

*The*

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# SHORT-WAVE MAGAZINE

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

**JUNE**

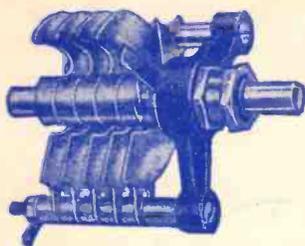
**1938**

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VOLUME II

NUMBER 4

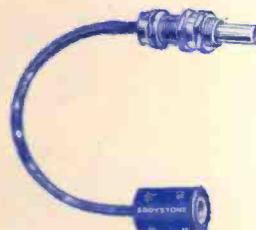
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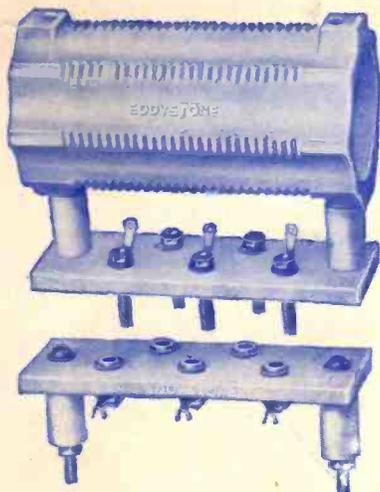
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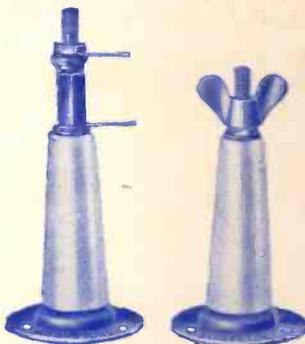


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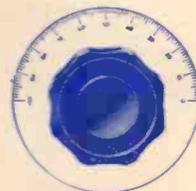


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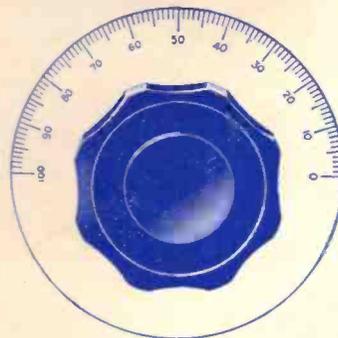
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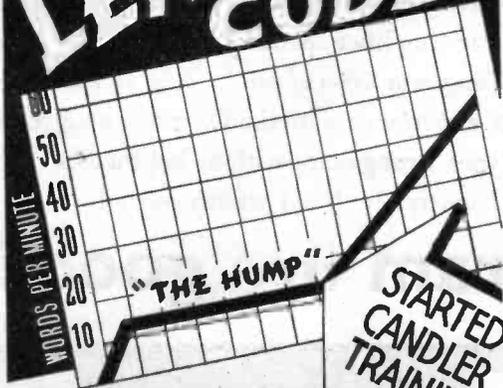
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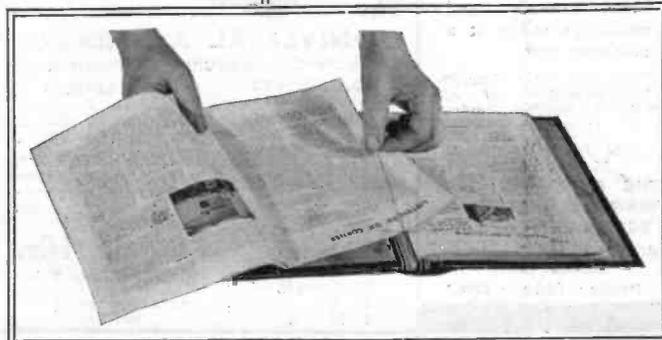
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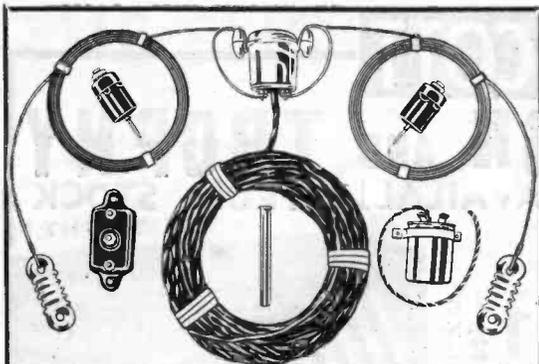
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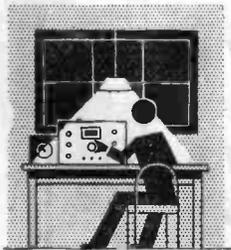
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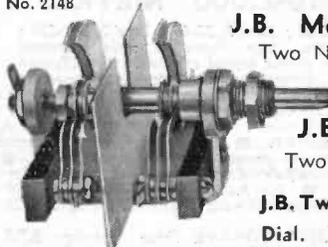
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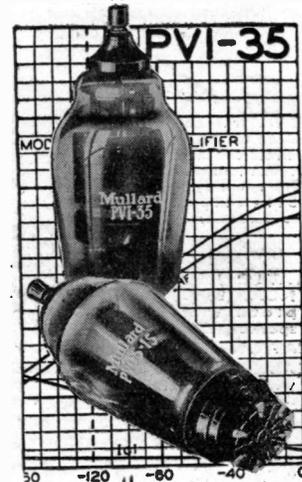
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# THE SHORT-WAVE MAGAZINE

Vol. II.

