Mc CO will always come somewhere in the 56 Mc band. If therefore it can be correctly identified and its frequency is known—by multiplying the 7 Mc CO frequency by 8—an accurate calibration point becomes available.

The essence of this method of calibration is the correct identification of the harmonics from the 7 Mc CO, which is done by finding where they fall in relation to the A.P. television signals. This will always give the 6th and 7th, so that the next ones must be the 8th and 9th.

For the lucky ones who live within the A.P. service area, this is by far the most satisfactory and reliable method of fixing frequency in the 5-metre band.—A. CECIL GEE, G2UK, Eastwood, Southend-on-Sea.

BAND-SWITCHING.

With regard to your query on band-switching, I am using this on all stages except PA, the reason being that I could not get a switch to run cool in the latter stage. At present, I have Yaxleys, the contacts of which can be changed round to suit one's own requirements. My circuits are arranged to give various combinations of CO, tri-tet, FD and BA, from 28 to 3.5 Mc.—RAYMOND EVANS, 5, St. Luke's Road, Maidenhead.

[Thanks for this information, which will be of general interest to amateur transmitters.—Ed.]

ERRATA

In right hand column of page 12 the third example under "Watts" should of course read .735 instead of 1.155.

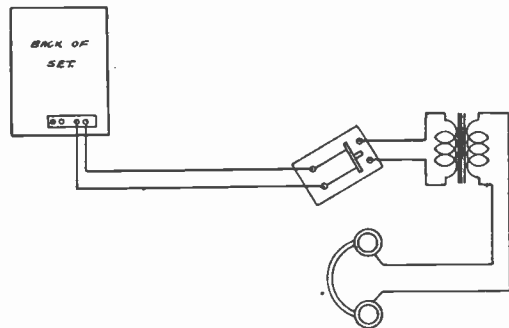
FOUR KEEN AMATEURS.

I am writing this on behalf of four of us who have formed a somewhat amateur short-wave club. When we first got together, we had a dilapidated shack—but it was our own. Miles from anywhere, we possessed two home-built S/W receivers and an ancient 3-valve b-c set. Just before Christmas, the club was broken into and much of our gear stolen. We were then offered a piece of ground nearer civilisation, but still without mains supply, so we decided to re-build on better lines. We even hope to have a transmitter some day. Our electrician member wants to run a car dynamo from a motor-cycle engine we already possess, to charge our batteries and finally to get HT with a vibrator unit of some sort. I want to say how much we all appreciate the Magazine, and that we are very interested in the articles on transmission.—EDGAR C. COOPER, The Alders, Hackenden, East Grinstead, Sussex.

[We congratulate Mr. Cooper and his fellow enthusiasts on the way in which they are overcoming what to many people would be almost insurmountable difficulties. We look forward to hearing that transmitter on the air one day. Good luck!—Ed.]

HEADPHONE RECEPTION WITH ALL-WAVE SETS.

Having derived much pleasure from the Magazine, I am sending along a small tip which may be of use to readers, a good many of whom must be using commercial "all-wave" superhets, on which they find reception of real DX weak.



To use 'phones on such a receiver, it is only necessary to have extension LS sockets, a 1:1 output transformer and a DPST switch, connected as shown in the sketch. Operation is by changing the set over to "Ext. Speaker" and listening on the 'phones.—WALTER E. CAUGHEY, BSWL-700, 216, Duncavin Gardens, Belfast.

[This suggestion should swell our "Calls Heard" lists! Where the set has no extension speaker terminals, it would be possible to take the speech coil connections of the built-in speaker to the middle pair of terminals on a DPST switch, one side of which would go back to the speaker and the other to a 25:1 output transformer, with the 'phones across the secondary. It would not be advisable to attempt this arrangement without skilled assistance.—Ed.]

Transmission for Beginners

Part II. of a series combining theory and practice in easy-to-understand language

By A. A. MAWSE

LET US COMMENCE this month's article with a personal appeal: We should like to see more correspondence from readers following these articles. Notice how the SWL's keep up "DX Corner" interest; the need exists for a similar corner in this section, and it can be done if you care to write in.

Now to business. . . Continuing the policy of a future use for all gear constructed, the relay rack shown will later contain panels for (perhaps) the receiving apparatus, together with frequency-measuring equipment; in fact, there are a variety of uses for such a rack, therefore a few notes on its construction will not be out of place.

● A minimum of tools required

Many of my readers are desirous of avoiding the use of woodworking tools wherever possible—for more reasons probably than the one that deters the writer, a "poor fist"! A small tenon saw, a $\frac{1}{2}$ -inch chisel, and a sheet of sandpaper completes the necessary outfit, apart from the usual lit in the possession of every amateur. The base of the rack is formed with two 10-inch lengths of "2 by 2," which are slotted one inch from the front ends to take the uprights in a tight fit. Battens are then fastened at the front and back to hide under-chassis wiring and at the same time form narrow panels for switches (mains primary, HT and LT) and high and low tension outlets, also the mains entry socket.

The photographed arrangement has proved sufficiently rigid but the design will of course permit strengthening should the necessity arise. Additional locking is provided by making the lower baseboard a fixture, as the power supply does not require continual changing and, as mentioned, may be left in position after the transmitter in hand has had its day. If the lower panel is separate, meters may be let in as and when they come along.

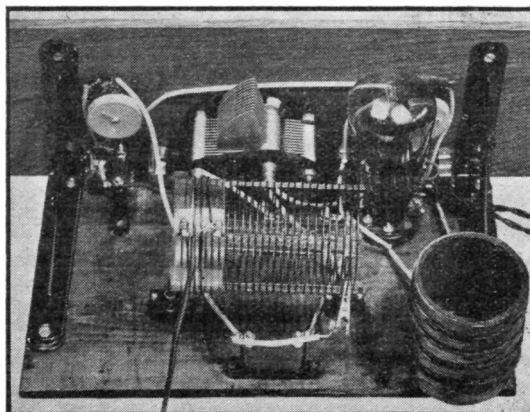
The first meter for panel use should be a 0-50 mA dead-beat (needle steady after travelling determinedly to its reading) moving-coil instrument. This range has almost unlimited uses for it may be shunted to give higher maximum readings; the shunts should be placed across each jack, where the leads are plugged. Parallel condensers of about .006 mF will prevent RF reaching the instrument.

● Layout

Only one alteration in the circuit shown last month has been made in the promised layout photograph—screen HT is led off from the HT + side of

the "Avo," because it is necessary to read plate current accurately in all experiments. If total current is to be measured, then the former wiring is correct.

The "jam-jar" of slotted wiring is the RF choke (300 turns of 28 enamelled S.W.G.), the cheeks being built up with layers of card pasted over a paxolin roll. When mounting this be careful to place it away from the tank coil field; the choke in the photograph has to be moved another inch or two yet for full clearance. Further, this component must have suitable characteristics for the 1.7 Mc band, as will be explained later.



A close-up of the construction of the Hartley oscillator. Note the experimental RF choke on the right, and the link-coupling on the tank coil:

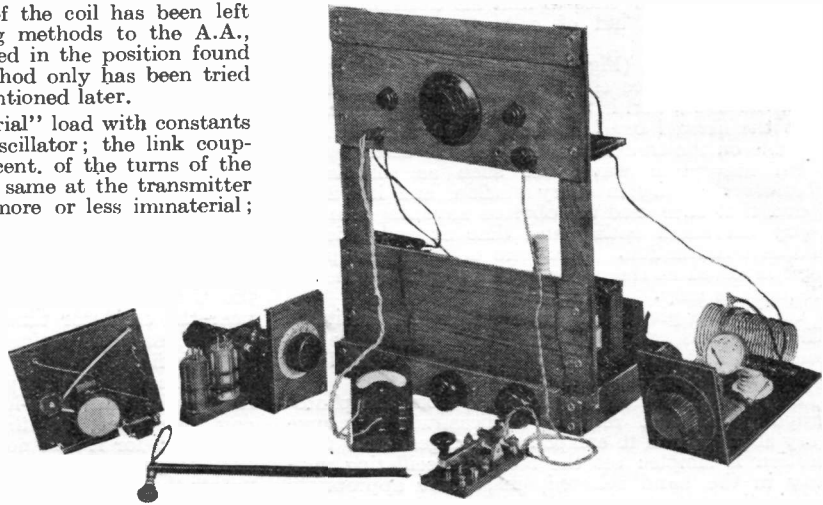
Next to the RF choke will be seen the tank coil, which is also an amateur-made inductance, and although it has no former a coil wound on paxolin will serve equally well for 1.7 Mc working. The story of its construction is not for this page, but for those with an "Inspector Hornley" bent it is made by using a collapsible mold, strips of celluloid, a tube of "Durofix" and that other most necessary element—patience.

To provide against vibration the cathode tap condenser is used as an anchor for a short length of 18 S.W.G. with a crocodile clip, the length permitting complete traverse over the coil.

Space at the plate end of the coil has been left for testing various coupling methods to the A.A., which has been photographed in the position found most suitable. As one method only has been tried so far (link), results are mentioned later.

Fig. 2 is the "artificial aerial" load with constants for L^3/C^2 as used in the oscillator; the link coupling coil can have ten per cent. of the turns of the tank coil winding, with the same at the transmitter end. Length of feeder is more or less immaterial;

Complete transmitting equipment, as used and described to date. In the photograph can be seen the 100 kc oscillator (on the left) the absorption wavemeter, transmitter rack, tuning loop (in foreground). AvoMinor, key, and artificial aerial.



in my own experiments fifteen feet of flex has been successfully employed without apparent losses.

Commence measurements and tests without the A.A. load by first checking voltages at the plate and screen; about 250 and 200 volts respectively are normal, with anode current at possibly 40 mA. Screen voltage should be kept within the maker's rating; this is most important if the valve is to have a useful life.

● First tests

250 (volts) multiplied by 40 (mA), over 1,000 equals 10 watts. Quite correct, but complacency on this score is short-lived for directly a load is applied to the tank up go the milliamperes and one condition of the licence is disregarded.

Now to get nearer the mark, and at the same time obtain correct operation of the oscillator, it is necessary to make careful adjustments in the following order. First, test for RF output by using a loop of wire connected to a torch-lamp bulb: this, the tuning loop, is another useful gadget and is worth the mounting on a handle as pictured. As the loop is brought in proximity to the coil (while holding the key down) a glow will indicate RF output. Another method is to touch a neon indicator type lamp (without a loop) on to coil, but the loop lamp method is better.

During this test the tapping point should be left about half-way up the coil and the condenser set midway. If RF is not indicated the tapping point should be adjusted a turn at a time until the lamp glows. Two points are emphasised: make certain the clip is contacting wire and not enamel, and secondly, be sure to release the key at each alteration of the tap. Apart from the possibility of shocks, the valve and meter will suffer by neglect of either precaution, for if bias is suddenly removed up goes everything.

Optimum RF output coincides with a current decrease to the minimum obtainable by tap adjustment, and having found this setting proceed to test for unwanted choke resonances. If all is well here, movement of the condenser over the band leaves the meter reading more or less constant. Sharp variations outside the band will not matter,

and if the values given are followed it will be found that the oscillator will tune over both the 3.5 and 1.7 Mc bands.

● Finding the Band

In carrying out calibration and frequency measurements it soon becomes apparent that locating the bands themselves on the transmitter is not always an easy matter. Harmonics seem to be everywhere

ABSORPTION WAVEMETER

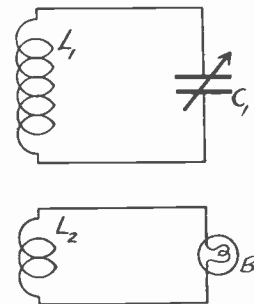


Fig. 1.

Coil	Band	L1	L2	Reading
1	1.7	56	15	75
	3.5			22
2	3.5	27	8	58
	7.0			13
3x	14.0	7½	3	40
	28.0			5

Each wound with 28 S.W.G. enamelled wire; x is space wound on a non-ribbed former.

Parts Required

- 2 Plain coil formers (Eddystone, 935).
- 1 Ribbed coil former (Eddystone, 936).
- B—1 Lamp and holder.
- 1 Baseboard 4-pin valveholder.
- C1—Eddystone .0001 mF (900/100) with slow-motion head and dial.

when the beginner tries to find his transmitter frequency with the aid of a frequency meter and receiver.

The instrument (Fig. 1 and shown in the photograph) will at once check whether the transmitter is in the band, and is the means of giving assurance that the *desired band can always be found* if it is tunable on the transmitter tank circuit used.

An absorption wavemeter such as this is an *absolute necessity* in every station, and it will be found that once used the obvious advantages amply repay the small outlay and time expended in its simple construction. There are no harmonic problems involved as the meter operates on fundamental frequencies only.

Coil data is given and the layout speaks for itself. The handle is well away from the tuner while the coil is placed so that close coupling is possible to the circuit being checked.

Dial readings recorded are those from the photographed unit and readers' replicas will of course vary slightly, due to component changes, etc. Calibration is simple: set the receiver oscillating midway in the band selected, insert the appropriate coil in the meter and, holding it near the oscillating stage in the receiver, tune the wavemeter until a sharp wipe-out effect is obtained on the receiver; the coupling should be as loose as is consistent with well defined tuning. The meter dial reading should be noted and used for any future check; it will agree fairly closely with those given. In the case of transmitter adjustment, the lamp will glow when resonance with the meter is obtained; thus the transmitter can be tuned as required—and checked on any band.

● Loading up

Plate mA are likely to be in the vicinity of 20 after making preliminary tapping adjustments, and as this is presumed to be the very lowest reading obtainable it is time to couple the A.A. and take further readings.

This is done by arranging the link coupling between the oscillator and A.A. circuit, such that when C^2 in Fig. 2 is tuned to resonance—or brought to the same frequency setting as the oscillator—a rise in current is indicated on the plate milliammeter; at the same time the aerial ammeter A, or a lamp in series with it, should indicate RF in the A.A. circuit by deflection and/or glow.

THE ARTIFICIAL AERIAL

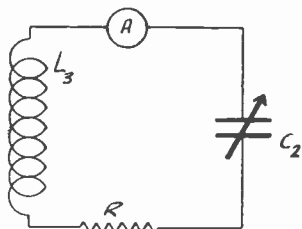


Fig. 2.

$L3/C^2$ —Duplication of oscillator tank circuit.

R—500 ohms, 20 watt (Bulgin, PR2).

A—0-1.5 hot-wire ammeter (Electradix).

A 6 v. 3 w. car sidelamp can also be inserted in series with the meter.

If coupling is excessive RF output will fall off rapidly, which condition is noted by the receding ammeter needle and lessening glow in the A.A. lamp; conversely, the best coupling condition is seen at that stage when full brilliance is visible in a tuning loop held near the A.A. coil—or maximum deflection on the aerial ammeter A, and is attained by tuning both circuits to resonance, where a touch of either condenser is critical. Slow motion dials would be an asset if for this reason only.

The object of the tuning adjustments is to transfer as much RF as possible from the oscillator to the A.A. circuit, this being done by variation of the positions of the two link coils. If the coupling is too tight—out will go the tuning lamp when held near the oscillator tank coil. The links should be moved nearer to or further away from their respective windings.

The final tuning up will show one obvious reason for keeping initial no-load current down, which in any case must be the minimum obtainable for efficiency, for it will now be evident that the addition of the A.A. load has increased plate input nearer the ten watts aimed at.

In summarising, experiments from now on should centre round final touches at each step to get the maximum allowance of watts into the oscillator while loading the A.A. at best efficiency. At the same time, record all details for repeating adjustments should a later test give less RF in the A.A.

● Keying

A clean note should be strived for by listening on the monitor or a harmonic in the receiver, making coupling adjustments to obtain the purest signal. The setting giving most RF in the A.A. will not necessarily produce the cleanest note. No values for a suitable keying filter (a condenser and resistance in series across the key) can be given as each case requires a different ratio. This subject is broad and therefore cannot be dealt with fully just at present.

● Frequency measurement

Space forbids enlargement, but a final note on frequency measuring in the 1.7 Mc band is necessary. Using the 100 kc oscillator (described last month and shown in the photograph) it is easy to locate on the receiver the 18th and 19th harmonics; tune in, say, Radio Normandie (1,411 kc) then count on from the next 100 kc beat, which is the 14th. The receiver should be oscillating while these calibration points are found on the frequency meter by making the latter in turn heterodyne the beats being heard on the receiver. With these two markers plotted (the 18th and 19th harmonics at 1,800 and 1,900 kc respectively) listening to the transmitter signals on the frequency meter and via the receiver will leave no doubt as to where the transmitter is tuned.

It is necessary to emphasise that checking on a frequency meter *alone* does not necessarily locate the band because, to put it simply, any one dial frequency meter reading produces a family of harmonics. The frequency meter serves as a means of adjusting the transmitter accurately once the band has been found with the absorption wavemeter. The note heard in the frequency meter is incidental from the point of view of checking its *quality*. It just happens that a frequency-meter-monitor can be used both for frequency setting and note checking, thus making it possible to judge how the signal sounds at a distance.

THE "TROPHY 3"

FOR THE LAST FEW WEEKS we have had some interesting experiences with this mains-operated receiver, which is specially designed for short-wave working over the range 6-200 metres, selected by means of single plug-in coils.

The general neat and clean appearance of the set pleases the eye; the crackle-finish metal cabinet is 13½ inches by 8 inches by 7½ inches deep, with a plated "aeroplane" dial and light-finished speaker grille.

So much for appearances; now about its internal economy, the latter word being particularly appropriate as the left-hand half of the cabinet space is occupied only by the speaker. The circuit is the always-sensitive detector and one LF combination, using pentodes in both stages, the third valve being the rectifier. All components, including the shielded mains transformer, are mounted on a small chassis behind the controls, and particular attention has been paid to the important factors of screening and short RF leads. Other points in the design are the reasonable-sized speaker, rigid construction, neat and accessible mains voltage adjuster, easy coil changing and smooth yet positive action of the controls, of which there are four in all.

● Loudspeaker results

Now we, who have been concerned with short-wave receivers of every type for more years than we care to remember, have hitherto regarded with some scepticism claims of loud-speaker operation with three valves, let alone two. It was therefore with no very great expectations that we switched the set on, with the 12-26 metre coil in place, and tuned across the band.

Without cataloguing what we received, it can be said that they were all there. Broadcasters, commercial CW stations (we have three pet ones for receiver testing and calibration checking) and the 14 Mc amateur band, which yielded a good crop of American 'phones and plenty of CW DX. Except on some of the very strong commercials, signal strength was not over-powering, but it was adequate and certainly exceptional for a two-stage receiver of any type.

As in the case of all short-wave receivers with the necessary variables, one has to learn the controls to get the best out of the set. In this connection, we were particularly pleased to find that the knob on the right, described as a "Sensitivity Control," is actually a potentiometer in the screen of the detector—incidentally, its other function is as "On/Off Switch," in the zero position—thus allowing this valve to be adjusted to its most critical setting in relation to the reaction control and aerial loading. The latter is varied by means of a series condenser in the aerial, the knob being on the left-hand panel of the cabinet.

● Easy tuning

The best adjustment of these three controls is that which allows smoothest reaction with maximum aerial coupling, and the aerial loading will naturally change from band to band. This is a point to watch.