JUNE, 1938

No. 4

Editor: AUSTIN FORSYTH (G6FO)

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## ARTIFICIAL AERIAL

The rumour is once again afoot that the authorities are considering abolition of the AA licence, and not with the object of making the getting of permission to transmit any easier. The two-letter call would only be granted, as now, on the passing of the Morse Test.

The contention is that the artificial aerial permit, in the hands of an irresponsible person, is an open invitation to piracy, and that on technical grounds this grade of licence has outlived its usefulness.

Our own considered opinion is strongly opposed to both these suggestions. In the first place, the AA licence holder, by the very fact that he goes to the trouble of obtaining it, is demonstrating both his respect for the law and his implied intention of qualifying for a full permit as soon as he can pass the Morse Test. Further, and much more important, the AA licensee is able to gain valuable experience in the building and operation of a transmitter before he goes on the air. Under the present law, even the possession of transmitting apparatus is forbidden without a licence, so that if the proposed modification is introduced, the result will be an influx of badly operated stations, whose owners will have to learn under radiating conditions what they should have found out with an AA permit.

Thirdly, the contention regarding piracy can scarcely be considered as well founded when it is obvious that the information generally available nowadays makes it quite easy for a transmitter to be built without reference to anyone. If a person wishes to pirate, he will do so, licence or no licence.

Lastly, it is said in support of the case for abolition that 75% of convicted pirates are holders of the AA licence. This seems to us one of the strongest reasons why it should be retained—the authorities at least know where to look when piracy is reported from any particular locality.

Our offering to those concerned with deciding the case is that they should make the obtaining of an AA permit a little easier but the qualifications for a full licence rather higher—say a simple examination in addition to the Morse Test.

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# HAVE YOU HEARD...?

ONCE AGAIN conditions have been decidedly variable, reception on the 16th and 23rd of April proving particularly disappointing. The delinquent was our old friend Aurora Borealis, the bogy of radio communication, although in fairness I must add that only the former date appeared to be affected by magnetic disturbances of great intensity, judging by reports and the comments of the lay press. Fortunately, however, we have again been favoured by the appearance of a number of new stations and altogether the period under review has not been devoid of interest.

## ● Stations of the moment

Strange as it may seem, European reception has proved unusually absorbing; on approximately 34.34 m, 8,735 kc, a Bulgarian, announcing as "Radio Sofia" and apparently relaying the medium-wave station of the same title, has been noticed on several occasions until the conclusion of its broadcasts, heralded by the playing of the appropriate National Anthem, at 23.00 BST. This station was originally known as LZA (14,920 kc); in fact that may still be its call-sign, and reception reports should be addressed to "Radio Sofia, 19, Moskovska Str., Sofia, Bulgaria." The most outstanding identification characteristics are the employment of a female announcer and frequent use of the title already referred to.

From the Finnish Broadcasting short-wave station at Lahti, I have, in company with many others, received their not unattractive QSL card which gives the following information:—wavelength: 19.75 m. (15,190 kc.), 25.47 m. (11,780 kc) and 31.58 m. (9,500 kc); power 1,000 watts; address "Oy. Suomen Yleisradio Ab., Lahlen Yleisradioasema, Lahti, Finland." No call-sign or schedule are shown, but I have observed it on the 31 m. channel at 07.25 and closing at 23.00, with programmes derived from the normal broadcasting service.

Italian stations have again been prominent; a relay of 2RO was active in the vicinity of 25.6 m. during Herr Hitler's visit, 2RO6 (16.67 m.) and 2RO5 (19.6 m.) continue to broadcast in the early afternoon while IRF (30.52 m.) appears to be in permanent use for relaying the Arabian (18.10), Latin-American (24.00) and North American (01.30) programmes. CSW4, Lisbon, operating on 25.34 m. may be heard in the afternoon from 14.00 or earlier, but I cannot say at what time it changes to the 30.8 m. channel.

No doubt many of my readers are familiar with the recent controversy concerning "Radio Normandy" (212.6 m.) and many have no doubt been puzzled by the station's rather prominent and powerful harmonics, but I can assure them on good authority that "Radio Normandy" has never broadcast on short-waves, been relayed on the short-waves, or is likely to be. This information came to me from the Assistant General Manager of the I.B.C. and is, of course, authentic.

## ● Latin-America again

As I mentioned in a previous article, Asiatic reception at my address in North Essex is particularly

disappointing, but on the other hand Latin-America is extremely good, and apart from the Orientals, I consider the Latins the most fascinating of all broadcasters and they are extraordinarily consistent considering the comparatively low power employed. If the Asiatics, Africans and Australians would only rise to the occasion and permit their radiations to reach this country at proportionate strengths then I would be satisfied. However, conditions deem otherwise; reception at *true* entertainment value must be sought from the West, or from the Europeans.

The present centre of attraction is doubtless TGWA. This is not a new station by any means, but due to a recent increase in power reception in Great Britain has proved remarkably brilliant. For best results listen from 03.00 or 04.00 on the 30.95 m. (9,865 kc) channel, when TGWA is generally a link in the "Guatemalan Network," the latter comprising TGW (1,520 kc), TG1 (1,510 kc), TG2 (6,190 kc), TGQ (1,450 kc) and TGQA (6,400 kc). Generally at 04.45 or so TGWA breaks away from the network and may often be heard with transcribed melodies or a fascinating marimba band, and numerous English announcements, the station call being given at each quarter-hour as "You are in tune with stations TGW, 1,520 kc, and TGWA, 9,685 kc, in the 31-metre band, long- and short-wave stations of the Voice of Guatemala, Guatemala City." On one occasion they closed at 05.30 after announcing that they would be in the 19 m. band "tomorrow at 11.45," or 19.45 BST, where the station generally remains until about 23.15. TGQA is situated in Quezaltenango, has 200 watts power, and operates between 03.00-05.00 daily, Sundays until 07.00 and 19.00-21.00. It has been heard in Great Britain.

A recent verification from XEXA, accompanied by a booklet dealing with Mexico and the Valley of Mexico—"the most transparent realm of the atmosphere," gives their schedule (see "Guide to the World's Broadcasters") and frequencies, a questionnaire relating to their broadcasts being attached. XEXA and its associated medium-wave station, XEDP (1,080 kc), are known as "Cadena Radio-difusora DAPP" or broadcasting "chain" of the Departamento Autonomo de Prensa y Publicidad and reports should be addressed to that body.

Two outstanding QSL cards received several weeks ago are from "Radio Martinique" and COCM. The former, as many of my readers are aware, is particularly striking, depicting a Mercator's projection of the World, female native figure and large slogan, the whole being brilliantly coloured. The aerial power is 200 watts, frequency 9,700 kc—and the date of reception September 26, 1937! The Cuban confirms reception of August 23, 1937, but was well worth waiting for, the card bearing composite photographs of Havana. The wavelength is given as 31 m., but, of course, the station is heard in the region of 30.45 m.

The remarkable TI4NRH dedicated 31 special programmes to various radio personalities and societies during May, to mark its 10th Anniversary, one of the dedicatories being in honour of the British Short-Wave League, "prominent promoters of radio fraternity," and, in addition to the usual certificate

## Broadcast band news, recent "veries" readers' forum, and items of interest, compiled and presented by F. A. BEANE (2CUB)

of verification, awarded a beautiful lithographed diploma to those giving service to the world's only amateur broadcasting station during the month.

Senor Cespedes claims TI4NRH to be one of the original five short-wave broadcasters, establishing Costa Rica on the same level of radio with GBW, PCJ, KDKA and WGY, the power of NRH having been increased from 7½ watts to 15, 50, 75, 100, 150 and finally 500. But there my panegyric must cease, lest I be accused of being Cespedes' publicity agent! However, make his acquaintance for yourself by listening on 9,670 kc from 03.00 to 04.00 BST.; you may even hear his hearty laugh until 07.30 or later.

Other notes from my log include reception of LRX, Buenos Aires, 31.06 m., until 07.00 one Sunday; OAX4Z, "Radio Nacional," 49.32 m., closing at 06.00; TIPG, San Jose, 46.8 m., "La Voz de la Victor," with English call and sign-off at 05.30; HCJB, Quito, "La Voz de los Andes," 33.5 m., closing at 04.49; an extremely weak XEBT, Mexico, "El Buen Tono," 50 m., at 06.10; TICPH, San Jose, 51.5 m., playing its concluding number, the "Good-night Song" at 06.00; good signals from an old friend—HIT, Trujillo, 45.25 m., at 02.25 (left the air at 02.49); YSD, San Salvador, 38 m., R7 at 01.34; excellent signals from CXA2, Montevideo, 50 m., at 23.30 and the three chime signal and call "Radio Internacional" from OAX4J, Lima, 32.15 m. at 01.15.

HJ4ABU, Medellin, 34.65 m., operating on a slightly lower frequency than COJK, proved fair on one or two occasions and may be identified by its use of Westminster chimes at each quarter-hour and the striking of 8 at 02.00. I do not know the address of this newcomer and care should be taken to avoid confusion with HJ6ABA (ex-HJ4ABU) of Pereira-Caldas. Another Colombian to cause confusion is HJ7ABD, "Radio Bucaramanga," which recently reverted to its original wavelength of 50.17 m. for a brief period around 04.00, identification being simplified by its use of a bugle call, long sequence of chimes, one chime between items, male and female announcers and mention of Bucaramanga. COCX has moved to 25.54 m.; HIG, Trujillo, 32.26 m. proved excellent on one occasion, while CD1190, Valdivia, 25.2 m. has been outstanding at 23.15, or earlier.