Since the tuning range already mentioned is covered with one condenser only, in conjunction

with five plug-in coils, it follows that there is not a very high degree of band-spread on the shorter ranges. As we can never have it both ways in this world, this is only to be expected, but tuning is a great deal easier than on most "all-wave" receivers. Another possible snag is hand-capacity at the HF end of the tuning range, but this can be almost entirely eliminated by using a good earth; anyway, it only becomes slightly noticeable below 12 metres.

As regards calibration, this is approximately correct—the dial is marked in wavelengths, with the various broadcast and amateur bands shown and the more prominent of the former named—but it should be remembered in this connection that the setting of the aerial condenser will, of necessity, alter the position of the pointer a little in relation to the calibration, which can be taken only as a guide.

● No hum with 'phones

Somebody will now say "What about hum?" and someone else "Can 'phones be used?" The answer to the first question is "None," unless you abuse the detector screen-voltage control, and to the second "Yes," there is a 'phone jack provided under the aerial condenser, so arranged as to "de-sensitise" the set a little for headphone working. In case anyone asks "Is there hum on 'phones?" the answer to that is "No"—and this shows that the designer knew what he was doing, because it is notoriously difficult to get a silent headphone back-ground on a mains set working on the higher frequencies.

We can unhesitatingly recommend this little receiver as a really sound job for general short-wave listening. Its makers, Messrs. British Television Supplies, Ltd., Faraday House, 8-10, Charing Cross Road, London, W.C.1, are to be congratulated on being able to produce it at the remarkable price of £6 6s. 0d., while a battery model is available at £5 15s. 0d., less batteries and with a slightly different circuit arrangement. Ericsson headphones are 16s. 9d. extra in each case, but coils for 12-26 and 26-52 metres are included.

AMATEUR-BUILT MASTS

In response to our note last month, we have received three very practical designs from readers, Messrs. A. Jackson (Galashiels), H. L. Judd (Enfield) and N. Guy (Coulsdon).

As we should like to see a few more before proceeding further, these are being kept on the file for the moment. What do readers in Wales, Northern Ireland and Eire do about masts?

A HANDY TOOL

The new "Gilbert" pistol-grip electric drills are excellent value for money at 30s. These little machines take up to ½-in drills, run at 700 r.p.m. on load, and have a power consumption round 80 watts. They are obtainable in standard voltages at good ironmongers and tool-shops.

A 56 Mc PA.

Using the R.K.34 as A Push-Pull Amplifier

By A. J. DEVON

IN MY ARTICLE "Getting Going on 56 Mc" in last month's issue, a circuit and some information was given with regard to the use of the R.K.34 twin-triode as a driven amplifier on five metres.

The photograph shows the constructional method and lay-out adopted, though unfortunately it does not quite bring out the finer points. The "Isotex" holder for the valve is mounted on a pair of Eddystone insulating pillars, Meccano brackets—very useful round the shack for a variety of similar purposes—holding it so that the R.K.34 is parallel with the baseboard. This latter, by the way, is a piece of "Venesta" plywood 12 inches square, finished dead black with Woolworth's bakelite enamel—total cost about 10d., allowing for the fact that quite 75 per cent. of the enamel is still in the bottle.

The valve-holder is so placed that the grid tags are on the top side, the anode "horns" coming just below the left-hand condenser, which is C1 in the diagram on p. 16 of the March issue. The inductances are mounted right on the condensers by means of soldering tags, the nett result of this general form of construction being that grid and plate leads are only one inch long, with the tuned circuits just where they are wanted.

Note the neutralising condensers. These are the 15 mmF originally specified, with two of the three fixed plates removed and the remaining one arranged to give a wider clearance with the rotor, which was not touched owing to the difficulty of packing it up again. The knobs are slotted with a hacksaw.

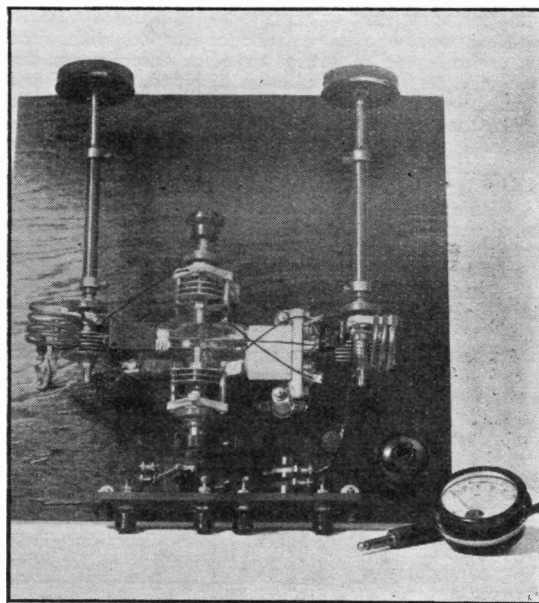
The mean height of the RF wiring above the baseboard is $4\frac{1}{2}$ inches, the remaining connections for HT, LT, bias, etc., being carried right underneath; No. 18 enamelled is used for all wiring except the coils. The terminal strip—also mounted with Meccano brackets—carries HT and bias terminals and the grid and plate jacks. LT is brought in by means of the Clix plug and socket at the right. The extension controls are essential, and tuning would be easier still if slow-motion driving heads were used with an additional adjustable mounting bracket at the knob end. In operation, the baseboard stands on three marine or "reel-type" insulators, though it must be admitted that this gives no noticeable improvement in RF output!

So far, this PA has only been run under test conditions, driven from the Exciter described in January, with the input and output sides link-coupled by means of a single turn of stiff wire. Neutralising has to be done very carefully, owing to the high frequencies and very small capacities involved, and an insulated tool—a strip of ebonite with one end ground to go in the slots cut in the

knobs of the neutralising condensers—is almost essential when adjusting them.

It is also evident that the output could be improved by using split-stator condensers, as mentioned in the original article. For these, either the new Eddystone 27 mmF or the standard J.B. twin midget USW type double-spaced should do excellently. One or other will be tried, and further results reported when the PA is working properly and actually feeding an aerial.

In closing, we might perhaps mention that the little ultra-audion oscillator, also described in "Getting Going on 56 Mc" last month, has since distinguished itself by producing an RST-578 report in QSO at a range of 25 miles—on straight CW! The input was just under 5 watts, and the aerial 8 feet semi-vertical end-on.



How the push-pull R.K.34 PA stage has been arranged for 56 Mc working. Note the neutralising condensers; two fixed plates have been removed, the remaining one being set $\frac{1}{8}$ " from the nearest moving vane, which are not altered. Grid and plate leads to the valve are just 1" long.

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

The 1.7 Tests

February 19th—27th

WE MIGHT AS WELL use the right word to start this short article—Flop! About all we can say is that conditions simply folded up during the week in which we expected to be able to work American amateur stations, though WIBB, using an input of 500 watts on 1,800 kc, was very well received by several operators on this side.

Noise-level was fairly high all the time, and very much worse than during previous Tests at the same time of year. This made it a great strain listening for weak CW DX, and 'phone was just impossible.

However, a very praiseworthy degree of patience and determination was displayed by those who did not give up after the first couple of mornings showed the DX to be missing. Reports have been received from G8ML, G8NL, G6GM, G2PL, 2DHV, WIBB, W2BFA and SWL H. Hughes; G5LO and G6LM were also heard to be keeping the schedule.

Coming to the logs, both G8ML and G6GM between them received WIBB consistently from Tuesday 22nd till Saturday 26th, at QRK's varying from R2 to R6, and tried hard to QSO. In G6GM's words "It was tantalising hearing him so well, and yet not being able to make contact." G8ML kept the schedule daily without a miss, which is most commendable in view of the fact that zero hour was 5.00 a.m. and conditions almost hopeless. G2PL reports no results, and G8NL G's only. 2DHV listened on 3.5 Mc in between times, and was well rewarded with plenty of W/VE 'phone DX. SWL H. Hughes heard the G's and already mentioned, together with G8NF(L?) and G3CJ(?), of neither of whom have we any other record.

The reports of WIBB and W2BFA make very interesting reading. They mention a total of over twenty W and VE stations as having been active, but nothing was heard by anyone of signals from this side. In the course of his letter, WIBB makes the following observations ". . . it is my opinion that the 1.7 Mc Tests (at this time of year) are beginning to prove that there is a change in DX characteristics on that band over long periods, and I believe that when sunspot activity is greatest, 1.7 Mc DX is poorest (though S/W results are better with high sunspot incidence). This theory is borne out by the fact that 1.7 Mc DX has been getting progressively worse during the last four years (though we are approaching the peak of sunspot activity) and that now we have reached a 'low' on 1.7 Mc, DX on this band will pick up during the next few years as sunspot activity decreases. . . ." Well, let's hope so! But WIBB's ideas would certainly seem to be supported by what is actually happening, so that we must maintain these Test Schedules during coming years to see if we can get back to the conditions of 1921 and 1933, when Trans-Atlantic QSO's were quite possible with low power.

Again quoting WIBB ". . . It was to be expected that we should not have as much participation in the Tests this year as previously. It is very tiresome and discouraging to listen night after night for 1.7 Mc DX, through terrific QRN and with the RF gain control turned way up to catch a weak signal, and then not to hear anything. But just

HEADPHONES FOR DX

We are often asked what is the best way in which to connect headphones to an ordinary "all-wave" receiver for the better hearing of DX signals—especially late at night, when the family is QRT!

Generally speaking, it is not very wise for the inexperienced owner to attempt any tampering with the output wiring of a commercial receiver; nor are there many dealers over-anxious to find the right connections, bring them out, and make provision for the attaching of a pair of headphones.

This is as it should be, because in many cases it would be dangerous to do anything of the kind unless care was taken to isolate the HT from the 'phones. In fact, it is essential to use either choke-filter or matching transformer output with almost any type of set, and this point should be borne in mind by readers contemplating looking for DX with headphones.

Keen listeners are rapidly coming to realise that for real DX, headphones are a great help—apart altogether from the late-night noise-reducing factor—and it can safely be said that until one gets down close to things with a pair of 'phones, DX-hunting experience in the true sense cannot be claimed.

A correspondent, who has evidently come to the same conclusions, recently sent us a suggestion about this matter of using headphones with a commercial "all-wave" receiver, and we have been glad to print his letter in our Correspondence columns on p. 13 for the information of other readers.

WE HEAR THAT . . .

"Windowlite" is a well-known substitute for glass in the cold-frame business; it passes the ultra-violet, is unbreakable, flexible, light and easily cut. Since it is made up of a bonded wire screen of small mesh, stiffened with a transparent material, it has an obvious application to radio construction for screening such apparatus as power packs, modulators, etc., while allowing one to see inside. One word of warning, however; the stiffening substance burns, though not easily. "Windowlite" is 4s. 6d. per square yard, and should be obtainable through ironmongers.

let news get round that 1.7 Mc is again 'open' and amateurs will flock to the band for the thrill of a 1.7 Mc DX QSO. . . ." He also goes on to say that because his own signals were heard, it does not necessarily disprove his theories, since—as he rightly remarks—low power transmission is more truly indicative of the condition of the band than QRO. We fully agree with this, remembering how in 1933 WIDBM, also using about 500 watts, would come through day after day at anything up to R8; when conditions opened sufficiently to allow us to get across, WIDBM was hardly any stronger, but our QRP signals, and those of the W's using between 25 and 100 watts, were well received on both sides.

We can only conclude by thanking first WIBB for his painstaking co-operation—he undertook the circularising on the other side—and then all those other W's and G's who also took part. Finally, if the gods are propitious, we hope to try again next year and the year after, these collected reports remaining as a permanent record of our efforts.

LONG-DISTANCE LISTENING — APRIL

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

THE POSITION of international broadcasting becomes more complex every month. As we are now so accustomed to ever-increasing numbers of stations and expanding schedules we cease to wonder, but at last we can feel that this country is now very definitely on the international radio map. The authorities here, slow to realise the powerful influence of world-wide broadcasting, have more recently been working overtime in developing our Empire and overseas broadcasts and, with the addition of two more transmitters, we now have eight outlets. To these must be added the relays from other points in the Empire, which are very easy to overlook as just another B.B.C. station unless you have the time and patience for identification.

● Presentation

To America must be given the credit for the bulk of experimental work in developing and exploiting long distance short-wave broadcasting, with, of course, the willing assistance of listeners in all parts of the globe. America, happily free from propaganda propensities, to-day commands the attention of SW listeners by programme merit. Not that I would suggest they are so very far ahead of our B.B.C.—each system has much to commend it.

a command. The listener, who gets it all for practically nothing, has at least the satisfaction of feeling quite an autocrat in being able to air his likes and dislikes with such effect.

● Views

I have been criticized on the grounds that I have always practically ignored the lesser known items. But I am not a talent-spotter, though frequently an interested listener to Major Bowes (W2XE at 4.30 p.m. each Sunday, 13.94 m.) and in any case, the spate of first-class programmes to-day precludes any single person from even attempting to follow more than a selection from each. Again, tastes vary so much—in music alone I know my own preferences, but yours? Is it symphony, grand opera, light opera, folk songs, popular classics or dance music in its many varieties, apart from the question of orchestration?

I am, therefore, more or less compelled to take the middle course and choose such items as Marek Weber (a gramophone best-seller over here) and his Hotel Stevens Orchestra, which is certain to please more or less everybody. This popular orchestra is on the air every Wednesday, Thursday and Saturday from W3XAL at 11 p.m. on 16.8 m. An artiste who can boast of being one of the first radio

Try for these Highlights

Weds.	1.30 a.m.	EDDY CANTOR—Variety	...	...	...	...	W2XE	25.36 m.
	1.30 a.m.	FOR THE SW LISTENER	...	...	...	...	W1XAL	49.6 m.
Thurs.	10.30 p.m.	AROUND THE TOWN IN RHYTHM	...	...	...	...	W2XE	25.36 m.
Fri.	10.15 p.m.	HOLLYWOOD BREVITIES	...	...	...	...	W2XAD	19.56 m.
			...	...	...	...	W2XAF	31.48 m.
Sat.	11.15 p.m.	RHYTHMAIRES	...	...	...	...	W2XAF	31.48 m.
	1.0 p.m.	SOUTHERNAIRES	...	...	...	...	W3XAL	16.8 m.
	6.55 p.m.	FULL LENGTH GRAND OPERA (Metropolitan Opera House)	...	...	...	...	W3XAL	16.8 m.

Even if you do not habitually listen to the U.S. broadcasters, every SW receiver owner must have heard enough of them to understand and appreciate radio entertainment in that country. On the other hand, our own short-wavers are at last breaking down the impression held by many Americans that the B.B.C. dish us up mostly with education and only occasional entertainment, and that when we do have the latter, the station “knocks-off” for frequent periods, unblushingly admitting to the listeners that at the moment there is nothing worth while to broadcast. Late last year, I saw the following written by one of America’s best known radio artistes, in the most widely read American BCL radio magazine, of an un-named B.B.C. station where the announcer says “Our boys are going out to tea and we are going to put on some phonograph records for you” The writer thought it the height of breezy informality—so should I!

Over there it is generally felt that so long as both sponsor and station competition remain at to-day’s peak the whim of a fair-sized minority is virtually

stars and who has broadcast regularly since the very early days in America, but is yet unfamiliar to many English listeners, is Vaughn de Leath, also to be heard from W3XAL for fifteen minutes each Thursday at 3.15 p.m. It is unusual for me to make a special favourite of a vocalist, and a contralto at that!

Many listeners vaguely suspect that singers are only included in programmes to give the violinists time to resin their bows or the cornet-players a breather. I feel that Vaughn de Leath, like Gracie Fields, has a “voice with a personality”—only of a different sort. She first came to my notice via a gramophone recording about ten years ago. I bought a second of that record when I wore the first nearly through to the other side! Occasionally, like Gracie, she indulges in vocal acrobatics, but it is in her deep, low-toned, rather “throaty” and “modulated” voice which possesses a special fascination. Listen for her and judge for yourself—though my description reads as though she were an ordinary crooner.

● Sideline

It has often been stated that there is a large proportion of SW listeners who are also stamp collectors and that that hobby is by far the most popular of our secondary interests. Being one of those rare persons who has not, even in his schooldays, had philatelic leanings, I am not entering into the argument but stamp collectors in the States have been estimated to number nine millions, or about one in twelve of the population.

If that ratio also holds for this country, there must be many hundreds of readers who will be grateful to me for directing their attention to "Calling all Stamp Collectors" from W2XAD and W2XAF each Saturday at 9 p.m. By the way, these popular stations (among the pioneers of DX short-wavers) who have for so long maintained a splendid programme standard without government subsidy or commercial venture, have from March 4 enlarged their schedule. Two new frequencies have been granted by the Federal Communications Commission and the broadcast schedule increased by 2½ hours. This makes four frequencies operating as follows:—

W2XAD 21,500 (13.95 m.) 1 p.m. to 5 p.m.
15,330 (19.56 m.) 5.30 p.m. to 12 midn't.
W2XAF 9,530 (31.48 m.) 9 p.m. to 5 a.m.
9,550 (31.41 m.) 12.30 a.m. to 5 a.m.

● Europe

I have almost exhausted my space and have not yet touched upon the continental SW broadcasters. However, there is nothing of particular note this month in their schedules; while the programmes still maintain plenty of interest, it is not quite the sort to make headlines.

● Reports and Comments

Short-wave broadcasters are again renewing their requests for reports on quality and consistency of reception and also for comments on programmes, so it's up to you, but do please be helpful and listen to the stations you report on over a period.

A few addresses:—

W3XAL, International Division, National Broadcasting Co., Radio City, New York City, U.S.A.
Rome, Station 2RO, 5 Via Montello, Rome, Italy.
W2XAD and W2XAF, General Electric Co., Schenectady, New York, U.S.A.

ANOTHER LETTER (see page 13)

INDOOR AERIALS.

In the January issue, Mr. Davey of Belfast gave some interesting data on indoor beams. When I saw the results he obtained, I decided to try one out. I rigged one in the top room of the house, about 30 feet above ground, using ordinary copper wire. No particular lengths were used, but the aerial was shaped as a "V" with the point towards S. Africa. On measuring it, the sides were 8 feet long, with 6 feet across the opening, and the lead to the receiver from the point of the "V" was 12 feet long. After a few minutes' testing, I was thrilled to hear ZS1AX, ZS3FR, ZS6AJ, and VU2CQ. I have never previously had much from S. Africa, and 2CQ was my first Indian. I was also surprised to hear a W6 on this beam.—G. W. OSBORNE, 5, Hurst Street, Oxford.

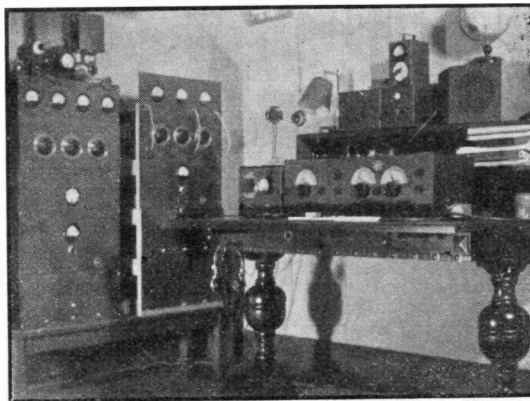
The Other Man's Station

Continuing our "Ham Shack" series

G3GH

THE VERY FINE RIG illustrated here cannot strictly be called the other *man's* station, because actually it is owned and operated by Mrs. C. H. Myler, Knowle, Braunton, N. Devon, who has recently been licenced, after a spell as 2CHY, under the call G3GH.