### ● Readers' letters

A. L. King (Clacton on-Sea), reports details of the new Finnish broadcaster and adds that he has a QSL card from the E.I.A.R., Rome, for his reception of 2R06 (17,820 kc). From J. Humm (Walthamstow) I have received a particularly interesting piece of news concerning HRN—Mr. Humm has received their QSL! His "hoodoo" station is HIN—four reports and no reply, and he adds that COCM and PSH are very dilatory in verifying. Yet another exceedingly enlightening epistle is that from an American—Warren H. Stark. Mr. Stark comments on exceptionally poor conditions on April 16, states that he, too, is experiencing difficulty in extracting a card from HIN; reports the XEXA veri already mentioned and suggests that my mystery Asiatic

on 6,125 kc may have been ZGE, although its schedule (Sun., Tues. and Fri. 12.40-14.40) does not tally. JFO, he adds, verifies by letter, and states that the Taiwan Broadcasting Corporation has its headquarters in Taihoku, JFAK operates on 9,636 kc, and JIB on 10,535 kc. The former radiates an English news bulletin from 15.00-15.20 and is sometimes known as JFO, presumably the short-wave call, since JFAK is the call of the 750 kc station from whence its programmes are derived.

### ● African transmissions

Some time ago I mentioned a "Radio Marina." Since then I have observed what appeared to be this station near 33.9 m. On one occasion it closed at 20.30 while the next evening it was audible until 20.50, after radiating a news bulletin at 20.30, and the QRA appears to be Italian Somaliland. Another Italo-African of interest is the Tripoli telephony station on 31.71 m., recently heard relaying the Milan-Taranto Motor-cycle race for the Mussolini Cup. In addition Addis Ababa is now said to be broadcasting on 31.25 and 80 m., but so far I have not heard it.

#### STATION ADDRESSES.

VK2ME, "Wireless House," 47 York Street, Sydney, Australia.  
VK3ME (to same address; all VK3ME QSLs are now mailed from Sydney).  
VLR, National Broadcasting Service, Postmaster General's Dept., Melbourne, Australia.  
VK6ME (to same address as for VK2ME).  
VPD, Amalgamated Wireless (A/Asia) Ltd., Suva, Fiji Islands.  
YDA, YDB, YDC, PLP, PMN, PMH, etc., N.I.R.O.M., Batavia, Java, Dutch East Indies.  
JVH, JVN, JVM, JVP, JZI, JZJ, etc., Overseas Section, The Broadcasting Corporation of Japan, Atagoyama, Tokio, Japan.  
HS8PJ, Post and Telegraph Dept., Saladeng, Bangkok, Siam.  
VUD, All India Radio, Delhi, India.  
VUB, The Indian State Broadcasting Service, Irwin House, Sprott Road, Ballard Estate, Bombay, India.  
ZBW, Hong Kong Broadcasting Committee, P.O. Box No. 200, Hong Kong.  
JIB, Taihoku Broadcasting Corporation, Taihoku, Taiwan, Formosa.  
ZRH, ZRJ, ZRK, ZRD, South African Broadcasting Corporation, P.O. Box 4,559, Johannesburg, South Africa.  
VQ7LO, Cable and Wireless, Ltd., P.O. Box 777, Nairobi, Kenya Colony.  
ZEA, ZEB, General Post Office, P.O. Box 792, Saisbury, S. Rhodesia.  
VPB, The Radio Club of Ceylon and South India, P.O. Box 282, Colombo, Ceylon.  
CR7BH, CR7AA, Gremio dos Radiofios da Colonia de Mocambique, Caixa Postal 594, Lourenco Marques, Mozambique, Portuguese East Africa.  
CR6AA, Alvaro C. P. Nunes Carvalho, Caixa Postal 103, Lobito, Angola, Portuguese West Africa.

### LONG DISTANCE LISTENING

From the programme point of view America reigns supreme, reception is generally good and the hours convenient to those in the Old World. But there is a time when the average listener tires of the mode of presentation, the interspersed advertisement, the clockwork regularity, the same personalities at the same time each day or week, and the whole tends to become a monotony rather than a diversion. Then is the time to study your short-wave programmes and look elsewhere; possibly it will mean listening at less suitable hours or securing less satisfactory results, but it will serve as a refresher and an enlightening comparison.

With this in mind I can recommend VK2ME, Sydney, 31.28 m., which can be heard with any good receiver providing one listens at the right time, that is on Sundays during the first and fourth sessions (i.e., 06.00-08.00 and 17.30-19.30 during

June), when the transmissions are primarily designed to suit the taste of the British listener, the items broadcast comprising popular entertainment interspersed with interesting and informative lectures and talks on Australian matters. Then, of course, there are the powerful Zeesen transmitters whose entertainment is second to none. And mention of Zeesen reminds me of the Reichs-Rundfunk's request to announce that the broadcast "I come from Alabama wid my banjo on my knee," advertised for June 26, will actually take place on the next day at 9.30 p.m. EST, or, in BST, 03.30 June 28. So no matter how we try we cannot escape the influence of the U.S.A. in the variety world; we must revert to America and desert our digression.

### ● Programmes for June

Being conversant with the summer conditions I forecast good early morning reception of the States prior to the usual close down at 05.00 or 06.00 and I feel certain that the early riser will appreciate the grand variety of dance orchestras available such as King's Jesters', Duke Ellington's, Benny Goodman's, and so on.