From its appearance, much of the gear will be familiar to readers. The transmitter on the left is for 7 and 14 Mc operation, with its own modulator and power pack, arranged for class AB working and controlling an eight to ten watt carrier. The other transmitter is a similar rig for use on the 1.7 Mc band, in which band G3GH is very interested, the line-up being 47-CO, 46-BA, P/P 46-PA. In spite of this array of apparatus and power, Mrs.



Myler does not exceed an input of ten watts to her finals on any band, either with CW or 'phone.

Apart from the RME-69 and pre-selector, the receiving equipment includes a SHORT-WAVE MAGAZINE field strength meter and oscilloscope, together with an accurately calibrated heterodyne frequency meter.

On 1.7 Mc, a quarter-wave Marconi aerial pushes out a hefty signal, with a VF end-on Hertz for 7 and 14 Mc. G3GH has naturally not yet had time to do more than get the station into operation—she does a great deal of her own constructional work, by the way—and it is with aerial experiments and weather conditions that most of her activity is planned.

In welcoming Mrs. Myler to the growing ranks of our feminine supporters in the game of Amateur Radio, dare we whisper that in correspondence with the local boys she has been known to sign herself "Grandma"! But any lady operator must be a YL at heart, so that if you QSO, don't say we told you to use the other appellation.

Your ideas help us to help you

Adventures of an Op.

No. 4—"Baptism"

By N. P. SPOONER (G2NS)

IN SPITE OF OFF-DUTY RAGGING, it must not be thought that operators' lives were all "beer and skittles." There was an equal amount of hard slogging that made itself felt chiefly in the utter monotony of traffic-handling. That boring routine, however, was peaceful compared with the hectic days and nights that war brought to the brethren of the telecommunication world, when government priority and supervision started to take place.

Although service messages informed every Op. that, as a skilled man, he was doing his duty best by sticking to his job, many contracts shared the fate of a certain other famous "scrap of paper" and were scattered to the wind. Old So-and-So and his cronies were missed from duty and heard of, after many months of silence, in the burning desert as Acting Unpaid Dung-fire Attendants or something with the Camel Corps. Then poor old What's-his-name and party, stowaways on a homeward bound ship, were caught at a port of call by a vigilant British consul and chased off back as "deserters" from government service.

● Home again

As for the two of us who had gone out to Lisbon together, a transfer of staff brought us once more back to the Mersey on our way, and still under contract, to assist the harassed staff of the overworked London station. Somehow we got lost in the fog and, strange to relate, found our naked selves coughing and saying "99" to a medical officer at the St. Annes barracks of the King's Liverpool Regiment.

On an icy spray-swept promenade at Blackpool in the very early mornings we tried to grasp "drill purpose" rifles with frozen fingers and our thoughts strayed longingly to sunny Portugal. We soon learned the truth of the tag, however, that we were "in the army now" and that we were not "paid to think." Both of these lessons were duly drummed into us by a sergeant-major who never lost an opportunity of asserting that although every adjectival one of us had "broken our mother's hearts, we wouldn't adjectival well break his."

Gaily we skipped through an intensive training and eventually swung down the road to the station for the last time, with the battalion band playing "You'd be far better off in a Home." At Rouen the Army Service Corps first hailed us from the banks with the query "Are we downhearted?" to which the draft would indignantly roar "No!" Back would float the repartee "Well, you ruddy soon will be!"

● Telephones at the Front

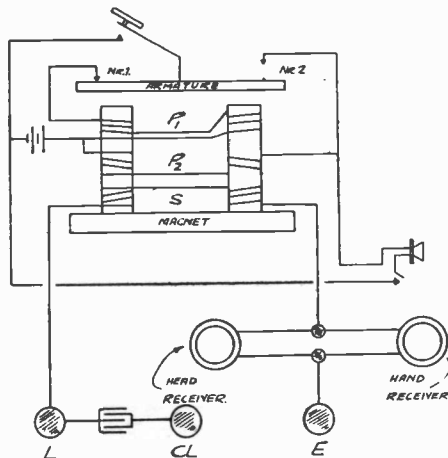
Every passing kilometre brought the growl of the guns louder to our ears until, detraining at Saulty Lebret, it had become positively insistent. After marching to Beaumetz, near Wailly, we were told that at last we were within range of enemy guns.

Upon being dismissed we started to prow around the ruined village and hearing voluble curses issuing from a sandbagged ruin we were prompted to investigate. We found a party of rain-soaked sig-

nallers moaning about what we nowadays call "conditions." The fact that this disease also affects line telegraphy and telephony should hearten many hams who firmly believe that the present day amateur bands are the only sufferers. In return for a cigarette we extracted the following details about some recalcitrant water-logged Mark 3 Telephones.

A leather case housed a hand-set, a separate headphone receiver, battery, condenser, key and buzzer. The hand-set consisted of a headphone "watch" receiver and a "capsule" type solid-back carbon mike. When speaking the handle switch was gripped to close the microphone circuit.

If speech became QSA2 the buzzer could be used and upon pressing the sending key battery current flowed from positive and through one primary coil to No. 1 contact screw, which was normally in contact with the armature. Passing through the coil



The circuit referred to by the author.

in a direction that would increase the magnetic field near No. 1 contact as it decreased the field near No. 2 contact it would thus cause the armature to break with No. 1 and make with No. 2. The current then continued through the other primary in such a direction that the armature would reverse back to its first position.

● No "Scrambled" Speech

The vibratory speed was between 300 and 500 times per second and gave a good readable note. Terminals L, E and CL allowed connection to Line, Earth or through a condenser to any other existing line. The original issues had a brass plate that gave an earth return simply by placing the instrument on the ground but the improvements made in overhearing devices soon rendered this practice dangerous and line returns were therefore adopted.

Owing to overhearing and QRM by induction the buzzer was usually confined to calling-up only, when in forward areas close to the enemy. The condenser

allowed the instrument to be tapped in at any intermediate point on an existing line and if a sounder happened to be in operation on that line no QRM was caused by it otherwise than by being liable to earthing direct through the telephone instrument.

The perhaps unfamiliar symbol in the diagram reproduced refers to telephony circuit condensers and another strange symbol may be that shown for a headphone receiver. Further cigarettes changed hands and I was able to extract the circuit. The resistances of primaries P1 and P2 were $3\frac{1}{2}$ ohms, Secondary S 62 ohms, 'phones 150 ohms and the varying microphone resistance, between diaphragm and carbon shot, during speech was between 10 and 30 ohms.

Returning to billets we lay that night on straw in a large draughty barn with our phenol-kexamine gas helmets close at hand. Gazing up at the rents in the roof (that were not made by mice) we talked of the base camp and Blighty until sleep overtook us one by one. It was not deep, however, and awakening abruptly we sat up to find ourselves shivering with a strange feeling that icy hands had gripped us as we slumbered. Other forms in the dark barn struggled up to squatting positions and in forced whispers complained of the cold.

We fell silent, staring into the darkness and straining our senses to catch something that we somehow felt must repeat itself. A distant explosion explained to every one of us the cause of our discomfort—it was sheer fright—and almost simultaneously a roaring volume of sound rapidly approached and seemed to pass close to our very heads. We cowered as the old barn shook to the thunderous upheaval that ended the screeching flight and, as a hail of clods and stones rattled down on the frail roof, the whine of metal splinters was drowned by a piercing shriek that died down abruptly to a moaning whimper.

● A "better 'ole"

The sound of running feet, a flash-lamp circle of light that stabbed the darkness and a sergeant's gruff orders to follow him and "not get the wind-up" made us hastily snatch at our kit. Knowledge of the cause of our fear at once banished it and we thereupon commenced to grouse loudly at being so rudely deprived of our straw, but further insistent orders bade us run into the night and down the deserted street where, in a few strides, we came to an ugly jagged hole.

Churned up earth, discoloured by explosive, still emitted trails of smoke that caught at our throats as we passed. The sandbags protecting the doorway of a battered house had been violently scattered, ripped with flying metal and splattered with blood. A dark congealing pool and a few khaki shreds silently told us that the gas sentry standing there, but a short time ago, had been terribly mangled and rushed off to the nearest first-aid cellar. We went to earth a hundred yards ahead and, stumbling down the steps of a cold deep dug-out, spent the rest of the night in wakeful discomfort but safety.

In such a fashion did two Ops. receive their baptism of fire and become duly accredited additions to the P.B.I. To this honour later days added active membership of the Suicide Club, the battalion bombers, and future pages will reveal how our fellow-men shunned us because of the retaliatory wrath that followed in our trail.

Next Month - - - "BLUNDERBUSS"

CLUB ACTIVITIES

(See also page 35).

MAIDSTONE Amateur Radio Society

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

On February 23 a film social was given at which the R.S.G.B. films and a programme of sound entertainment films were shown. 2DBA's transmitter, a 59 tritet, was lately demonstrated, and a two-way contact maintained with G5XB. 2BFW, the hon. treasurer, spoke to members present in the clubroom from G5XB, giving the transmitter, which was working on an aerial not cut to length, an RST589 FB report.

Future meetings of interest: April 5, A Voigt Loudspeaker, and other high fidelity apparatus demonstration by Mr. O. P. Lowther. A lecture on transmitting valves by Messrs. Mullard (19th). May 3, A demonstration by Mr. Cholot of Messrs. Lissen.

STAFFORD and District Short-Wave Club

Secretary: G. L. WALE, "Branksome," Acton Gate, Stafford.

Although only recently inaugurated the club has got well into stride. A good QRA has been obtained and members have access at any time. An A.A. transmitter is soon to be put into commission, Morse classes have been started, and a library compiled which is proving an asset.

Lectures, discussions and demonstrations are held on alternate Monday evenings when approximately 40 members turn up. The secretary would be pleased to get into touch with other clubs.

WEST SUSSEX Short-Wave and Television Club

Secretary: L.A.C. J. WILLIAMS, 2BBB, H.Q. Flight, 43 (F) Sqdn., R.A.F., Tangmere, Sussex.

At the Monthly General Meeting held on March 9 at "The Tangmere Cafe," Mr. D. Ashby, B.Sc., A.M.I.E.E., A.M.I.Mech.E. (Westinghouse), gave an illustrated lecture entitled "The All-Metal Way." The club has acquired new quarters by the purchase of a large portable building. The following lecture programme has been arranged: April 6th, "Microphones," by Mr. Orr-Ewing, of Shaftesbury Microphones, Ltd.; 13th, "Hi-Q," by Lissen, Ltd.; 27th, Lecture by Mr. Wilkins, of the Automatic Coil Winder and Electrical Equipment Co., Ltd.; May 11th, "Electrical Measuring Instruments," by The Weston Electrical Instrument Co. Ltd.

WHITSTABLE Radio Amateurs

Secretary: W. CROSSLAND, G5CI, 13, Queen's Road, Tankerton, Whitstable, Kent.

Mr. N. W. Robinson (2BBT) gave an excellent exhibition of R.S.G.B. films last month which were much enjoyed. The next meetings on April 2 and April 30 will be held at the secretary's QRA at 7.30 p.m. and readers are cordially invited. Local activity is quite high; 2AAN is experimenting with an RK23 as buffer amplifier and frequency doubler; G3BD is rebuilding again; and G5CI is building an exciter for a crystal controlled 56 Mc transmitter.

THE ALL-BAND EXCITER UNIT

Some Further Notes

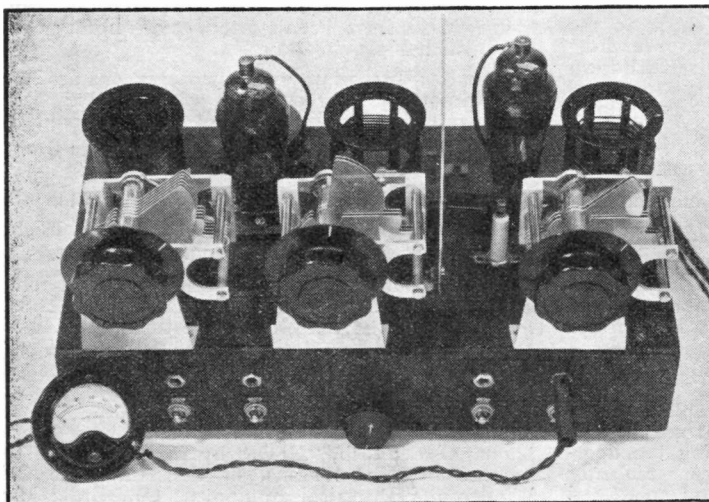
By AUSTIN FORSYTH (G6FO)

THE TWO-STAGE EXCITER, using Tungstram APP4g's and described in our January issue, has aroused a good deal of interest, and from several quarters further details have been requested. The original article was complete in itself, but such points as construction, coil data, the use of the second stage as a straight amplifier, and modulation of the latter were not fully covered in January, because it was considered that the basic idea could be adapted to individual requirements, as could its operation as a low-power transmitter.

As regards construction, the photograph herewith shows this quite well; note, however, that this is only one possible method. Experienced readers will know how to work in the design with their existing gear. The wooden shell we used is 16 inches long, 9 inches wide and 3 inches deep, which allows ample space for all the parts. The first stage, V1 in the diagram on p. 23 of the January issue, is to the left, the variable condensers being C1, C2 and C3, in order from left to right, with their corresponding

V2 is always worked as a doubler; this has the incidental advantage of dispensing with the necessity of neutralising this stage.

However, as enough output is available to use the unit as a QRP transmitter feeding the aerial direct, it becomes desirable to operate V2 as a straight amplifier, in which case it must be neutralised; the method is shown in the diagram on the next page. Neglect for the moment V3 and its connections, and notice that L3 is centre-tapped, in order to provide neutralising voltage. For us, this raised a little snag, in that our model of the Exciter has all variable condensers fixed to mounting plates, which are bolted to the wooden shell. This is quite all right with single-ended circuits, where the fixings of the condensers are dead from an RF point of view. But centre-tapping makes both sides of C3 "hot," and then painted wood is not so efficient as an insulator! The difficulty can be overcome by using insulating collars to secure C3 to its mounting plate, which in turn is held off from the chassis with ebonite washers and collars.



General appearance of the Exciter Unit, in one possible form of construction. The screen is not necessary if the second stage is always operated as a doubler. 1.7, 7 and 14 Mc coils are in position, with the crystal holder at the back of the first (left-hand) valve.

coils behind; the winding data for these is given here. Also visible in the photograph are the crystal holder, coupling condenser C6, switches, meter jacks and screen potentiometer. All other parts are mounted in the sub-space, a multi-way cable leading off to the power supply and keying points.

● V2 as Straight Amplifier

As this rig is primarily intended as an Exciter Unit and frequency-multiplier (see January issue),

● Neutralising

Nc is the neutralising condenser, the point here being that we are dealing with a capacity something less than 2mmF! We therefore made our own condenser, consisting of two narrow strips of aluminium, one fixed to the rotor side of C3 and the other to the pillar carrying C6. These two "plates," both less than 1/4-inch wide, were then varied in relation to one another till the valve was neutralised; the operation of neutralising is carried out in the usual way. No HT on V2, V1 driving, and milliammeter in grid lead of V2. C3 is then moved about the resonance point and Nc adjusted till no kicks show on the meter, which should simply indicate a steady drive current of 8-15 mA, the exact figure depending on what is being done with V1, i.e., doubling, quadrupling or working ECO.

The aerial tuning network should be link-coupled to L3, and about two turns of flex round the former and above the winding will be ample on any band.

● Modulation

V3 and its connections show the easiest way to modulate V2, suppressor-grid control being used. With a pentode at V3, of the ordinary LF type, no further microphone amplification should be required. The adjustment is to find the right value of negative bias on the sup. grid of V2 such that upward modulation is obtained, this being shown on the aerial meter or a tuning loop held near L3; speech

peaks should give brightening flicks in the glow from the bulb. As well as making the suppressor-grid negative, aerial coupling will probably have to be reduced from the "full CW output" setting. On CW, try varying amounts of *positive* bias on the suppressor-grid, and for speech working, make sure that the by-pass condenser marked .001 mF does not exceed this value.

Finally, don't try 'phone when using ECO, because the stability of V1 is bound to be affected, resulting in all those unpleasant occurrences which are so prominent on 7 Mc nowadays.

COIL DATA FOR THE EXCITER UNIT.

Band	En'd. Wire		
	Turns	Gauge	Spacing
1.7 Mc	45	18	close
3.5 Mc	25	16	1/16 in.
7 Mc	11	16	1/16 in.
14 Mc	5	16	3/16 in.
28 Mc	3	16	1 1/4-in. diam. by 1/2-in. spacing.

All coils, except 56 Mc, are 2 1/2-inch diameter.

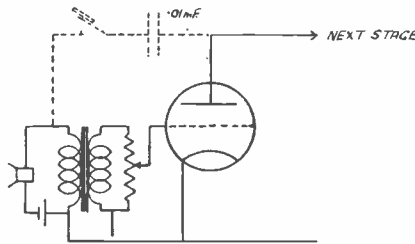
Tuning capacities: 100 mmF throughout.

Cathode tap for ECO working: 10-15 per cent. of turns, counted from earthy end.

A TUNING NOTE

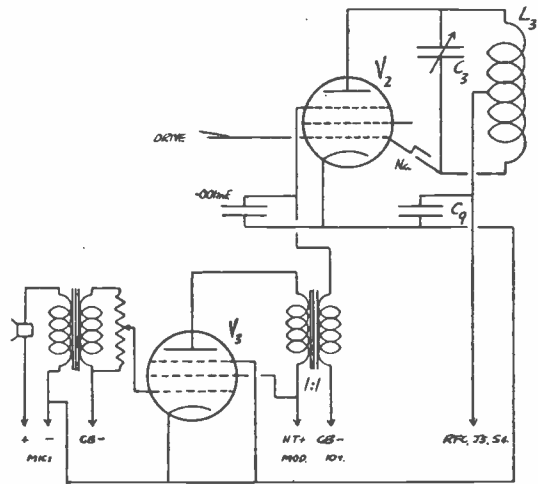
By A. E. J. Cooper, G5VT.

A TONE GENERATOR is a very useful piece of apparatus when tuning up a 'phone transmitter; it provides a steadier input than the usual whistling into the microphone! Fortunately it is easy to improvise such an oscillator by adding only one component to the speech amplifier—a fixed condenser. A capacity of about .01 mF is connected between the plate of the first valve and one side (that remote from earth) of the primary of the microphone transformer. This



The circuit recommended by G5VT.

causes the valve to oscillate at an audible frequency, the pitch of which can be varied by using different values of capacity. A switch should be fitted in series with the condenser, or a key may be used in which case code can be transmitted.* It is



Circuit of a simple suppressor-grid modulator for the second stage of the Exciter when used as a neutralised RF amplifier, feeding the aerial direct. About 7 watts can be controlled. The circuit references correspond to those in the original diagram on p. 23 in the January issue.

necessary to turn down the gain control of the speech amplifier when the note oscillator is switched into circuit. If oscillation cannot be obtained, reverse the connections of one winding of the transformer; in some cases it may be necessary to break the microphone circuit.

* Readers should remember that actual signalling under these conditions amounts to ICW transmission, and would therefore be contrary to the licence on all bands except 56 Mc.—EDRTR.