In the late evening Guy Lombardo will be available on Sundays from 22.30 over W2XE (15,270 kc), Kate Smith's Column (news) from the same station on Mondays, Wednesdays and Fridays, and later the popular feature "Hollywood Hotel" (25.36 m.), which takes place Saturdays 03.00-04.00. For the sportsman I commend W8XK's (19.71 m.) "Chesterfield Daily Sports Column" with the breezy comments of Paul Douglas, heard 00.30-04.45.

### ● Late News

Japanese transmissions for Europe are now radiated by stations JZK, 19.79 m., and JZJ, 2.542 m. Ahmad Nawaz (Lahore, India) informs us that the Indian short-wave broadcasting stations are now operating to the following schedules:—

VUD2, Delhi, 10 kw, 86 m.

Discontinued for the present.

VUD2, Delhi, 10 kw, 60 m.

12.30-18.30 BST.

VUD2, Delhi, 10 kw, 31.3 m.

03.30-06.30 and 07.30-10.30.

VUB2, Bombay, 5 kw, 98 m.

13.00-18.00.

VUB2, Bombay, 5 kw, 31.4 m.

03.00-04.30 and 07.00-10.30.

VUC, Calcutta, 5 kw, 49.1 m.

08.06-10.36 and 12.36-17.36.

VUM, Madras, 5 kw. Transmitter not yet ready.

VUD2 has also discontinued use of the 49.3 m. channel.

## WE HEAR THAT . . .

VR6AY works on air! High-capacity accumulators are charged from a wind-generator which gives 8 amps. in a 20-m.p.h. breeze. Rotary converters do the rest, supplying 750 volts for the 20-, 40- and 600-metre CC transmitters, and 200 volts for the receiver, which tunes from 10 to 3,000 metres.

\* \* \* \*

You can earn £5 and the gratitude of Messrs. Premier if you can think of a suitable name for their new range of universal matching transformers, which are being made in 50, 150 and 300 watt capacities.

## CLUB HISTORY

The secretaries of certain Clubs, selected by us, are being asked to write short accounts of the organisation and achievements of their societies. We present this month the second of this series.

### SOUTHEND

The Southend and District Radio and Scientific Society was founded as long ago as 1920 and from that time has been well supported.

Before this, an informal club was in existence but unfortunately the records only go back to the above mentioned year. On going through the names of the original supporters we find those of Captain Eckersley, H. B. Dent, and many old timers, some of whom are still active and some who have passed on. It is believed that this society is one of the oldest provincial clubs that has flourished from the start, and it has seen and kept pace with all the major changes that radio has undergone.

The society has been a keen worker for charity and more than £1,000 has been obtained by holding exhibitions and in various other ways. This money has been spent in buying equipment for institutions, construction and installation having been undertaken voluntarily by members, so that the total value of the society's efforts in this field has been very considerable. The outstanding achievement was the equipping of the new Southend General Hospital, with complete radio apparatus, including a headset for each bed.

Fortnightly meetings are held during the winter months with formal and informal meetings. In arranging the programme the word "Scientific" in the title is not overlooked and some of our most interesting lectures have been on subjects such as: "Time, as a Solid," "Cables and Telephones," "Moulding of Synthetic Resins," and many others, including an occasional cinematograph display.

During the summer months the society's activities turn more to field days, which have been mainly "direction finding" events on 1.7 Mc, and have proved to be most attractive.

At the last Field Meeting of the society held on May 15, sixty-one members and friends attended, eighteen cars being used. The transmitter was located eleven miles from the start and was hidden in an innocent looking hike tent up a little-used lane. The first competitor home took one hour, forty minutes to find the transmitter with his D/F receiver, and covered about 20 miles. These outings are followed by tea at which the experiences of the day are discussed and which prove to be a most enjoyable social function.

56 Mc has been the subject of several lectures, demonstrations, and experiments. July 3 has been chosen as the date of our first D/F field day on this band and members are looking forward to some interesting developments.

Informal fortnightly meetings are held for the younger members; at these meetings the elementary principles of radio are discussed and members find them to be of considerable value.

In this short write-up the hon. secretary has endeavoured to give a general idea of the work and history of the society. If any person would like any further information or to join in its activities they should communicate with:—J. M. S. Watson, G6CT, 23, Eastwood Boulevard, Westcliff-on-Sea.

# Adventures of an Op. \_\_\_\_\_ "BOOBY-TRAP"

No. 5

By N. P. SPOONER (G2NS)

WE RETURNED to the line and the Suicide Club was informed that "somewhere between High Wood and Delville Wood" were some cross roads that had to be captured. Whether they still existed was a matter of doubt and, not liking the idea of a blind-fold raid, two of us determined to try a little daylight reconnoitring directly the bombing officer had left on his usual visit to battalion headquarters. With a Mills' bomb in every pocket we scrambled over our block and a right-angled turn brought us to the surface where, eighty yards away, a long mound denoted a trench. Snaking on our stomachs we dropped unchallenged into what had evidently been a pre-war country lane.