NEW "CLIX" TERMINAL

Messrs. British Mechanical Productions, Ltd., of 79a, Rochester Row, London, S.W.1, who market the well-known "Clix" range of components, send us one of their new All-In Terminals.

This is an extremely neat connector of the recessed plug and socket type, so designed that all metallic parts are enclosed. The socket is recessed into high-grade insulating material, and can be mounted straight on to a metal chassis without any bushing being required. The plug, similarly insulated, to which the external connection is made by means of a tapered grip, is nearly 3/4-inch long, ensuring ample bearing surface.

The whole assembly is finished brown, both plug and socket being engraved—only markings "Aerial," "Earth," +, -, "Input" and "Output" are at present available—and at the price of 6d. complete, should find a ready market among constructors wanting an efficient terminal which also looks well.

See page 38 for particulars of another "Short-Wave Magazine" service—

Reporting Short-Wave Transmissions

What is wanted and How to get results

THERE ARE A GREAT MANY listeners on the short-wave bands who make a hobby of collecting what are known as QSL cards. These consist of printed verifications of the reception of the issuing stations, and are sent out on receipt of a report giving details of how a particular transmission was heard.

Short-wave broadcasting stations—that is, those active in the commercial, entertainment or propaganda fields—are usually very glad to have such reports, as they not only give a useful indication of how the station is being received in various parts of the world, but also help to build up "listener-goodwill," which in these days is one of the main objects of international broadcasting.

From the point of view of the sender of the report the verifications so collected, which are often tastefully printed and provide interesting details of the station or country, are a record of prowess in logging DX, and so the whole business of sending for verifications—or QSL'ing as it is often called, from the Q Code abbreviation used in commercial working—has become a hobby in itself, akin to stamp-collecting or any other similar pursuit.

• Data required

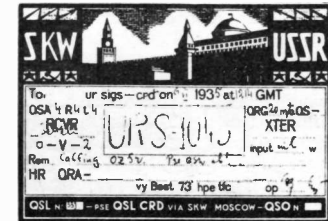
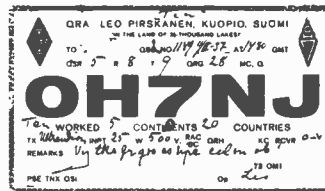
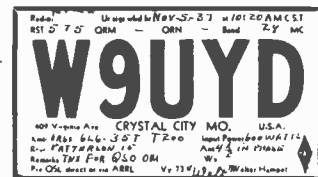
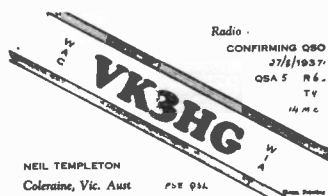
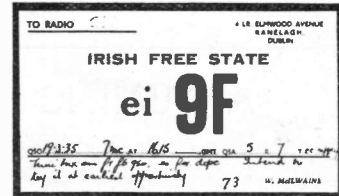
In order to get a verification from a distant broadcaster, it is necessary to send the kind of information which can be summarised as follows: A few details of what was actually received, the time of listening, type of receiver used and aerial, strength and quality of reception, fading or interference if any, and general reception conditions at the time. Such a report is obviously useful and interesting both to the programme and engineering staff of the station concerned, and would be gladly QSL'ed.

As in any other collecting hobby, QSL'ing has its rarities and difficulties, which enhance the value and interest of the verifications received. One of its most interesting branches is that connected with the collection of cards, not from commercial, but from amateur stations. Nowadays, with so many all-wave receivers coming into daily use, many listeners will have heard at some time or another amateur transmissions on the short-wave bands reserved for them.

• QSL'ing amateurs

The frequency-bands used by the amateurs of the world are well known and the point has often been made that in comparison with commercial broadcasting stations, the power allowed at amateur stations is very low. Hence the fact that reception

reports from distant listeners are often exceptionally interesting to the amateur transmitter at the other end. The best times to listen for different parts of the world and the bands to use have been mentioned in this paper on many occasions, and the QSL'ing which is likely to be most productive also outlined. This is an important point, as many of the stations most easily and regularly heard already know in what directions their signals are being well received. This means that unnecessary reports usually meet with no response unless they are of outstanding interest in the technical sense, confirming, say, reception at an unusual time for the particular band or the fact that no other similar transmissions were coming through from that part of the



world at the time. In connection with redundant reports, many thousands of which are sent off monthly, it must be remembered that amateur transmitters have to meet the often very heavy expenses of QSL'ing out of their own pockets and have no private organisation to deal with listener-reports.

All this makes the getting of QSL cards from amateurs more difficult and therefore more interesting, and the listener can judge his efficiency not only by the DX stations from which he receives them, but also by the percentage of replies to reports sent

out. 75% is a good figure and represents useful reports made with the discrimination which is necessary to achieve such a percentage.

● Identification

While many readers will know that amateur transmissions are largely on CW telegraphy (morse), meaning that a knowledge of the code is required to enjoy the full scope of QSL'ing, this need not deter those who think of morse as nothing else but a nuisance. Out of the 60,000-odd amateurs of the world, probably half at least use telephony, either wholly or partially. Consequently there are always on some band telephony signals to be heard which are worth reporting.

One difficulty which often confronts listeners who are unused to amateur procedure is the identification of stations, though a great help in this respect is the fact that most non-English-speaking transmitters at least try and announce themselves in both English and French. The call-signs allotted to licenced amateurs follow the international convention, and it is by the *initial letter or letters* of the call that the nationality of the station is made known. Amateur calls always start with letter(s) which identify the country, followed by a number, and then letters identifying the station. For instance, British calls use the initial letter G, such as G6OU, G5ML, etc., Americans start with W, as in W3AUC, WIBI and so on, while a Swedish station might be SM5YT. To get the nationality of the call, therefore, the initial letters must be correctly identified; and here another point arises. To ensure intelligibility in telephony working, call letters are often given thus: "SM5YT calling, Swedish five Yokohama Tokio," preventing confusion with letters which sound the same. This is the sort of thing which is apt to lead the uninitiated into thinking that somebody is trying to say he is a Swedish station in Japan! Letters like V, B and Z (pronounced "zee" in America) are notoriously difficult to log accurately unless some identifying word is used. However, once the form in which call-signs are given is grasped, correct identification becomes quite easy and is simply a matter of practice.

Owing to limitations of space, it is not possible to give here a complete list of the prefix letters of each country, but they can be found—together with the name and address of every known amateur in the world—in the "Amateur Call-Book Magazine," which is the standard and only guide on the subject, and can be obtained as advertised in this paper. The Call-Book also gives a lot of other useful information, such as the code forms for reports (QSA, R, T, RST, etc.) and a list of commercial stations.

● Posting

Reports, which can be on printed cards for convenience, cheaper posting and legibility, should in every case be sent direct rather than through the various QSL Bureaux. Most of these will now handle only cards for interchange between their own members or amateur transmitters foreign to them. An international reply coupon helps in getting cards, as it saves postage at the other end, but this makes QSL'ing somewhat expensive. The best solution of the problem is membership of one of the societies which handle members' cards in bulk as part of the service offered, though best results are always obtained by direct posting.

QSL'ing is a most interesting and instructive hobby, but it should be remembered that the co-operation of the man at the other end—who will be having plenty of requests for cards—depends on the accuracy and usefulness of the report. This should give the fullest possible details of the transmission heard and can follow the lines already laid down for commercial stations. Above all, discrimination is essential. It is a sheer waste of time sending a complete log to a station which is known to be working other amateurs in this country daily; on the other hand, simply a brief line will be appreciated by a DX operator who apparently cannot get a contact with anyone. It will be welcomed with open arms if it contains useful details, and it should be the aim of the efficient SWL to make sure that every report he sends is as accurate and as complete as possible.

Our Query Service

Once again, we draw readers' attention to this free service, for which it is only necessary to use the coupon from the current month's issue, sending it in with a stamped self-addressed envelope.

While we are prepared to deal with any query connected with short-wave radio reception or transmission, we naturally cannot undertake to get out complicated designs, provide circuit diagrams of multi-valve receivers, nor comment upon the products of manufacturers; in the latter connection, we are constantly getting enquiries about the capabilities, circuits, etc., of well-known commercial receivers, which requests for advice and assistance would be better addressed to the manufacturers concerned.

For the information of those who may think of using the Service—we do not mind how many or how often!—we would say that it is at present operating with a maximum lag of seven days; most queries are cleared in four days, many by return.

Some Bulgin Modifications and New Lines

Messrs. A. F. Bulgin and Co., Ltd., Abbey Road, Barking, Essex, manufacturers of a very complete range of essential "gadgets" for both manufacturers and constructors, have recently introduced slight improvements in some of their standard lines, and new parts for different applications.

Among the latter is the small knob, K.94, $\frac{3}{4}$ -inch diameter and designed for $\frac{1}{4}$ -inch shafts, which is very suitable for miniature apparatus, as the projection is only $\frac{5}{16}$ -inch. Then there is a two-pin plug and socket assembly, No. P105/106, with the elements at $\frac{1}{4}$ -inch centres. This is intended for chassis mounting.

Some of the new LF chokes are interesting; only $2\frac{1}{2}$ -inch by $1\frac{3}{8}$ -inch by $1\frac{1}{8}$ -inch over-all, 8 different ratings are available, from No. LF.67, 5 henrys at 60 mA and 210 ohms DC resistance, to No. LF.74, 50 henrys at 15 mA and 1,500 ohms resistance.

Lastly, constructors will be glad to hear that the very popular Bulgin plug and jack assembly is now further improved by extra springing for more positive action.

LISTENERS' DX CORNER

By THE DX SCRIBE

THANK YOU, LISTENERS! Your reply to our request for more co-operation has been phenomenal. A special endeavour is being made to squeeze in something of everybody's views, but do not be disappointed if all you say and think is not mentioned, now or in future. We cannot at present enlarge the Corner though I am trying to persuade our Editor that there is enough material each month to warrant it. Keep up the good work, and I'll do my share!

● Logs

The list of "calls heard" has surpassed any previous four months together, and so we have had to do a little judicious pruning. In future, please do not include any calls from W1, 2, 3, 4, 8, 9, VE1 and 2, VO, or any European country, except where the reception is on 1.7 or 56 Mc, or unless there is any specially interesting reason for giving details of a transmission from one of these areas. Many of you have already suggested that we do this, as "local" W's in large strings are of no real value. Anyone with a decent receiver and good aerial can receive, in a few hours' listening, hundreds of these stations when conditions are right. "Condix." have certainly woken up with a bang, and you can just imagine what some of the logs would look like next month!

While still on the subject of logs, we must draw particular attention to the brief rules appearing this month under "Calls Heard." Please read, mark, learn and inwardly digest! This will help us in setting up for the "Calls Heard" section.

● Care in Listening

Once again this month obvious mistakes have been made in identifying accents and too much appears to be taken for granted when deciphering a call. As an example, VR6A (whom we shall mention presently) was reported by one listener as VK6K, and he was quite sure that this was the call. Several readers have queried our remarks of last month about ZB1A, stating that they are certain that this was the correct call. Well, I'm sorry but I won't let go; what you really heard, in my opinion, was ZBIH. Listen to him sign next time he is on the air. ZB1A came to England two years ago, and worked as G5CI, which call he relinquished about a year later; it is now held by an amateur in Whitstable. The fact that ZB1A appears in the Call Book means that they (the publishers) have received no notification of his removal. Now are you satisfied!!

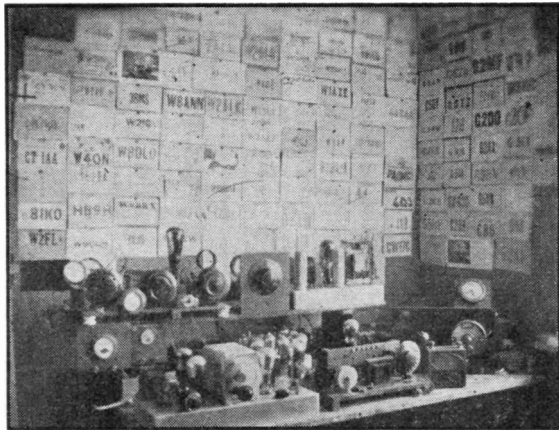
● Closing Date for Logs

Please note that in future we cannot be responsible for listeners' correspondence not being mentioned here if it is received after the 12th. It will be held for the following month if it arrives. A special endeavour is being made this month to include those received up to the 15th, but it cannot be repeated.

An endeavour will also be made to answer all your queries through the Corner, and therefore please do not expect the Editorial Staff always to write you personal letters. A reply to your question will probably be of interest to many of us.

● Shack Photo

We are publishing the interesting photo submitted by Harold R. Lodge (BRS191), "Hepani," Guernsey Gardens, Wickford, Essex. He has still some of the original cards for 440-metre reception of amateurs way back in—let me think, 1925, that must be; and his record to date is illuminating. He has received everything on 'phone. (14 Mc), 41 W6's, 10 W7's, 47 VK's, 7 K6's, 14 VE4's, 6 VE5's,



20 LU's and the usual run of commoner countries. (28 Mc), 500 W's in all districts, VE1, 2, 3, 4, K4, 6, VK, LU, VP5, ZS, ZE, VU, PY, HI, FA, HK, FM, TI, VO, VQ (what country?), HH and YV. And on 3.5 Mc 'phone, W1, 2, 3, 4, 5, 8, 9, VE1, 2, 3, VO, and TI. And finally, on 1.7 Mc 'phone, W1, 2, 3, 8. I think we had all better sell our receivers and take up stamps or something after that. Don't you agree? Or is it an extra incentive for you?

F. G. Antonie, 24, Carter Terrace, Greenheys, Manchester, 15, also sent a fine photo of his shack. We must apologise to any who may be disappointed each month, as we cannot publish all of them, much as we should like to.

E. W. Vaudin, 16, Paris Street, St. Peter-Port, Guernsey, C.I., sends in his log and mentions that he has omitted all American stations "of the common or garden" variety. We think that is a splendid idea for all to follow. E. Hartley, 78, South Royds Street, Tottington, near Bury, Lancs., uses a receiver of home construction, with regeneration on the RF amplifier and a separate oscillator valve. He listens to all his DX in the bathroom (in or out of the water?). He is QRX only on 14 and 28 Mc, and on the latter band received TG9AA on

February 15 on the LF end. ZE1JR was heard to say that he did not want any more reports from England, as he had already received about 1,000 from all over the world, and did not intend to reply to them—listeners, please note. Geo. Shackle, "Allandale," 32, Bromwich Street, Bolton, Lancs. is 17, and just started in the DX game. He uses a Ferguson receiver and has not been lucky with home construction results yet.

Geo. Thorlby (BRS2476), The Crescent, Spalding Road, Holbeach, Lincs., has received 250 cards to date, his best reception being XZ2EZ on 14 Mc. W. J. Hambly, 52, Culverden Road, Balham, S.W.12, remarks on the phenomenal conditions existing on 14 Mc on the nights of February 15-16. To quote a W station: "All Europe seems roaring in here." From this side Mr. Hambly received nearly every station at R9 including VE3EO, VE5BF, VE2BG, and W1, 2, 3, 8 and 9. This was on 16 feet of vertical wire. H. Clarke (2CSC), 126, Atlas Street, Clayton-le-Moors, Accrington, is of the opinion that anyone who gets really interested in DX listening must of necessity shortly lose all interest in BC stations and concentrate only on amateurs. He thinks that it is necessary to be able to read CW to get the best out of the short waves. As an example, he quotes hearing W7's when none were coming through on 'phone. He has not yet heard any VK's on 'phone in the evening, but many on CW at that time. All the 'phones have been heard in the morning, as well as many on CW. He found that the VK's were received at much better strength when using a 75-foot V aerial sloping at an angle of 45° in a SW direction with a 10° angle of separation. The receivers used are a 6v. battery super. for 14 Mc and a National NC101X for 28 Mc.

● Bartlett Weather Service

The Bartlett Brothers are doing really splendid work. Briefly, they are asking for volunteers to make daily observations on a particular station, e.g., W2XAD, at the same time or times every day of the month. Log sheets for this purpose will be furnished through THE SHORT-WAVE MAGAZINE upon request. Bartlett Brothers' address is as follows:—Bartlett Weather Service, 6, Racquet Court, Fleet Street, London, E.C.4. As much detailed information as possible is required from all over the country, with particulars of local weather, barometer, cloud formations, etc.

● Pitcairn I.

Yes, undoubtedly the most interesting station to be heard on the amateur bands for years. Many of you have reported receiving him, as can be seen by the calls heard lists. He is operating on 'phone on 14,280 kc (approx.), and Andrew Young, the native operator, is at present being instructed by an American amateur in the handling of the equipment. The first day they came on the air was apparently March 4, and after working amateurs for the first week they announced that they would not reply to any more calls until official permission had arrived at the island to operate the station; this would be within three weeks, and during this time they would only maintain a special test schedule with a W2 station. By the time this appears in print, they will no doubt be going "full blast" in an endeavour to give everyone a chance to QSO a new country. Cards should be addressed to:—Andrew Young, Radio VR6A, Pitcairn Island,

South Pacific. But, have patience; it may take months to get the coveted reply! How would you like to sit down and write a few thousand cards? We cannot say yet whether an international reply coupon will be of any use, as we do not know the postal arrangements for the Island, but don't take the risk in not sending one; and this goes for any other frequently heard DX 'phone station. The only country we know where I.R.C.'s are useless is Nicaragua. YN1AA has thousands, and he doesn't know what to do with them!

● Local Americans Again

R. Q. Marris (2BZQ), 80, Wyberton Road, Boston, Lincs. is another who thinks that it is a waste of space to report "local" W's, and only wants to see W5, 6 and 7. He would like to correspond with any other DX enthusiast on general radio topics. Add ZB1J to list of Maltese 'phones. Mr. Marris heard him conducting his first 'phone test on a new rig. Incidentally, ZB1J is ex-ZC6CN of Palestine and ex-G6NC. While on the subject of Malta: W. Davey, 2, Findal Street, Woodvale, Belfast, N.I. heard what appeared to him to be ZB1A or R, with heavy QRM. Read above re ZB1A, and ZB1R (ex-G6UR) only operates 7 Mc CW. However, it is quite possible that ZB1R may have QSY'd to 14 Mc with a new 'phone rig. Mr Davey thinks that CW is more interesting than 'phone, as so many more stations can be received, and does not agree that the LS is the best medium for listening, but prefers the 'phones any day. He also does not think that listing "cards received" would serve any useful purpose, unless frequencies can be given, so that we know where to look for that elusive DX. However, he does mention that QSL's have been received from K7FBE, VK7CL, VU2FX, ZS1AH and ZS5CL. Yes, we think that it is fair to count Labrador, Java and Sumatra as separate countries.

● Man-made Static

Thos. J. Walsh, 8, Brythen Street, Liverpool, 1, Lancs. is right in the middle of the city, and has to do his listening after midnight owing to the terrific man-made static caused by local machinery. Can anyone offer suggestions for its suppression? Mr. Walsh would like to communicate with other readers in his district; any offers?