Scouting unmolested along the wide trench for a hundred yards we choked back simultaneous yells of delight as we came to a wide trench crossing at right angles to the one we were in. "Blimey," gurgled Alf, the imperturbable little Cockney with me, "the ruddy Cross Roads"! All we had to do was to get back and report our surprising discovery but, sad to relate, the Club's well-known weakness for looting overcame us and before fifteen minutes had elapsed our bag included three Mauser revolvers, four watches, twenty-five cigars, half-a-pound of Wurst, some rye bread and two bottles of coffee, lukewarm from the sun.

## ● The Trap

After lighting cigars we commenced to retrace our steps but I happened to drop mine from my lips and, by that simple action, a kind Fate decreed that we should save our lives. As I stooped to retrieve it I caught sight of a wire stretched across the trench. From the centre of it a shorter piece ran down into loose earth and was tied to the friction-lighter in the handle of a Stielhand-granate. Further scooping uncovered the heads of hundreds of those stick-bombs, packed so closely that they filled the trench from side to side. Anyone catching his boot in the trip-wire would have caused the friction-lighter and detonator to explode the entire booby-trap, the fuse being an instantaneous one in place of the usual time type. Pulling the priming-bomb away from its sleeping partners we soberly retraced our steps back through the silent trenches that were obviously only occupied at night.

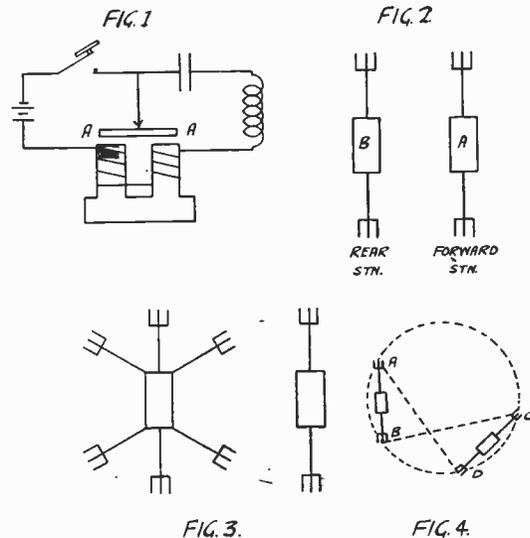
Two further cunning booby-traps were found and we blessed our Guardian Angels for their vigilance as we rendered both mines harmless. We had cheated death six times in fifteen minutes! As we reached the cross roads Alf suddenly choked, spluttered and managed to gasp "Strewth, look at 'em!" Six of the enemy were stealthily creeping upon us with rifles and fixed bayonets in the approved "on guard" position. We both took a flying leap at the parapet and scuttled for the nearest shell-hole but emerged almost as quickly as an enemy rifle-grenade struck the lip neatly and exploded. Bullets soon started kicking up the earth and Alf suddenly went head first into a shell-hole. "They've got me," he gasped, as I dived in after him, "here in the thigh!" Whipping out a

jack-knife I hastily ripped the khaki to expose the place . . . and burst out laughing. "That's not blood trickling down your leg, man, it's coffee!" I exclaimed, as I realised that a bullet puncturing the bottle, by which it was fortunately deflected, had deadened the feeling in his leg. "Luv a duck! and I thought I'd collected a lovely Blighty one," he rejoined. "Yes— and a ruddy court-martial for us both, being out here!" was all the sympathy he got from me.

We were met at our block by an apoplectic officer who furiously enquired what all the demmed tomfoolery was about but he nearly kissed us both, however, when we reported that we had discovered the elusive Cross Roads. He thereupon ordered the entire Club to stream out over the block and occupy the position.

## ● Some new gear

Signallers suddenly appeared from nowhere and, with power buzzers, spread the glad tidings towards the rear. Brief intervals in the shelling by an



annoyed enemy allowed us to investigate their unfamiliar gear and we were later able to exchange cigars and Wurst for useful dope. A blasé looking Op. told us that they were making considerable use of the Power Buzzer Amplifier in forward positions where other lines and methods of communication were impossible. The average range under normal conditions varied with the soil and also the QRM caused by others buzzers in the neighbourhood. The best results appeared to be where a thin layer of clay overlay chalk or rock and thus intensified QRK by confining the signalling currents to a layer of soil near to the surface.

Nowadays we are apt to look upon the humble buzzer as purely a device for code practice and forget the very important part it has played in many different signalling instruments. It can even be used in much the same way as the induction coil to generate high-frequency oscillations. Fig. 1 will show that upon pressing the key current flowed through the buzzer coils, attracted armature AA and broke the circuit. Owing to the self-induction of the coils the current flow did not then immediately fall to zero but continued along the path available, through the inductance and into the condenser which thus became charged up. The spark discharge then took place at the contact points, the spring restored the armature AA to its reverse position and the cycle of operation recommenced. It might be noticed that there was no need for a secondary winding on the buzzer as advantage was taken of the fact that when an inductive circuit is suddenly broken there is a consequent rise in potential.

In the case of the power buzzer, however, we found that although it employed low frequency currents it resembled the apparatus used in radio telegraphy. Taking the place of the "aerial" was a "base" that consisted of two lengths of insulated wire, laid along the surface of the ground, and connected at one end to the instrument and at the other to a number of earth pins. The power buzzer or "transmitter" was fed by accumulators and in order to allow for working on sites that had different resistances the step-up was adjustable between about 30 and 100 volts, alternating EMF.

The instrument gave a musical note with a frequency that could be altered between 500 and 1,000 cycles to lessen QRM between neighbouring installations.

### ● A Valve Receiver !

The receiver was a three-valve LF amplifier and the parts that would tickle a modern amateur's fancy were the very massive 4 to 1 ratio coupling transformers, bright valves burning like beacons and large filament rheostats that were works of art. A step-up transformer with adjustable primary allowed for the input to the first valve to be altered to suit the varying resistances of the earths. A base circuit consisted of an earth pin with its length of wire, the buzzer transformer, the second length of wire with earth pin and finally the ground return itself.

The earth currents did not flow in a straight line but spread out like a magnetic line of force, and if another such base was placed near the first and parallel to the flow of current it would provide a path along which current could be led into the valve amplifier. The longer the bases the greater would be the range but usually 100 yards of wire was the longest that could be laid out in forward areas and probably in a rear base about 200 yards. Although the actual signalling range varied with the soil an average of 2,000 yards between sender and receiver could be accomplished.

### ● Line Layout

As the amount of current that could flow in a base depended upon its resistance several different earth pins were tried in addition to watering the soil, burying metal plates, etc. Fig. 2 shows that attempts were usually made to place the sending and receiving bases as nearly parallel as possible and

at right angles to an imaginary line joining the two stations. Fig. 3 shows that several pins could be conveniently tried out at the rear base and the most efficient earth of them all used. If that was impossible, then the best lay-out was to arrange the two bases in such positions that the earth pins of the forward station all fell on one imaginary circle, as in Fig. 4. If means of actually measuring the angles were available the fact that angles BCD and BAD happened to be equal was an important factor in results.

Next Month - - - - "SHOCK."

## ANOTHER USEFUL VALVE

Messrs. Mullards will shortly have available a new low-loss triode for transmission on frequencies above 56 Mc, the general construction of which will be similar to the TY1-50. Rated at 10 watts anode dissipation, with a 6.3-volt 0.9-amp. heater, the obtainable RF output will be 10 watts at 50 Mc and 4 watts at 400 Mc. We hope soon to describe some of the practical applications of this valve, which fills a gap in the British market caused by the lack of a suitable equivalent to the WE-316A, an American UHF triode of proved efficiency.

The Mullard Wireless Service Co., Ltd., Mullard House, 225, Tottenham Court Road, London, W.1, will be able to give fuller details by the time this is in print.

## THE TECHNOLOGICAL INSTITUTE OF GREAT BRITAIN

This year the T.I.G.B. sees its twenty-first birthday, and there must be many among our readers who have taken, or contemplate taking, a course of home-study in some subject of the enormous range covered by the Institute.

It is impossible to chronicle here all the branches of Engineering which are catered for by the T.I.G.B.—that is very well done in the Institute's booklet, "The Engineer's Guide to Success," which gives full details of all the examinations and the two-hundred or more courses available for a student of literally any subject in Pure and Applied Science, Commerce or Languages. The engineering curricula include preparation for any examination, and there are also free consultative and employment services.

Many students, not all of them young, are for one reason or another denied the advantages which accrue from what might be called a whole-time school or college education and training. For them in particular, authoritative and carefully-prepared home-study courses, on which they can work as time permits and at leisure "off the job," are of the utmost importance. In the majority of cases, home-study offers them their only chance for advancement, so that the road to it must be well chosen if success is to be achieved.

The T.I.G.B. has in its twenty-one years of existence started upwards of 25,000 of its students on careers in Engineering, through the medium of correspondence training, so that those who are contemplating taking a course owe it to themselves to see what the Institute has to offer.

Write The Technological Institute of Great Britain, Temple Bar House, London, E.C.4, for details and the booklet mentioned.

# On The Amateur Bands

By OLD TIMER

THE BOOK of Cairo has been written, and cannot be altered. In spite of rumours to the contrary in the popular press we are to lose no frequencies at all, though there are some re-adjustments.

European amateurs are to be allotted the following frequency bands, subject to approval by their respective governments.

- 1,715- 2,000 kc (shared with other services).
- 3,500- 3,635 kc (and another 50 kc somewhere between 3,685-3,950 kc—making a split band).
- 7,000- 7,300 kc (7,200-7,300 kc to be shared with BC stations in Europe only).
- 14,000-14,400 kc (as before).
- 28,000-30,000 kc (as before).
- 56,000-58,500 kc (British amateurs only, shared with Television and QRP stations, but other countries may license amateurs in this band).
- 58,500-60,000 kc (British amateurs will be allowed this channel on a shared basis. Amateurs generally will work in this band).

The above do not include the usual edge tolerances which will apply as they do to-day. It will be noted that broadcast stations in Europe will be permitted to work between 7,200-7,300 kc. We are waiting with very great interest to see who will win, the BC station or the high-powered American amateur! It must be remembered that the broadcasters can only operate providing they do not cause interference with other stations! When short skip obtains in Europe, the fun will begin with a vengeance.