● Home-Built versus Commercial

On March 9 at 07.20 G.M.T., VR6A was heard working F8XN by C. Duwe, 80, Burton Road, West Didsbury, Manchester. This is the first report we have had of a contact by VR6A with Europe. Pitcairn was received at QSA5, R6-7 on a Super Sky-riider. D. C. Chamberlain, 67, Wiltshire Road, Thornton Heath, Surrey, received VR6A on a home-built 0-v-Pen, on March 4, and believes this was his first day on the air. We are inclined to agree, as no reports have been received before this date. On March 6, he heard W6CQS, K6GAN, VE3WA, W6LAJ, W6GYE, VK2GU and VR6A again. We think this is definitely good reception for a simple straight receiver, and we feel sure that more satisfaction is obtained by the owner of a home-made set giving good results than excellent reception on apparatus designed by someone else's brains. After all, what credit is there in receiving long lists of DX using a super aerial and a receiver built by a commercial concern? The results are of great interest to all of us, but we feel that the pat-on-the-

back should be reserved for listeners of the Dennis Chamberlain calibre. G. W. Osborne, 5 Hurst Street, Oxford, reports VR6A on March 5 at 08.27 G.M.T., also VK3WA, VK2GU, VK3MP varying between R7-9. Other noteworthy reception by him includes XZ2EZ, KA1BH, XE1LK, K4EJF, HH2B, VU2CQ, ZS1AX and ZS6AJ. VUB, Bombay, is sufficient address for the Indian station.

● Manchuria and Tahiti

J. R. Deane Sainsbury (2CYW), "Brunook," Crossways, Shenfield, Essex, queries the authenticity of MX2B heard at 15.00 G.M.T. on 14 Mc. This station is quite genuine, is listed in the call book, and has worked many British stations. The only other station active in Manchuria at present is MX5B on 14,120 kc. 2CYW found that the DX chart submitted by John Burt last month agreed with his own log entirely, except that he heard VK and ZL2BI at lunch time, the first month he has ever had this experience. He agrees with Bryn Hammond that news of those stations who QSL is of interest, and has received cards from K4SA, K6NZQ, K7FBE, VK3AL, VK4KO, VP6MR, W6KME, W6OCH, Y12BA and CO8MA. Yes, Mr. Hammond, OQ5AA does QSL. B.C. stations to oblige have been: CR6AA, CR7BH, HJ1ABE, TIRCC, HJ1ABP and PRF5. His best reception on 7 Mc is FO8AA of Papeete, Tahiti, a semi-broadcast-cum-amateur station. Gramophone records were played, and frequent announcements were made such as. "This is FO8AA at Papeete, Tahiti, owned and operated by the Papeete Radio Club, please send us reports." The announced schedule is: Daily 04.00-05.30 C.E.T. except Tuesday, when there is a special transmission from 02.00-05.30 C.E.T. (Central European Time). Mr. Sainsbury uses a simple 0-v-2 with 'phones. Congratulations! He is the Secretary of the Brentwood Amateur Radio Society, which operates G8HV on 7 Mc 'phone and CW, and they badly need reports.

● This QSL Business

"Another Silent Listener" in Scotland writes as follows:—"May I throw a spanner in the works, particularly among the QSL collectors? 'Silent Listener' deserves support in his statement that collecting QSL's is selfish, and Bob Everard is deluding himself in thinking a card is proof of reception. For example, I heard a W4 working a CO on 14 Mc 'phone; he reported the CO QSA5 R8 with slight QRM. If I had sent a report to the Cuban that I had heard him at that time and he was QSA5 R9, some QRM etc., using an 0-v-1 with LS, I probably would have received a QSL from a delighted but sadly swindled ham." A very good argument, hard to prove wrong I think, especially as "Another Silent Listener" is a lawyer. Bryn Hammond on the other hand agrees with Bob, and thinks that obtaining QSL fosters goodwill between countries and adds considerably to the enjoyment of SW listening. He congratulates John Burt on his list of countries, being six more than Bryn has heard (97). VK is only needed for HAC on 3.5 Mc (try for ZL4BR on 3,599 kc CW at 07.00 G.M.T.—Ed.) 40 U.S.A. States have recently been logged with all Cuban districts as well. VR6A was held for an hour peaking up to R8 plus, and K7FBE produced a new one for him. Bryn asks why he does not hear KA, PK, VS2, etc. Do you listen between 15.00-18.00 G.M.T.? And sometimes they

come through as late as midnight (their early morning). Will anyone correspond with Bryn Hammond, "Toronto House," Alexandra Road, Abertillery, Mon.?

P. L. Chamberlain, 218, Norbury Crescent, London, S.W.16 heard VR6A on a simple 0-v-1 and has started learning the code following our pronouncements of last month. He asks if any readers have heard TGWA, Guatemala City?

T. C. Fletcher (BRS2908), 4, Cyril Road, Bexleyheath, Kent, sends in a fine list of CW stations logged and requests that CW and 'phone calls be listed separately. That's up to all of you now and we think it a good idea. In fact, we are thinking of publishing only those logs which are well drawn up and easy to produce in the magazine. If you follow the idea mentioned earlier you will stand a better chance of having your log accepted. BRS2908 is concentrating on Empire stations in an endeavour to obtain the R.S.G.B. "H.B.E." certificate, but finds that so many stations do not reply, even when an I.R.C. is enclosed. This seems to be holding up his certificate sine die!

● South Africa

P. Jacobs, 63, Douglas Road, Goodmayes, Essex, has noticed that South African signals have almost disappeared during the last few weeks. Many of you have written in this vein, and it is quite definite that all districts of the world have their peak and minimum periods, though South Africans have been audible lately on CW. He asks if any other listeners noticed the complete fade-out on 14 Mc on February 28 at 22.30 G.M.T.? This was probably due to the height of the "F" layer and not to any other cause, as "Dellinger" fade-outs are more noticeable during daylight hours, when signals will reappear again.

One reader mentions hearing LZ5BW, but we cannot help thinking this is OZ5BW who uses good quality 'phone on all bands. As far as we know, there has never been a single amateur station (licensed or otherwise) in Bulgaria. L. A. Green, 59, Marquess Road, Canonbury, London, N.1 tells us that Radio Martinique uses 200 watts and will be issuing QSL cards as soon as they are printed. Frequency is advertised as 9,700 kc and their schedule 12.15, 13.45, 19.00 and 21.00 Martinique time; reports will be welcomed. Other Martinique stations on the "ham" bands are FM8AA and FM8AD, but I believe that the latter does not QSL reports. L. D. Hubbard, 17, Patten Road, Wandsworth Common, London, S.W.18 sends an excellent photo of shack and self. He uses an H.M.V. 6 v. superhet and is in his fourth year of DX hunting. 63 countries in all continents have been heard, the best confirmation being ZP14, YV3RA, and HC1FG. "Catches" on the amateur bands recently include LU4AW, OQ5AA, VK5AM, FL, JS, and ZE1JA.

● QSL Bureaux

F. Evans, 28, Edale Avenue, Flixton, near Manchester has just started in this DX business, and would like to know the working of the QSL Bureaux systems of the world. See the article elsewhere in this issue.

Another keen listener is N. Stevens, 59, College Road, Kensal Rise, London, N.W.10, who has been concentrating on African and Eastern stations. In

one year he has had 60 countries verified. Gordon Birrell of Dundee reports again, and has found conditions disappointing, but the first marked improvement was noticed on February 16. For your information Gordon, VE9 stations are "experimental," the numeral "9" being given irrespective of the Province.

Now, herewith Bob Everard again! This month his views are expressed thus: "Referring to A. P. L. Casling's challenge for a 7 Mc contest; I see no point in it, as he goes in for CW, and I do not. (Never too late to learn.—ED.) Has he H.A.C. except Asia on 7 Mc 'phone? What about N. America? (Quite a few in Central America and West Indies.—ED.) I have one N. American 'phone 'verie' from VO1P, SU6HL for Africa, and LU5CZZ and CX1AM for S. America. With reference to A. Hobson of Manchester; I do not report any 'phone QSA5 R9 plus unless it is so, and many are only given as QSA5-3, R4-7. My congratulations go to John R. Burt. A most wonderful record, but how many zones have you verified on 'phone? I have 35." (There are 40 in all.—ED.). Bob goes on to say that he is not in agreement with Mr. Barron in listing nothing but new calls as a full list is the only complete check each month (please no more "local" W's, Bob.—ED.).

An unusual thing occurred when CR7MF sent a card to Bob via Air Mail with his coupon enclosed returned!! Other cards received were: K6OQE (28 Mc), VO6J, W5WX, 5CPX, 5VQ, and ZTIR, etc.

Raymond H. Pounder, 36, Hythe Road, Thornton Heath, Surrey, reports for the first time and has heard VR6A using 0-v-1. F. G. Lloyd, Gerallt, Sychnant Pass Road, Conway uses a 1-v-2 receiver of home construction with 6-year-old valves, and wonders why it won't oscillate on 28 Mc! He cannot hear S. Africans, and we suggest that his aerial is at fault or that he listens at the wrong time. W5, 6 and 7 are also strangers, and we suggest a little early morning concentration for these on 14 Mc. Another simple straight receiver is used by Wm. Warner, 56, East Grove Road, St. Leonards, Exeter, and he advises all of you to refrain from sending a card to W6CQI, as he listened to him for two hours one morning, during which time W6CQI worked 8 stations. A report with coupon was sent giving details of all the contacts, but no card—alas! He sends a very fine photo of his shack, remarking that the operator is completely absent. We will endeavour to publish this next month.

● Straight Receiver versus Superhet

Wm. Warner continues by saying: "It seems to me that if the signal is above the general noise level you receive it, on the other hand if it is below the level, you can amplify it till Doomsday and still you won't get it. As an example, a signal will be R3 on a straight receiver with R5 noise, and R7 on an 8 v. super with R9 noise, and that leaves you as you were!"

As our space is running low, we must try to condense the later reports received, so here goes:—Geo. Thorlby, The Crescent, Spalding Road, Holbeach, Lincs. would like to send a list of cards received to

anyone who cares to write to him, but a S.A.E. should accompany the request! Mr. Hobson may be interested to know that he receives his DX QSA1-5, R2-9 plus. A friend of his who works 7 Mc 'phone regularly gets as many as 8-10 reports daily giving him R7-9. This, he thinks, is sheer waste of time and money, and your DX Scribe would like to add "hear, hear." George's best DX for the month was XU8RB in Shanghai at R6 and FI8AC at R5, both on 'phone. Ted Vaudin wishes to add to his list:—PK1MX, FI8AC, VR6A, VK2AL, AHA, CP, BX, 3DK, ZZ, XD. He likes the present arrangement of the Corner. H. Sugden, 15, Arncliffe Terrace, Legrams Lane, Bradford has only reported new stations heard, and thinks this an excellent idea, as valuable space is not wasted by repeating the same call month by month. He also notices the absence of S. Africans this past month, and wishes to have details of those stations who QSL. K7FBE has obliged. A. V. Freeman, 292, Pershore Road, Birmingham, 5, has frequently heard ZB1A at R8-9 and suggests he must therefore be a pirate.

The log submitted by H. Holyland, Swincliffe Side, Hampsthwaite, Harrogate, is an absolute work of art for neatness and legibility. He uses an autodyne converter as a straight 0-v-0 with 'phones and gets better results this way! So neat is his log that we are sorry to delete the "local" W's, but we are sure you will all appreciate the necessity for this. QSL's have been received from W5DUK, 5GHW, 6GCA, 7EMP, OQ5AA, K4EIL, NY2AE, and PY2CK, all being on 14 Mc 'phone.

D. A. S. Dryhough, Cairnie Farm, Musselburgh, Midlothian, Scotland wants to know how to tune to 56 Mc using .00016 variable condenser. The answer is that it is doubtful if you get lower than about 8 metres with this condenser. Conrad Tilly of Bristol has received many Europeans, and his best outside our continent include VP6TR and EA8AE on 7 Mc, and LU4AW on 14 Mc. L. Levitt, Well Lane, Kippax, Leeds agrees with G. F. Keen's remarks on CW stations producing more interesting DX than 'phone stations. He listens to 'phone though, and his best were: CO6OM, CO8RQ, BC, 2JJ, TI2HP, HC1FG, YV5AG, ABY, LUIDA, 5PZ, 4BL, VP6TR, PK4AU, K6GAS, VK3PW, 2UI and W7COV in Wyoming. G. F. Keen (our Code champion) heard VQ4KTB (on 'phone) telling ON4VK that FR8VX was the only active station in Reunion, although two new calls have been added to the latest edition of the Call Book. He would like to see all logs set out in chronological order, and has started the ball rolling by doing this. He feels that all calls heard should be listed, and not just the new ones! New QSL's were ZU1T, ZS1AH, ZS1AX, ZS5AH and CR7AY, all on CW. Paul Cashing has not yet heard VU2FV on 7 Mc, but is hoping; however, he logged KA1SL at 22.20 G.M.T. on February 22 on 7 Mc. His best card has just been received from Prince Moneim, SU1AM, for 7 Mc 'phone reception.

We are glad that the readers of this Corner show such splendid support by regular reporting, and we have obtained extra space as a result. (*But only for this month!*—ED.) Reports by the 12th, please!

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

CALLS HEARD

GORDON BIRRELL, 1 Renny Place, West Ferry, Dundee, Angus. 20 metre 'phone—CE1AH, CO2JJ, RH, OY, AH, RA, EG, RV, 7RP, 8BC, RK, BV, F18AC, FR8VX, H17G, 5X, 4O, HK2B, 3JA, LJT, FA, GC, KAI1ZL, LU7AG, 4BL, 1DJ, 9AF, PK1ZZ, PY1MB, 2GC, CK, 3BI, 5AQ, SU1RK, CH, VE3LC, BY, JU, JE, HY, FO, ACK, AGS, ADB, AFD, 9BW, AF, VO1Y, I, X, A, 4A, 6J, D, B, VP6MR, XZ2EZ, YV1AQ, 4AA, AB, 5ABY, ZS3F.

R. T. BLACKMORE, 1 Broadway, Exeter, Devon. Class B 1-valver. 20 metre 'phone—CO2RA, 5EO, HH2B, SU1CH, GP, RD, RH, WM, 2TW, VE3AIB, KX, 9EW, VO1A, I, X, 2Z, 6D, VK2OQ, VQ4CRE, VU2CQ, XZ2EZ, ZT1R.

KEN. W. BUNSTON, "Gable Cottage," Broad Kinton, nr. Swindon, Wilts. 5v. s.h., all loudspeaker. 20 metre 'phone—CO2AO, AZ, CO, HX, JB, JJ, JO, KC, LY, RH, RA, 7AH, AS, HB, VP, 8CE, EC, OG, VZ, YB, CT2AB, BC, F18AC, HH2B, 5PA, H12K, 3N, 4O, 5X, 7G, I, HC, FR, JW, K4DDH, EDC, 6FKB, KMB, OQE, KGA, 7FBE, KA1BH, HS, LUI1X, 8CR, OA4R, PY2HN, 3EN, 4BL, 5AQ, HK, FC, GC, KS, SU1RD, RH, KG, 2TW, TI2HP, RC, VE3AFD, AYL, BI, CI, DA, DI, EO, FT, GK, HK, JV, KL, KV, LC, VK, AAZ, 5ACN, 9BW, W5BF, BLP, DVE, DW, FFO, FHJ, FIJ, VEW, 6NWT, IUG, COI, LM, 9FUH (Denver, Col.). XE1LK, YV1AG, AP, 4AA, AB, 5ABF, ABY, ADY, AZ.

W. E. DAVEY, 2 Fingal Street, Woodvale, Belfast, N.I. s.h.6. 20 metre 'phone—CE3AC, AS, CO2JJ, RH, LY, RA, 6OM, 7CX, 8BC, CT2BC, BD, F18AC, FR8VX, HH2B, 5PA, HK1Z, JB, 3JA, K4EMG, KA1ME, ZL, LUIDA, 4EA, CZ, ZC, 8LR, PY2CP, TI2AV, RC, VE3VY, YW, JV, AFD, ACK, OX, AKT, TI, VOID, X, 2Z, 4A, 6D, VP6MR, VQ4KGB, VU2CQ, LL, W6CQI, 7FQK, 9PBA, IVA, XE1Y, YV5AA, ABQ, ABY, AK, AZ, ZS1AX, 3F, 5CL, ZU6P.

20 metre CW—CR7AU, CT2AN, F18HC, FM8AD, VU2FX, ZS1AH, ZT2U, ZU1D.

40 metre CW—CN8CN, FA8BE.

D. A. S. DRYHOUGH, Cairnie Farm, Musselburgh, Midlothian, Scotland. 10 metre 'phone Battery 0-v-Pen—H17G, K4FAY, LUIDA, 7AG, TI2RC, VE3AJ, VU2CQ, W5EBZ, GK, JR, TW, 6DET, MPS, YV5AA, ZE1JR, ZS1Q.

20 metre 'phone—CO8BC, LUI1D, PY2FK, HS, CK, 4BI, VE4UK, VP6MR, VS2AK, VU2CQ, YV4AB, 5ABY, AZ, ZE1JR.

BOB EVERARD, Oakdene, Lower Sheering Road, Sawbridgeworth, Herts. 1v. converter and 6v. s.h. (AC). 10 metre 'phone—CO7CX, CT2BC, HClJW, H17G, K4EIL, ENT, FAY, SA, EMG, EJD, DDH, LUBAX, PY3BF, SU1CH, TI2RC, FG, TG9AA, VE3ANF, LB, AIV, AKY, ADH, CG, AFJ, AGT, AIB, ARW, 4AW, GD, CP, HM, VP3NV, 6YB, 9R, VU2CQ, W5EHM, GSY, ENZ, BEN,

1IX1AG, 5BU, LUI1A, DA, 4AW, KA, 7AG, PY1MH, 2CP, ET, SUIKG, VE3BY, CA, YY, XQ, VK2IQ, VV, KO, KS, XU, 3JU, KX, WA, KR, AD, 5AW, VO1X, 4A, VP3THE, 6MR, PR, 9R, VU2CQ, XE2HD, 3AT, YV1AQ, 3AD, 4AA, 5AA, AB, BY, AZ, ZBW3, ZS6AJ, ZT6J.

J. C. FLETCHER, 4 Cyril Road, Bexley Heath, Kent. 20 metres—CR7 AC, AN, AY, MF, CT2AB, BC, BE, 3AN, CX1BG, 2AJ, F8BA, 17AA, KA1AX, ME, ZL, 7HB, K4DUZ, EYP, 5AC, AN, LUI1CA, 5BL, CZ, 6JB, OQ5AE, PK1ME, PK, PX2B, PY1BD, DI, 2AA, GW, LW, KT, KX, SU1CH, DP, GT, HB, KE, RD, RH, RK, RO, SW, WM, 2TW, U9AG, AV, MI, VE3AG, CC, EO, GK, GT, KC, OH, WA, 4ABY, AE, IQ, RF, RO, 5QP, VK2AHX, DG, EO, PX, TF, VN, YL, 3HK, NG, QK, 4BB, GK, RF, YL, 7CL, 8SS, VO1M, 3O, X, 4Y, 6D, VP2AT, TG, 6MR, 9L, VQ4CRI, VS1AT, 7GJ, VU2CQ, EO, FV, LJ, LK, W5BNC, 6CD, GRL, JMR, LYM, NPU, 7AMX, FUL, 8KML, YV1AC, 5AK, ZB2A, ZE1JA, JF, JG, JJ, JN, JW, ZL1CH, DI, FE, HY, MR, 2FA, FS, LB, LG, OU, SM, 3AX, AZ, KX, 4BP, DQ, GM, ZS1AH, AL, AN, AV, AX, AZ, B, CX, D, G, 2G, J, 3F, 4D, H, L, 5AH, 6AD, EM, EG, J, M, P, ZT1Z, 2O, U, 5P, V, Y, 6AB, AQ, K, Y, ZU1D, U, F, 2G, 5AQ, D, 6AF, AC, AM, C, E, P, U, V.

10 metres—FR8VX, H17G, VE3FB, VK5KO, VO1N, W5EMH, 6BOY (S.S. "Barbara Cates").

While we are always glad to publish DX logs, as a matter of general interest and for comparative purposes, our space is not elastic! We must therefore request that in future readers should (1) delete all W1-4, W8-9, VE1-2, VO and European calls on 3.5, 7, 14 and 28 Mc; on 1.7 and 56 Mc they are still DX. (2) No logs can be used unless they are written in block letters on one side of separate sheets. (3) Sheets should be headed with the country, and the calls arranged alphabetically in columns under the appropriate number. (4) All log sheets must bear the name and address of the sender, and must reach us on the 13th of the month before the month of issue. (5) Letters to The DX Scribe should be written on separate sheets.

We would particularly welcome more 1.7 and 56 Mc logs, where ALL C CALLS should be included, also logs of C and Empire calls from overseas readers.

40 metre 'phone—CO2RF, VP6TR, XE1MX.

40 metre CW—CM2AD, HK5JD.

A. P. L. CASLING, 6 Ollerbarrow Road, Hale, Cheshire. Home constructed 0-v-1. 10 metre 'phone—FR8VX, K4ESH, EMG, DDH, SA, TG9AA, VE3AFR, ADH, 5RV, VP6YB, VU2AN, FV, W5EMH, GHT, GKZ, 6BAM, NLS, MPS, ERT, 7FHW, ZE1JJ, JR.

20 metre 'phone and CW—CO2RA, CT3AN, K4ESH, EYP, 6OQE, LU4AW, 7AG, PY3BP, 4BL, TF5C, U9AW, VE3 AGX, EO, ACK, 9BW, VK2DQ, AIB, OE, OR, 3EK, CZ, KX, MX, UQ, QK, TS, XD, ZZ, NS, 5MG, XJ, 6AF, VP9R, VQ4KTB, VS2AK, VU2CQ, W5 FHJ, PJ, 6JMR, 7FKW, EKA, CJR, YV1AP, 4AB, ZL21W, 3AZ, 4CK, DQ, ZT2U.

40 metre CW—KA1SL, VE3ALG, W6NLZ.

P. L. CHAMBERLAIN, 218 Norbury Crescent, S.W.16. 0-v-1, 20 metre 'phone—CE2AM, 3AI, CO2LY, UG, WZ, 6OM, 7VP, 8OZ, CT2BC, AB, CX2AJ, FA3QV, HClET, HH2B, H15X, LUIDA, PK, 4AW, PC, 7AG, PK1BI, PY4PL, 2CP, FK, TI2AV, HQ, U2NI (CW), VK2GU, BK, PU, XU, 3AN, JX, WA, KX, XB, VO1I, P, Y, X, 6Z, 7D, VP6MR, PR, 9B, VR6A, W5FHJ, DUM, BJO, AXU, LAD, 6AFN, AH, AM, MNR, MWB, 9WJJ (Denver, Col.). XE2XT, 3AR, YL2BC, YV1AQ, AA, ABE, ZB1L.

DUK, ETR, EGU, FDE, FZY, ZS, GPX, GKZ, FCM, AXQ, GLW, EB, ZA, FXD, AWE, EGF, EME, EEL, GJS, BIN, CFO, BAT, ELP, FNI, GMR, AQS, GHB, FRL, GW, EHR, CSH, JR, FMO, 6AM, AK, NLS, MPS, ERT, PBD, 1MSO, LUB, GCX, CKR, OTE, GUQ, PNO, PDB, OZH, OZC, NWK, NAP, PKK, GBO, MFR, DEP, KZP, JXF, IWS, 7BEE, FLT, EMP, FDL, GGG, CKZ, YV5AA, AK, ZE1JR, JJ, ZS6AJ, T, ZU6P.

20 metre 'phone—CO8MA, CX1AA, FB8AD, AH, F18AC, FR8VX, HK3LDC, K4FAY, DDH, EIL, 6GAS, OQE, KGA, KMB, NZQ, 7FBE, KA1ME, BH, YL, ZL, LU3EJ, 4AW, 8DR, PK1MX, ZZ, 2WL, 3W1, 4WS, AU, PY2CN, FK, 4BL, TI2PH, VE4SS, HQ, 5ES, VK2GU, XU, XV, 3ZZ, XD, WA, PH, 4JU, VP6MR, VR6A, VS2AK, VU2CQ, W5AXU, AKU, MLG, AH, 6CLS, NNR, NLG, ITH, CCX, CCT, XZ2EZ, ZE1JR, JA, ZS2N, 3F, 6AJ, AA, ZT1M, 6AK, ZU6P, M. 9-11 metres (experimental and police): W1XHC (Hartford Police), XOV, XDT, 2XGC, XEM, XES, XIJ, XFA, 3XAR, XEY, 4XCE, 6XFE, 6X?? (Los Angeles Police), 8XCY, XLC, XBE, 9XLS, XEH, XL, XJL, 10XEN.

F. J. FIELDER, "Hillside," Mill Road, Epsom, Surrey. 0-v-1, 20 metre 'phone—CE1AH, AI, AO, AV, 2AO, BR, 3AA, 4AO, 5DW, CO2JJ, LY, RA, 7VP, CT2AB, CX2AK, HH2B, 5PA, H13N, 5X,

L. A. GREEN, 59 Marquess Road, Canonbury, N.1. Commercial s.h. 20 metre 'phone—CO2JJ, 7VP, K4DDH, ENY, LUI1D, 4AD, OQ5AA, SU1CH, GP, KG, VE3PA, PI, VO6D, VU2CQ, ZE1JA, ZS3F, 6AJ, ZT1M.

BRYN HAMMOND, Toronto House, Alexandra Road, Abertillery, Mon. 6v. s.h., 20 metre 'phone—CE1AO, AH, EO, 3AA, CO (300 w.), CO2JJ, EG, UG, RA, OK, OY, 5YQ, 6OM, 7VP, AS, VC, CX, 8VC, RC, YB, RO, EC, BC, VZ, DG, CT2AB, BC, CX2AK, 3BL, AI, EA9AH, FA3HC, QV, 8ZZ, WH, WL, QV, FB8AD, AF, AH, F18AC, FR8VX, FT4AN, AU, AI, SI, HH2B, 5PA, H12K, HG, 3A, 5X, 7I, 9I, HK1A, 3JA, 5AR, K4FAY, 6GIS, BNR, 7FBE, LUIDA, WA, 2DG, BV, JW, BC, BG, 3AH, BJ, 4CS, CC, AW, 5TI, 6KE, 7AF, AG, 8DR, PY1HZ, QO, CK, GJ, GH, 2JC, FK, ET, IM, JP, CK, 3JN, BP, 4UV, BL, 5BC, AQ, 6AL, AE, 7LI, SU1RH, RD, CH, RC, KG, KP, TA, RK, SG, 2TW, TI2HP, RC, FE, VE3 ACK, XQ, AJT, BK, ZEA, JV, TP, VK2XU, AHA, GU, OG, BG, OJ, FD, 3XD, BK, KX, WZ, WA, ZZ, 5DB, VO1I, Y, A, X, P, 2Z, 4A, 6D, J, VP6MR, TR, 9C, VQ4KTB, VR6A, VS2AK, VU2CQ, W5BUW, AXU, RZ, 6AH, FTU, LJI, COI, KSO, LYC, AM, NNR, 7EQP, 9KYV (Kansas), EOL (Nebraska), UEL (Colorado), XE1LA, 2RC, YV1AA, AB, AQ, 2AA, 3AA, 4CR,

AD, AA, AY, 5ABY, AG, AK, AZ, AA, ZEJJA, JR. ZS1AX, 3F, 6AJ. ZT6AM, ZU6N, P.

40 metre 'phone—EA8AE, 9AH, T12XZ.

75 metre 'phone. 00.00-05.00—W1, 2, 3, 4, 8 and a few V9. Some recent QSL's include EA9AH, EA18, FET5, 11, H1ABE, ABP, SPD, SPW, CO, CM, VE1DQ, 9HX VP3BG, MR, THE (interesting card). ZS1AX.

20 metre 'phone. March 11 (07.00).—W5RZ, 61CP (07.05, R6-7), FWD (07.09, R7), IMK (07.10, R8), ITO (07.12, R7), ETH (07.30, R6-7), CQI (08.30, R6), 6AM, AH, FTU, 9ZYB, ARI., ARA. VK2GU'. VR6A.

E. HARTLEY, 78 South Royds St., Tottington, nr. Bury, Lancs. Battery h.f. pen-s.g. det.-1 f. 20 metre 'phone—CT2BC, FB8AD, AF, F18AC, FR8VX, H12B, K4ENY, KA1ME, LU4BL, SU1 CH, RK, KG, WM, 2TW, VK2VV, V13THE, 9C, VQ4KP, VS2AK, VU2CQ, L1, YV1AG, 5ABQ, ABF, ZE1JL, JA, ZS1B, AX, 6AJ, 6T, ZT1R, 6AM, J.

10 metres—H17G, K4EMG, T12FG, VE3AQ, VP6YB, VU2CQ, W1 (25), W2 (16), W3 (15), W4 (14), 5EHM, FDE, W8 (19), W9 (13). ZS6AJ.

H. HOYLAND, Swincliffe Side, Hampsthwaite, Harrogate. Autodyne Converter and 1-v-1 (batteries). All Loudspeaker, 10 metre 'phone—CO2WM, H17G, K4EJG, EMG, FAY, ESH, EIL, DDH, TG9AA, VE3KX, NH, VU2CQ, W5GGG, GKZ, EYV, ZA, FZY, EUK, FPZ, EHM, EPJ, JR, EHR, DOC, ESL, 6NLS, KFP, CKR, AK, DET, NDC, 7EKA, EMP, 9LYV (Col.), UXG (Col.).

20 metre 'phone—CO2RA, EG, JJ, K4DDH, PY2BC, CK, VE3CI, KX, AFD, BK, XQ, YV1AQ, 4AA, AB, 5AA, ABY, AK, AZ, ZE1JA.

P. JACOBS, 63 Douglas Road, Goodmayes, Essex. 4v. s.h. and 0-v-Pen. 20 metre 'phone—CO2CG, JJ, 8MA, BC, H15X, LU4AW, 7AZ, PY2CK, 4BL, SU1 CH, RB, RV, RD, RH, 2TW, VE3KL, HY, CK, VO1X, 6D, VU2CQ, W5ABY, 7VP.

G. F. KEEN, 50 Wibbory Crescent, Hove, 4, Sussex. Home constructed 0-v-2. 20 metre 'phone—CE2AB, CO2 R, VA, LY, EG, JJ, 7VP, 8BC, FT4AN, H15X, H1JR, HK1GC, K4ENY, EMG, LU1UA, 7AG, 8DR, PY4BL, BL, VE2EG, 3JV, BK, YV, HK, AGS, AK, AGT, VE2HF, VP6MY, VQ4KT, YV5AG, AK, XE1GC, 1K.

20 metre CW—CM2Z, PW, RZ, HH3L, HP1A, K4FAX, PY1AZ, 5AQ, AG, SU1GT, VE3QB, AA, 9EW, VK3IW, NS, AA, 5FM, JS, VU3FV, W5EHP, QA, 7GK, VV5AK, AD, ZE1JA, ZL2CN, 3AX, ZT6AQ, ZU5AQ.

F. G. LLOYD, "Gerallt," Sychnant Pass Road, Conway. Battery 4v. 20 metre 'phone—CM2EG, JV, CO2KC, RA, EG, AV, YV, IJ, VU, JJ, 7VP, 8VC, DY, BC, RA, CT2AA, AB, BC, F18AC, HH2V, G, D, H12K, Z, 3F, M, 40, 5F, HK1VC, GC, 3LDC, K4EJV, CDH, EMG, EMY, KA1ME, DX, LUIDA, UA, 4AW, OQ5AA, PY2JC, 3CAL, SU1RK, RH, KV, PV, GP, KG, CH, RD, 2TW, T12RC, VE3JE, ACK, JV, ACT, FK, AER, AYL, AF, KL, CI, SQ, QL, 4SC, VK3NP, VO1I, X, A, Y, Z, 6D, G, VP6MR, VU2CQ, FV, YV1AB, 5ADY, AT, ZE1JR.

HECTOR LUDLOW, 8 St. Canices Terrace, Santry, Co. Dublin, Ireland. 6v. s.h. 20 metre 'phone—CO2CO, JG, EG, JJ, RH, CC, RA, KC, LY, 60M, 7VP, CX, 8VZ, RC, BC, VP, RO, HH2B, 5PA, H12AI, 4R, 5X, 7I, HK1EP, KAI ZL, K4DDH, ENY, EXT, FAY, LU4AW, 8BR, LX1TW, OQ5AA, PK2AK, PY4BL, 5AG, AQ, 7AG, SU1CH, KG, RH, RK, RD, 2TW, VE3JP, MZ, ACK, AFD, BK, AER, ABB, KX, AGT, JV, ST, BY, LC,

HY, YV, VK, AHA, AGS, ADB, AKT, AHV, HK, 4SS, GU, 5PE, OT, 9AF, BW, VK2FN, 4AU, VD, VO1Y, X, A, I, P, J, Z, B, 3Z, 6D, J, VP2AC, 6MR, YB, TR, 9G, VS2AK, VU2CQ, W5BB, BEK, BMD, SSS, 6GCT, YV1AA, AP, 4AB, AA, 5ABY, AZ, AG, ZE1JR, ZS3N, 6T, AJ, ZT1F, R.

R. Q. MARRIS (2BZQ), 80 Wyberton West Road, Boston, Lincs. 0-v-1. 20 metre 'phone—CN8AM, AV, MB, CO7 CX, 8VC, FA3QV, FB8AA, F18AC, FT4AH, HK5AR, KA1BH, LU1CA, QA, 4CQ, 7AG, NY2AE, PY4BL, SU1CH, KE, TF5C, VE3BJ, BD, 9BY, VK3MD, VQ6D, VU2CQ, W5SM, CCY, 6CQI, NC, 7ADH, YV5AN, ZB1L.

F. E. MILSUM, 30 Southern Road, Camberley, Surrey. Midwest receiver. CO2BG, 7VP, 8BC, CT2BG, HH2B, K7FBE, KA1ME, ZL, LU8DR, PY2CK, 6AI, SU1CH, RD, GP, RH, 2TW, VE3 ME, KX, AGT, LP, 4SS, VK2GU, 3KX, VU2CQ, W5FDE, FMM, 6AM, NNR, AH, YV5AG.

R. DUDLEY MONTAGUE, 155 Windsor Road, Ilford, Essex. 0-v-Pen. 20 metre 'phone—CE2AM, 3AI, CO2LY, OK, OY, RA, EG, 60M, 7VP, 8BC, MA, RD, VZ, CT2AB, BC, CX3DL, H15X, HK1VP, GC, KA1ME, LUIDA, 4AW, 5AN, 8BR, DR, OA4R, PY4BL, 5AQ, 6AI, SU1CH, VE3CI, EO, JZ, KX, LC, XQ, VO1A, X, Y, 6D, VP6MR, 9G, VU2CQ, YV4AV, 5ABY.

L. G. PAIRMAN (2DKF), Ailsa View, Mary Street, Dunoon, Scotland. Sky-rider. Miscellaneous 'phone—CO2CO, RC, JV, 60M, 7VP, 8YB, HH2B, LUIDA, DG, 2BG, 4AW, OA4R, PY1GJ, 2CP, 4BL, 5AQ, SU1CH, 2TW, VE4GA, VP6 MR, VQ4KT, W5BEN, GKZ, 6AMG, YV1AA, AQ, 4AA, 5ABY, AD, AZ, ZE1JA, JR, ZL1MR (CW), ZS1AX, 6AG.

RONALD L. PATTLE, 11 Havergal Villas, Green Lanes, Harringay, N.15. 4v. s.h. All loudspeaker. 20 metre 'phone—CO60M, 2JK, KC, EG, SU1RB, KG, RH, CH, VK2V, 3NB, YV4AA, 5AZ.

RAYMOND H. POUNDER, 36 Hythe Road, Thornton Heath, Surrey. 0-v-1. 20 metre 'phone and CW—CO2RH, DG, LU1EP, 7AZ, PY4BL, 5AQ, VE3HY, ST, JE, 4RO, VK3XD, 4AW, 5JT, VP6MR, VR6A, W5KC, GKZ, ZL4AP.

FRANK RABONE, Riggs Hall, The Schools, Shrewsbury, Salop. 20 metre 'phone—FB8AD, F18AC, KA1GR, ZL, PY5AQ, VK3KX, VU2CQ, FV, W7EKA, ZS6AJ.

20 metre CW—CO5VC, 7CX, YV, AP, CR7AL, FB8AA, FR8VX, HS1BJ, VE3WA, 4RO, VK2EG, ED, AHA, 4BB, YL, EL, VO4Y, VP9BF, VSTR, VU2AU, AN, FV, VP, BQ, W6GHU, JMR, 7AFS, AMX, AMZ, ENR, ESN (17.00-18.30, Feb. 9). ZE1JI, VQ, 2QJ, ZL1CK, LB, AR, 2FA, SM, MQ, LA, ZL3GR, 4BP, FK, CI, DQ (at 08.00, 10, 12, 14 and 19). ZS1BP, B, 2Q, 4L, 5Q, 6AA, ZT6AQ, ZU.

D. RAILT, 33 Wellington Square, Hastings, Sussex. 0-v-2, 20 metre 'phone—CO2JJ, EG, LY, GJ, OK, 4XF, 5EO, 60M, 7CX, YF, 8BC, YB, BZ, RU, HH2B, X, 5PA, H13E, 7I, LU1GJ, 6KE, PY6AS, SU1RD, CH, VE3EI, AL, YF, FC, XQ, AEX, GK, DA, MB, BX, HY, FQ, CT, LC, KE, 4FA, 5ACN, 9BW, VE2WA, 3ZX, VA, VO1I, 6J, VR6A, W5HM, JR, DEW, AXU, 6DGT, LVD, CQI, AH, YV1AQ, 4AA, 5AK, AZ.

F. J. RUTTER, 324 Wigan Road, Standish, West Wigan. s.s. super. 20 metre 'phone—CO2AR, CU, EA9AH, H14F, 8X, HK3LD, LU1HI, PK3ML, PY2CK, 4BL, SU1CH, SG, KG, TF3P, VE3JV, VO1X, I, J, 6J, L, VP2AT, 9G, J, VU2CQ, VK2JC, VV, AHA, AV, 3XX, KX, 4XU, W5YA, OO, CAV, 6NFX, 7KKQ, YV4AA, 5ABY, ZT1I.

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

Essex. 0-v-2, 20 metre 'phone—CO2LY, RR, 60M, 7CX, BP, EA9AH, FT4AJ, AH, K4EMA, PY4BL, SU1KC, CH, CP, RO, RH, 2TW, VE3AEL, AFE, KF, KX, 9BW, VK3MG, BZ, VO1I, X, Z, 6D, JQ, J, VP3THE, 6MR, VQ4RE, W6CQI, ITH, YV5AG, AZ, ZL2BI, ZSSS, ZT2B, ZU6P.

N. STEVENS, 59 College Road, Kensal Rise N.W.10. 7v. super with converter. 20 metre 'phone—CT2AB, BC, FR8VX, KA1ME, YL, BH, HF, OQ5AA, PK1ZT, MX, SU1RH, RK, WN, CH, SG, VQ4RE, KTB, VS2AK, VU2 CQ, XZ2EZ, ZE1JA, JR, ZS1AX, 6AJ, 1B, ZT1M, R.

H. SUGDEN, 15 Arncliffe Terrace, Legrams Lane, Bradford. 5v. s.h. All loudspeaker.—CE1AH, 2AM, 3AI, CO2 EG, GI, OK, RC, WZ, 7AS, 8RQ, YV, CX2AK, HH2B, X, 5PA, H19I, HK1CG, 3LDC, K4EMG, SA, 6NZQ, 7FBE, KAI BH, ZL, LUIDA, DJ, 2BG, 3EJ, 4BL, EL, 6KE, 7AG, 8DR, 9PA, PK1XM, ZZ, PY1CO, 2AM, BP, CK, J, CT12AV, UBX, VE3AEX, AHK, BK, CI, HY, KZ, NF, OJ, QL, YV, 4SS, VK2AHA, GU, 3KU, PH, XD, ZV, VP4GA, 6MR, TR, 9L, R, VU2CQ, W5AXU, 6AH, AN, APS, BAW, CQS, FTU, MLC, MWI, 7CEA, XZ2EZ, YV1AA, AG, AQ.

(Thanks for the only alphabetical list.—DX Scribe).

GEORGE THORLBY (2DLC), The Crescent, Spalding Road, Holbeach Lincs. SX11 Super Sky rider and 6v. s.h. 10 metre 'phone—CO7CX, K4EJG, VE4SN, ADY, NI, NH, W5GKZ, EH1J, FBE, QE, JR, G.W. FTD, FMQ, 6MLS, LUB, NLS, ASZ, ITH, LYT, MPS, MIL, 7DTE.

20 metre 'phone—CE3AA, CO2KC, OY, F18AC, H17G, PY4BL, VU2CQ, W6AH, YU, 7CAM, XU8RB, YV1AP, 4AA, ZE1JR, JA, ZU6P.

E. W. VAUDIN, 16 Paris Street, St. Peter Port, Guernsey, C.I. 0-v-Pen. 20 metre 'phone—CO2JJ, 8YB, HK3J, K4EXD, LU1DJ, PY4BL, SU1CH, RD, RO, 2TW, VE3BG, VK2NY, ADE, HA, NE, NO, XU, 3KX, ZL, VQ4KT, VS2CQ, VU2CQ, W5GKZ, PP, ZA, 6NLF, ITZ, XE1LK, YV5RD, ZE1JA, JF, JR, ZS1AX, 6AF, AJ, Q, ZU5M, 6P.

THOS. J. WALSH, 8 Brithen Street, Liverpool. 1. Pilot a.w. s.h. 6. 20 metre 'phone—CO2HS, 60M, FA3HC, SU1CH, VE1DQ, FX, AW, DG, 2BV, BG, LP, YV5ABX.

WM. W. WARNER, 56 East Grove Road, St. Leonards, Exeter, Devon. 2v. Battery. 20 metre 'phone—H1CFG, K6OQE, 7FBE, LU1HI, DJ, 2CQ, 9BV, VE4AX, 5ACA, VK2UY, VA, GU, ADE, XU, ABD, VV, CP, ACO, TR, IQ, VB, NQ, SK, UC, BK, 3KX, BH, FL, AI, ZL, XD, XJ, ZX, WD, BN, OI, IW, BZ, WA, ZZ, 4BB, 5BF, VR6A, VU2CQ, W6NNR, FTU, HKQ, CQI, 7CEO, ZE1 LK, 2BJ, ZS6AJ, ZT1R.

JACK WILSON, 2 Harrison Road, Oulton Broad, Lowestoft. 0-v-2. 10 metre 'phone—K4ECO, TG9AR, T11FG, VE3LD, W5BEN, EHM, FCM, YGF, GKZ, FDE, EGU, BMM, EGF, JR, FAH, GPX, 6EDP, CKR, EOT, PDB, MI, GRL, MPS, LUB, BCX, GUQ, NLS, ZE1JR.

20 metre 'phone—CE2AM, 3AI, 4AM, CO2LY, GO, RH, EG, JJ, RC, AK, KC, OK, WZ, 7VP, 8YB, BC, HH2B, C, 5P, H1IC, 5X, 9R, I, K6OQE, LUIDA, 4CD, AW, 5AN, 7AG, P12HC, T12HP, VE3VK, YV, YW, OC, JV, KF, BY, KL, XQ, AGT, QL, AHK, 9EW, VK2GU, 3XJ, ZV, VP6TR, VR6A, W5BA, HJ, BM, AXU, BJO, 6TJE, AH, XE1G, YV1AQ, 4AA, 5AP, AQ, AC.

W. YEO, Ebbelley Dairy, Newport Road, Barnstaple, Devon. 0-v-2 Pen. 10 metre 'phone—W6POB, N1H, AM, 7EMT.

20 metre 'phone—SU1RG, RO, VU2 CQ.

GUIDE TO THE WORLD'S S.W. BROADCASTERS

Compiled by F. A. Beane (2CUB)

LATIN AMERICA

HC2JSB, GUAYAQUIL

(Ecuador)

Metres: 38.08. Kilocycles: 7,854. Power: 500 w.

Operating schedule: 16.00—19.00 and 21.00—04.00 daily.

Standard time: G.M.T. less 5 hours.

Distance from London: Approximately 5,400 miles.

Postal address: "Radiodifusora HC2JSB, Juan S. Behr, Apartado 805, Guayaquil, Ecuador."

Identification characteristics: Styles itself "Ecuador Radio" and employs single gong note, deep toned.

Verification of reception reports: Confirms with QSL card, but sometimes proves difficult to secure.

TG2X, GUATEMALA CITY

(Guatemala)

Metres: 50.51. Kilocycles: 5,940. Power: 500 w.

Operating schedule: 21.00—23.00 and 01.00—05.00 daily.

Standard time: G.M.T. less 6 hours.

Distance from London: Approximately 5,000 miles.

Postal address: "Radiodifusora TG2X, Direccion General, Policia Nacional, Guatemala City, Guatemala."

Identification characteristics: Announces as "TG2X, La Voz de la Policia Nacional" (National Police) and uses English at times.

Verification of reception reports: Confirms with QSL card.

HC2ET, GUAYAQUIL

(Ecuador)

Metres: 65.22. Kilocycles: 4,600. Power: Unknown.

Operating schedule: Thursday and Sunday, 02.15—03.45.

Standard time: G.M.T. less 5 hours.

Distance from London: Approximately 5,400 miles.

Postal address: "Radiodifusora HC2ET, Casilla 824, Guayaquil, Ecuador."

Identification characteristics: Announces as "Radiodifusora, 'El Telegrafo' en Guayaquil, Ecuador." Employs 12 chimes.

Verification of reception reports: Unknown.

TGS, GUATEMALA CITY

(Guatemala)

Metres: 52.26. Kilocycles: 5,740. Power: 200 w.

Operating schedule: Believed to be 23.00—01.00 on Wednesday, Thursday and Saturday.

Standard time: G.M.T. less 6 hours.

Distance from London: Approximately 5,000 miles.

Postal address: "Radiodifusora TGS, Julio Caballeros h., Casa Presidencial, Guatemala City, Guatemala."

Identification characteristics: Signs on with march; employs slogan "Radiotransmisora de la Casa Presidencial" and strokes on a gong. Seldom heard in Gt. Britain.

Verification of reception reports: Unknown.

TGWA, GUATEMALA CITY

(Guatemala)

Metres: 16.85, 19.78, 25.51 and 30.95. Kilocycles: 17,800, 15,170, 11,760 and 9,685 respectively.

Power: 10 kw.

Operating schedule: Unknown, but apparently testing between 16.00 and 05.00 on the various channels. Originally (old transmitter) on 9,450 kcs. with schedule of 17.00—19.00; 01.00—05.00; Sunday, 01.00—11.00.

Standard time: G.M.T. less 6 hours.

Distance from London: Approximately 5,000 miles.

Postal address: "Radiodifusora TGWA, Secretaria de Estado en el Despacho de Formento, Guatemala City, Guatemala."

Identification characteristics: Employs slogan "La Voz de Guatemala" (formerly "Radiodifusora Nacional") and English at times. Derives programmes from medium-wave TGW.

Verification of reception reports: Requests reports and verifies promptly.

HH3W, PORT-AU-PRINCE

(Haiti)

Metres: 31.10. Kilocycles: 9,645. Power: 30 w.

Operating schedule: 18.00—19.00 and 00.00—01.30 daily; has been heard much later for special broadcasts, etc.

Standard time: G.M.T. less 5 hours.

Distance from London: Approximately 4,100 miles.

Postal address: "Radio HH3W, C. Ricardo Widmaier, Boite Postal A-117, Port-au-Prince, Haiti."

Identification characteristics: Announces in French, English and Spanish; employs 4 (sometimes 3) chime signal and occasionally bugle call, noise of train, etc. Closes down with good-night greetings in the same languages, and sometimes Ted Lewis "Good-night Song." Often remarkably strong despite low power.

Verification of reception reports: Notorious non-verifier, although a few have been favoured with confirmation.

CLUB ACTIVITIES

(see also page 23)

NATIONAL RADIO SOCIETY

By the Hon. Gen. Secretary, C. F. BIGGS

IT IS WITH the greatest of satisfaction that I am able to report that our progress has outstripped all expectations. Not only have we passed the five-hundred mark, but we now have members overseas.

● Membership Competition

This is being organised and a useful prize given by the North Regional (No. 1 Area) Manager; it is open to all N.R.S. members. Points will be awarded for new members obtained between March 1 and Sept. 30, and details are obtainable from H.Q. or Mr. Park, 14, Fairfax Road, Prestwich, Manchester.

● Cards, Certificates and News Sheets, etc.

The membership cards are to hand and as soon as the certificates arrive both will be sent out to every member. Please acknowledge receipt.

Mr. Park's News Sheet will be known in future as "The Official Headquarter News Gazette"; full particulars from him.

The Executive meeting will have been held when this is published, and a report will appear in the May S.-W.M., together with details of the General Meeting in June.

Notepaper will be available in ten days. Members requiring it should write H.Q. for information enclosing a S.A.E.

● Round the Areas

LONDON. Meeting held every Wednesday evening at 8 p.m. at 24, Penrith Street, Streatham, S.W.16.

SOUTHERN. The inaugural meeting of the East Ham and District Radio Society, local branch of the National Radio Society, was held in the Brampton Road Schools on Wednesday, March 2. The chair was taken by the hon. gen. secretary of the National Radio Society, who outlined the policy of the club and the N.R.S. Rules of the Local Branch were decided upon and a committee elected for the forthcoming year.

Meetings are held every fortnight at Brampton Road, the next being on Wednesday, March 16, and then fortnightly at 7.45 p.m. A morse class is conducted by Mr. H. Richards. Full particulars on application to the hon. sec., Mr. G. Storey, 105, Ranelagh Road, East Ham, E.6, enclosing S.A.E.

ESSEX. N.R.S.387, Mr. C. J. Greenaway, G2LC holds a morse course every Tuesday at 8 p.m. Members in the district are invited to attend. QRA 24, Percy Road, Leigh-on-Sea.

MIDDLESEX. The C.R., Mr. G. B. Routledge, 91, The Drive, Feltham, Middlesex, will give details on receipt of S.A.E. Eastern and Southern counties Representatives are wanted; please communicate with the Area Manager, Mr. R. F. Stevens, 43, Pettits Lane, Romford, Essex.

IRELAND. Good progress is being made; write the Area Manager, Mr. J. G. White, 18, St. David's Terrace, N.C. Road, Dublin, I.F.S.

● Notes

In the paragraph headed "Activities" on p. 20 of the March issue of S.-W.M., it should have been stated that the election of officers and committee takes place after the General Meeting in June.

CRYSTAL REGISTER. Crystal register of amateur stations in the Southern Area is being compiled by 2BVN, and all members are asked to help. Details of this and the list of stations appear in the Essex News Sheet.

B.S.W.L. Full particulars from Mr. F. A. Beane, Ridgewell, Halstead, Essex. W.S.F.R.A., to Mr. A. H. Bird, 35, Bellwood Road, Waverley Park, Nunhead, S.E. R.S.S.L., Mr. F. Stringer, 62, Bedford Road, Walthamstow, E.17. S.A.E. required in each case.

APPLICATIONS FOR MEMBERSHIP. If you do not want to cut your copy of THE SHORT-WAVE MAGAZINE, send your name and address with P.O. for 1s. to headquarters. Address: Hon. Gen. Secretary, 86, Lordship Lane, Tottenham, N.17.

● Certificates

It has been decided to award certificates for proficiency in short-wave listening. It has come to my knowledge that claims have been made regarding certificates. As however these are not yet printed none have been awarded!

BRENTWOOD Amateur Radio Society

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

Activity at the February 25 meeting was directed mainly towards pre-arranged 56 Mc tests, carried out in co-operation with G2WG, at Hutton, and gave good opportunity for testing. More 56 Mc work is desirable in the area, so any full G anticipating 5-metre transmitting will be welcomed.

Morse classes are now in full swing, thus A.A. members can obtain valuable practice at key-work, while Gs with rusty fists have a good chance to re-learn what they have forgotten. Secretary 2CYW, and Mr. A. D. Green, 2CIH, report that they are engaged in exhaustive tests and organised experiments with regard to the effects of sunspots.

BRIGHTON Branch: World Friendship Society of Radio Amateurs

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

The above society met visitors from the Heathfield Radio and Television Society at 2, Cheapside, London Road, recently, the visitors including Mr. C. W. K. Sands (G5JZ) and Mr. A. G. French (G5PN). Most of the evening was spent in a general talk on short waves, receivers and aerials, and a 5- to 10-metre super-regenerative receiver was demonstrated by Mr. R. J. Lee, Heathfield secretary.

BRITISH SHORT-WAVE LEAGUE

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

The B.S.W.L. has just celebrated its second birthday, receiving numerous congratulatory messages from amateurs and listeners from all over the world. Membership, since reorganisation, stands at just over 400 and is gradually increasing.

A special broadcast will be given by COGF, Matanzas, Cuba, 25.4 m., on April 23, 10-11 p.m. E.S.T., or April 24, 04.00-05.00 B.S.T. in honour of the society, and during the programme a message from the secretary will be read. This has been made possible by the station owners and the B.S.W.L. hon. programme arranger, Mr. J. R. Garrett-Pegge (2ADG), to whom the League expresses its gratitude. During May two other special programmes will emanate from the Cubans CUCM and COBZ, details later.

CARDIFF and District Short-Wave Club

Secretary: 2BQB, 132, Clare Road, Cardiff.

Yet another club journal is to hand, this time it is our pleasure to compliment Cardiff on the production of something more than a few pages of local gossip. Here we find transmitting topics that will make handy reference on such matters as modulation, aerial "dope," etc. Even a list of parts are given for "A compact Exciter." However, the keen amateur with lower ideals is welcomed and advised to see what he is missing by sending a note to 2BQB.

EALING and District Short-Wave Club

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

An interesting talk was recently given by Mr. Ray (2APP) on low power transmitters and simple receivers for DX work. A.A. and SWL members are keen on construction work; 2CKL is building a new TX, using a 6A6-6L6 Jones 5-band exciter driving a 210 in the final stage; 2APP is using the popular 59 as tritet CO with a 46PA. Mr. F. Edwards has rebuilt his 0-v-2, adding a HF stage. Copies of the club magazine ("The Monitor") are available for 3½d. post free.

EASTBOURNE and District Radio Society

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

Mr. F. E. Wingfield (G3CX) gave a lecture on the elements of transmitter design on February 28 at the Science Room, Cavendish Senior School, at 7.30 p.m. He showed the evolution of different oscillators from the fundamental reacting detector circuit. First he described the production of oscillations in this circuit, then the Hartley—the normal and series-fed. The TPTG oscillator was explained and its stability praised.

The speaker mentioned experiments, first the triode and pentode circuits for a CO; then the different forms of frequency doubler, and after detailing the design of PA stages and output he dealt with several different forms of aerial, with particulars for making a Collins coupler. The society is hoping to establish two-way communication with Hastings Society.

EXETER & District Wireless Society

Secretary: W. CHING, 9, Sivell Place, Heavitree, Exeter.

We would like to give Exeter's recent reports in full but space forbids. Such interesting matters as the Aurora Borealis by Mr. D. R. Barber, B.Sc., F.R.A.S., in his "Radio and the Stars" lecture; "Measurement in Radio" by Mr. V. C. Regan; and "The Electrical Conception of the Hammond Organ" by Mr. R. C. Lawes, A.M.I.E.E., A.M.I.Rad.E. serve to show the varied fare recently provided the members. As we have said before, this club get "the goods" when it comes to popular and regular programmes.

HALIFAX Experimental Radio Society

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

The 56 Mc transmitter is complete and is being tested every Sunday in preparation for extensive field work this summer. Other societies or individuals interested in 5-metre work are invited to write G5QS, who will be pleased to arrange schedules. G. Hirst is now 2DGK and G5DF is a new call to the society. All members are active building portable gear for field use.

JERSEY Short-Wave Club

Secretary: MARTIN G. BOURKE, "Creditor," Samares, Jersey, C.I.

All amateurs interested in renewing the activities of the Jersey Short-Wave Club are requested to communicate with the hon. secretary.

KINGS LYNN and District Short-Wave Club

Secretary: G. RODGERS, 112a, High Street, Kings Lynn.

The first meeting was held on March 11 at The Oddfellows' Institute, Railway Road, when a goodly number turned up, including G8BW and five A.A.'s, G2JS being unable to attend owing to pressure of business. The various officers were elected and it was decided to charge an entrance fee of 5s., 2s. 6d. under 18.

LONDON Transmitting Society

Secretary: G. VALE, 40, Raeburn Road, Edgware.

On March 3 a film showing several well-known amateur transmitting stations was exhibited. On the 17th a talk was given entitled "An outline of 50-watt transmitters." All members must possess A.A. or full transmitting licences. Thursdays at 8 p.m. at above address for meetings and Morse practice.

LONDONDERRY, N.I. (Proposed Short-Wave Club)


Sydney Foster, BSWL876, 2, Florence Street, Park Avenue, Londonderry, in company with 2DHB, is anxious to get in touch with SW enthusiasts in the district with a view to forming a club.

(Please turn to page 23).

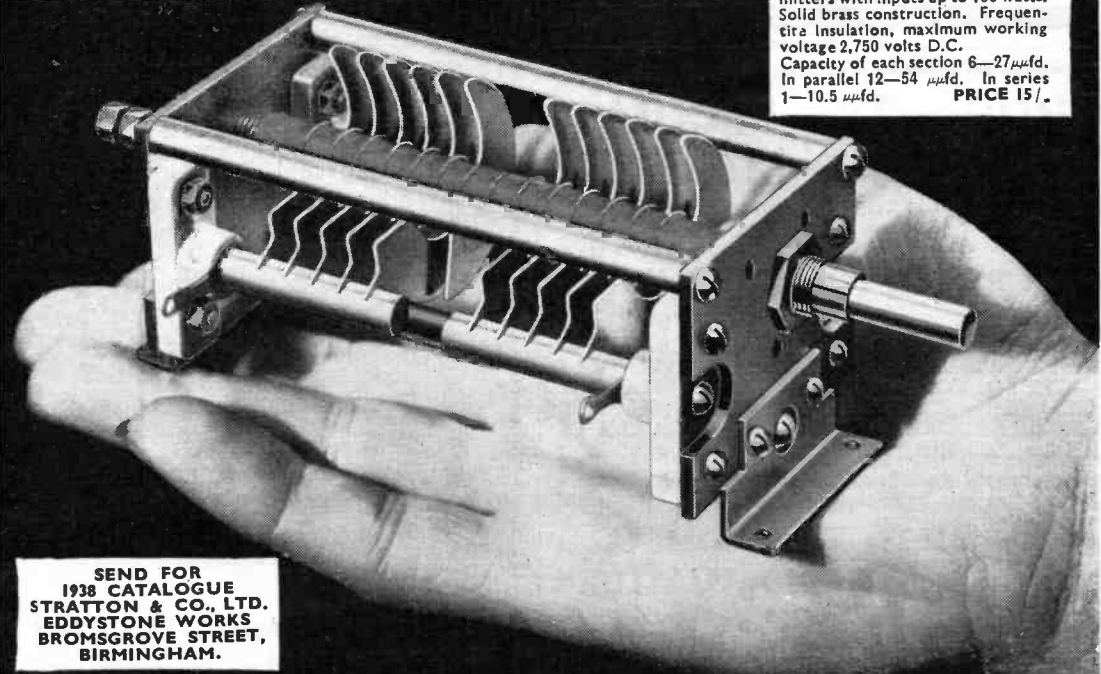
We are glad to give space in these pages to any club, irrespective of its affiliations. Secretaries should keep their notes to a reasonable length and post to reach us by the 15th of each month.



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Cat. No. 1088. Neutralising Condenser. Ideal for ultra high frequency circuits using low capacity triodes. Maximum working voltage 2,000 volts D.C. Capacity variation 1—8 μmf . Glazed Frequentite Pillar insulator for mounting. Insulated adjusting knob. **PRICE 6/6**



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NATIONAL NC100, 12 tubes, 10-550 metres, 10 watts output, RF and AF gain controls, beat frequency oscillator, air-tuned I.F. circuits, in black crackle cabinet with speaker. £35

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NATIONAL NC81X, as above but amateur bands only 10-20-40-80-160 metres, with speaker. £26

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RME69, famous all over the world, 10-550 metres, signal metre, crystal filter. £38

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- 1 Advertisements must be accompanied by 6d. in stamps or P.O. made payable to "The Short-Wave Magazine" and crossed.
- 2 A maximum of four lines only will be allowed, or about 28 words including name and address.
- 3 Trade and Box Number advertisements cannot be accepted.
- 4 We reserve the right to refuse any advertisement.
- 5 We cannot act as an intermediary for an advertiser in this section.
- 6 Advertisements must reach this office not later than the 15th of the month preceding the month of issue.

It is anticipated that this service will be of most use to those readers having apparatus for sale or exchange.



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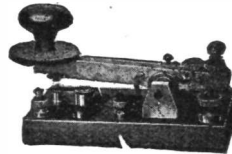
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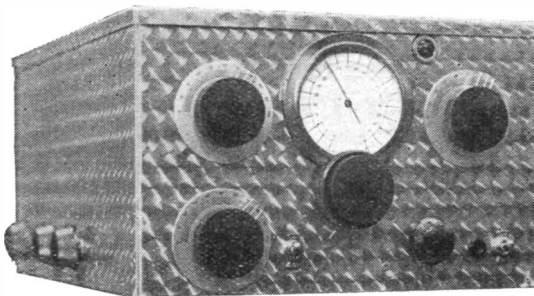
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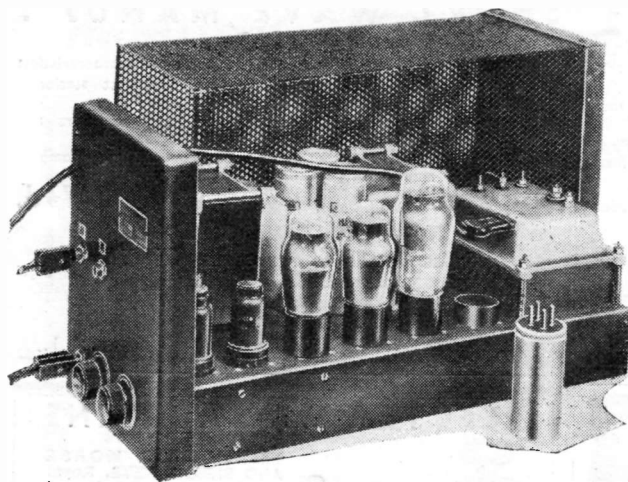
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Abbreviations: S—Sunday; M—Monday; T—Tuesday; W—Wednesday; Th—Thursday; F—Friday; Sa—Saturday.
All times G.M.T., twenty-four hour system.

M.	KC.	CALL-SIGN, LOCATION, SCHEDULE.	M.	KC.	CALL-SIGN, LOCATION, SCHEDULE.
13.93	21,540	W8XK, PITTSBURGH, 12.00-13.00.	51.32	9,580	VLR, LYNDHURST, w'days 02.35-13.30; S. 03.00-12.30.
13.94	21,520	W2XF, WAYNE, 12.30-15.00.	31.32	9,580	GSC, DAVENTRY, 02.20-04.20, 17.20-01.30.
13.97	21,470	GSH, DAVENTRY, 10.45-17.00.		M.	KC.
15.77	19,023	HS8PJ, BANGKOK, M. 13.00-15.00.	31.35	9,570	KZRM, MANILA, M-F. 21.30-23.00, 10.00-14.00; Sa. until 15.00! S. 09.00-15.00.
16.86	17,790	GSC, DAVENTRY, 08.15-23.00.	31.36	9,565	W1XK, MILLIS, 11.00-05.00.
16.87	17,780	W3XAL, BOUNDBROOK, 14.00-02.00.	31.38	9,560	DJA, ZEESEN, 05.05-16.00.
16.88	17,770	PHI, HUIZEN, S. 13.25-16.00; M. 00.00-01.00, 13.25-15.30; T. 13.25-15.30; Th. 13.25-15.30, 00.00-03.30; F. 13.25-15.30; Sa. 13.25-15.30.	31.41	9,550	OLR3A, PRAGUE, irregular.
16.89	17,760	DJE, ZEESEN, 05.05-16.00.	31.45	9,539	DJN, ZEESEN, 05.05-16.00.
16.89	17,760	W2XE, WAYNE, discontinued.	31.46	9,535	JZJ, TOKIO, 19.30-21.00.
19.52	15,370	HAS3, BUDAPEST, S. 14.00-15.00.	31.47	9,534	VPD2, SUVA, 10.30-12.00.
19.54	15,340	W2XAD, SCHENECTADY, 17.30-00.00.	31.48	9,535	LKC, JELOY, 10.00-13.00.
19.60	15,310	GSP, DAVENTRY, 18.45-23.00.	31.48	9,535	W2XAF, SCHENECTADY, 21.00-05.00.
19.62	15,280	LRU, BUENOS AIRES, 12.00-24.00.	31.49	9,530	ZBW3, HONG-KONG, 04.30-06.15, 08.00-14.30.
19.63	15,280	DJQ, ZEESEN, 05.05-16.00.	31.50	9,523	ZRH, ROBERTS HEIGHTS, 04.45-12.30.
19.64	15,270	W2NE, WAYNE, 18.00-23.00.	31.51	9,520	OZF, SKAMLEBAEK, 19.00-23.40.
19.66	15,260	GSI, DAVENTRY, discontinued.	31.51	9,520	HJ4ABH, ARMENIA, 13.00-16.00, 23.00-03.00.
19.68	15,243	TPA2, PARIS, 11.00-16.00.	31.55	9,510	HS8PJ, BANGKOK, Th. 13.00-15.00.
19.68	15,243	W1XAL, BOSTON, 18.30-21.00, ex. Sa.; S. 15.00-18.00.	31.55	9,510	GSB, DAVENTRY, 02.20-04.20, 08.15-10.25, 17.20-01.30.
19.70	15,230	OLK5A, PRAGUE, tests around 12.00.	31.58	9,500	VK3ME, MELBOURNE, w'days 09.00-12.00.
19.71	15,220	PCJ, HUIZEN, T. 08.30-10.00; W. 14.00-17.00.	31.58	9,500	PRF5, RIO DE JANEIRO, 21.45-22.45.
19.72	15,210	W8XK, PITTSBURGH, 14.00-24.00.	31.58	9,500	XEWW, MEXICO CITY, 03.00-05.00.
19.74	15,200	DJB, ZEESEN, 05.05-16.00 and 21.50-04.00.	31.63	9,484	EAR, MADRID, 21.00-00.00.
19.76	15,180	GSO, DAVENTRY, 08.15-15.00 and 21.15-23.00.	31.80	9,428	COCH, HAVANA, 12.00-05.00.
19.80	15,160	YDC, BANDOENG, 03.30-07.00; 09.30-15.30; 23.00-00.30; S. 00.30-07.00, 10.30-15.00.	32.09	9,350	COBC, HAVANA, 11.55-05.30.
			32.15	9,350	OAX4J, LIMA, 17.00-20.00, 22.00-06.00.
			32.88	9,125	HAT4, BUDAPEST, M. 00.00-01.00; Th. 00.00-01.00; Sa. 23.0-24.00.
19.80	15,160	SBG, STOCKHOLM, M. to Sa. 16.00-22.00; S. 14.00-22.00.	33.32	9,030	COBZ, HAVANA, 12.42-05.03.
19.82	15,140	GSP, DAVENTRY, 08.15-17.00.	33.50	8,950	HCBJ, QUITO, between 12.00-03.15, ex. M.
19.84	15,123	HVJ, VATICAN, 15.30-15.45.	34.62	8,665	COJK, CAMAGUEY, 01.00-02.00.
19.85	15,110	DJL, ZEESEN, 15.40-21.30.	40.65	7,380	XECR, MEXICO CITY, M. 00.00-01.00.
20.04	14,970	LZA, SOFIA, 11.00-12.30, 18.00-20.45; S. 06.00-22.30.	44.94	6,675	HBO, GENEVA, S. 18.45-19.30.
20.61	14,535	HRJ, GENEVA, S. 18.45-19.30; M. 07.30-07.45.	45.00	6,666	HC2RL, GUAYAQUIL, S. 22.45-00.45; W. 02.15-04.15.
22.00	13,635	SPW, WARSAW, 23.00-01.00 or 02.00.	45.25	6,630	HIT, TRUJILLO, between 17.15-05.45.
24.52	12,230	TFJ, REYKJAVIK, S. 18.40-19.30.	45.31	6,618	PRADO, RIOBAMBA, F. 02.00-04.30.
25.00	12,000	VZSPS, MOSCOW, from 11.00.	46.01	6,520	YV4RB, VALENCIA, 16.30-17.30, 22.30-02.30.
25.23	11,880	TPA3, PARIS, 07.00-10.00; 16.15-23.00.	46.80	6,410	TIPG, SAN JOSE, between 12.00-04.30.
25.27	11,870	W8XK, PITTSBURGH, 00.00-03.00.	46.88	6,400	YV5RH, CARACAS, 00.00-04.00.
25.29	11,860	GSE, DAVENTRY, discontinued.	47.10	6,396	YV5RF, CARACAS, 22.30-02.30.
25.34	11,840	OLR4A, PRAGUE.	47.15	6,362	YV1RH, MARACAIBO, between 11.30-04.30.
25.36	11,830	W2XF, WAYNE, 23.30-04.00.	47.28	6,345	YV1RC, VALERA, 22.30-01.30.
25.40	11,810	I2RO, ROME, 10.00-18.30.	47.85	6,270	YV5RF, CARACAS, 23.00-04.00, approx.
25.42	11,800	COGF, MATANZAS, 22.00-04.00.	48.05	6,245	HIN, TRUJILLO, 23.30-02.30.
25.42	11,800	JZJ, TOKIO, 19.30-20.30.	48.31	6,210	YV1RI, CORO, between 15.30-02.30.
25.42	11,800	OER3, VIENNA, 14.00-22.00.	48.78	6,150	YV5RD, CARACAS, between 15.30-03.00.
25.45	11,790	W1XAL, BOSTON, 21.45-23.30; S. 20.00-23.30.	48.80	6,150	CJRO, WINNIPEG, 23.00-05.00.
25.48	11,770	DJD, ZEESEN, 15.40-04.00.	48.83	6,140	W8XK, PITTSBURGH, 08.00-06.00.
25.52	11,750	GSD, DAVENTRY, 02.20-04.15; 08.15-10.25; 13.55-23.00.	48.88	6,136	CR7AA, LOURENCO MARQUES, see CR7BH (25.6 m.).
25.60	11,720	CJRX, WINNIPEG, 23.00-05.00; S. 18.00-03.00.	48.92	6,135	VE9HX, HALIFAX, 15.00-05.00.
25.60	11,720	CR7BH, LOURENCO MARQUES, 17.10-21.00; S. 15.00-19.00.	48.94	6,132	COCD, HAVANA, between 14.00-06.00.
25.61	11,710	TPA4, PARIS, 23.15-06.00.	49.02	6,125	LKJ, JELOY, 16.30-22.00.
25.63	11,700	SBP, MOTALA, evenings.	49.10	6,110	VUC, CALCUTTA, between 07.00-17.06.
25.64	11,700	HP5A, PANAMA CITY, 16.30-19.00; 23.00-03.00.	49.10	6,110	GSL, DAVENTRY, 23.20-04.15.
25.64	11,700	CB170, SANTIAGO, 16.00-20.00; 22.00-05.00.	49.10	6,110	HJ6AB, MANIZALES, 23.00-05.00.
26.01	11,530	SPD, WARSAW, as SPW (22 m.).	49.15	6,105	ZRK, KLIPHEUVEL, 17.00-21.00.
26.23	11,440	COCX, HAVANA, 13.00-06.00; S. 13.00-17.00; 23.00-03.00.	49.18	6,100	YUA, BELGRADE, between 06.00-22.00.
27.17	11,040	CSW2, LISBON, testing evenings.	49.18	6,100	W3XAL, BOUNDBROOK, 00.00-06.00.
27.26	11,000	PLP, BANDOENG, as YDC (19.8 m.).	49.20	6,097	ZRJ, MARAISBURG, between 04.45-16.30.
28.93	10,370	EA8AB, TENERIFFE, between 19.35-01.00.	49.26	6,090	CRXC, BOWMANVILLE, 17.00-01.00.
29.04	10,330	ORK, RUYSELEDE, 18.30-20.00.	49.30	6,085	VUD, DELHI, testing.
29.24	10,260	PMN, BANDOENG, as YDC (19.8 m.).	49.31	6,083	VQ7LO, afternoons until 19.15.
29.35	10,220	PSH, RIO DE JANEIRO, 22.00-23.00; 00.00-02.00.	49.40	6,072	HVJ, VATICAN, 19.00-19.15.
30.18	9,940	CSW3, LISBON, testing.	49.42	6,070	VP3MR, GEORGETOWN, 21.15-01.15.
30.61	9,830	COCM, HAVANA, 13.00-04.00.	49.46	6,060	SBO, MOTALA, 18.30-22.00.
30.62	9,828	EAQJ, MADRID, evenings.	49.50	6,060	W3XAU, PHILADELPHIA, 01.00-04.00.
30.80	9,740	COQJ, HAVANA, 12.00-06.00.	49.50	6,060	W3XAL, CINCINNATI, between 10.45-07.00.
30.93	9,700	"RADIO MARTINIQUE," Fort-de-France, 16.15-17.45, 23.00-01.00.	49.59	6,050	GSA, DAVENTRY, 17.20-23.00.
31.06	9,660	LRX, BUENOS AIRES, 14.30-04.00.	49.67	6,040	W1XAL, BOSTON, 00.00-02.00.
31.09	9,650	CS3WA, LISBON, T. Th. Sa. 21.00-24.00.	49.75	6,030	HP5B, PANAMA CITY, 22.00-03.00.
31.10	9,645	H33W, PORT-AU-PRINCE, 18.00-19.00; 00.00-01.30.	49.75	6,030	OLR2B, PRAGUE, evenings.
31.13	9,630	I2RO, ROME, 17.21-02.00.	49.83	6,020	DJC, ZEESEN, 15.40-04.00.
31.15	9,630	HJ7ABD, BUCARAMANGA, 23.00-03.30.	49.82	6,010	OLR2A, PRAGUE, evenings.
31.21	9,612	HJ1ABP, CARTAGENA, between 12.00 and 03.30.	49.82	6,010	CJXC, SYDNEY, between 12.00-01.30.
31.23	9,607	HP5J, PANAMA CITY, 17.00-13.30; 23.30-03.30.	49.82	6,010	PRAS, PERNAMBUCO, from 21.00.
31.23	9,606	ZRK, KLIPHEUVEL, 04.45-16.45.	49.82	6,010	COCO, HAVANA, 22.00-05.00.
31.25	9,600	RW96, MOSCOW, evenings.	49.94	6,007	ZRH, ROBERTS HEIGHTS, 15.00-21.00.
31.28	9,595	PCJ, HUIZEN, M. 00.00-01.00; T. 10.30-13.00, 19.00-20.30; Th. 00.00-02.30.	49.96	6,005	CXA2, MONTEVIDEO, 21.00-24.00.
31.28	9,595	VK3ME, SYDNEY, S. 06.00-08.00, 10.00-16.00.	49.96	6,005	CFCX, MONTREAL, 12.45-06.00.
31.28	9,595	VK6ME, PERTH, w'days 09.00-11.00.	50.00	6,000	XEBT, MEXICO CITY, 15.00-05.00.
31.28	9,595	W3XAU, PHILADELPHIA, 17.00-01.00.	50.00	6,000	VZSPS, MOSCOW, 20.00-24.00.
			50.17	5,980	CS2WD, LISBON, from 21.00.
			50.60	5,930	YV1RI, MARACAIBO, 23.00-03.00.
			50.90	5,893	YV3RA, BARQUISIMETO, between 17.00-03.00.
			51.28	5,850	YV1RB, MARACAIBO, between 15.30-03.30.
			51.72	5,800	YV5RC, CARACAS, between 15.45-02.45.

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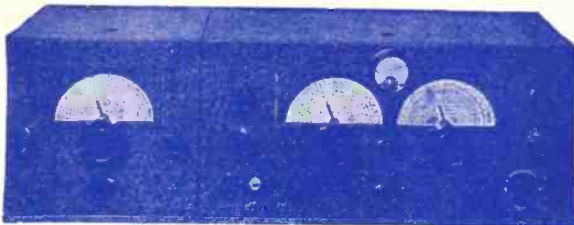
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