A BC station in this channel might order an interfering amateur to close down providing he was in the same country, but no European government could even request an American kw amateur to do this, because the Americans can work in this portion on an unshared basis. A new treat is in store for us on Sundays—"spitch" plus propaganda. Someone has stated that this new rule will merely regularise the present position on 7 Mc—the cynic!

And here are some other new regulations from Cairo.

If you hear a station calling "CP" do not think the operator has taken leave of his senses; it merely means that he is giving a general call requiring no answer—the old QST. In the new regulations QRK will mean "readability, 1-5" and QSA "signal strength, 1-5"; in other words, they are reversed. However, it is doubtful whether amateurs will take any notice of this. "R9" will live for ever, being so much more popular than any other R strength.

## ● QRP

Following our remarks on "real QRP" in last month's issue, we have received some very interesting letters. One is from an "old timer" wishing to remain anonymous, who says he is amazed at the ease with which certain "10-watt" stations achieve

WBE and WAC. He himself has won these two certificates with 8 watts at 250 volts, by using 4 half-waves in phase on 14 Mc, but he had to put up a special aerial to work South Africa to complete the WBE. He assures us that it all took a great deal of patience and perseverance plus a good location, and he deplores the present tendency to push the input to the maximum of the power pack (if such delivers more than 10 watts). In his whole eleven years on the air his input has never exceeded 10 watts—a creditable performance.

## ● Misuse of Power

In our friend's district he cites the following cases of power misuse. A 50 watt station regularly using 100 watts; another who claims to have WAC on 10 watts in reality did it with 18; a third uses 50 watts on 1.7 Mc (the cad); and the crowning example is the 10-watt licensee who has the cheek to push his input to 700 watts!!! We think we know to whom this applies, and if so, he has been closed down recently by the "powers that be." We do hope that we shall get a letter from a real dishonest-to-badness member of the Power Flaunters' Brigade with his reasons for using excessive power, and what he would do if he applied for a WBE certificate, where it is necessary to sign a declaration that his licensed input has been observed. Please tell us, you law-breakers!

## ● 10 Watt 'Phone

The Midlands have always produced a good quota of DX men, and G3DO of Sutton Coldfield is no exception. We mentioned last month that he had worked K6 and VR6AY using QRP 'phone. He has written and asked how we knew. Well, the "Old Timer" may be a doddering old fool but he has keen ears! However, G3DO tells us that in two months' activity on 14 Mc 'phone he has worked K6KGA (4 times), K6OQE (4 times), K6LKN (twice), K7AOC (twice), K7FBE (4 times), ZS2AF (3 times), FB8AH, ZE1JA (of QSL fame!), VQ4KTB and all W/VE districts, and his input does not exceed 10 watts. It would appear that his aerial is behaving very well, being a Johnson "Q" cut exactly to his frequency and unscreened, 500 feet above sea level. The direction is NNE by SSW (remember our remarks last month and look at your great circle map or globe). He intends to try another half-wave Johnson "Q" pointing East and West with which he hopes to contact the missing continents. Let us know about it, G3DO.

## ● 6 Watts of CW

And now we come further south to South Darent in Kent. G8UT will not be outdone by the G3's, and uses a battery power supply which only gives him 6 watts. The CO is a 2-volt LF pentode feeding a P625B doubler from a 7 Mc crystal. The aerial is approximately 25 feet high and has a 66-foot top with a 56-foot centre-tapped feeder. Quite a simple little rig with no magic about it! With this he has worked VK3, ZL1, 4, W1, 2, 3, 6, 7, 8, VE1,

2, 3, 4, PY2, HK4, CE4, ZE1, U9 and N. Africans, not forgetting numerous Europeans on 14 Mc. This means he has well and truly WAC'ed. His lowest powered QSO with U.S.A. was with 2 watts only, when contact was established with W1IJR. Next month we expect to hear of U.S.A. contacts with 1 watt or less; we are getting on very well with this "use lower power" campaign, and congratulations to both G3DO and G8UT. (FB, as they say on 7 Mc!)

### ● Watch your step

Quite apart from any other consideration, it is as well to get down to this QRP business, because it would not astonish us if the GPO took a hand in the use of illegal power nor would we be surprised if they looked with a great deal more interest at what some of us are doing. How many of you who read this can copy 12 w.p.m. to-day, say twelve months after you have obtained your licence—or even six months? Ask yourselves—you who haven't touched a key since the dreaded Post Office Morse test. Are you such a good 'phone operator as to mitigate to some extent your sin, or are you one of those "continuous drivell" hounds?

### ● The First-Class Operators' Club

We are pleased to learn that G5BW has taken the initiative and is actually running the F.O.C. The qualifications for membership require 25 w.p.m. code speed plus intelligent operating. Courtesy counts too, and membership is open to 'phone operators providing they can read and send not less than 20 w.p.m. Here is something for all of you to aim at; always remember you are judged by the quality of your signal and the rhythm of your fist. What is your mental picture of a "lid"? We always think of a sloppy operator as something that should be in the Zoo! If you think you can qualify, then write to G5BW, Willingdon, Eastbourne, Sussex, but remember the committee *may* turn you down!

### ● 7 Mc

A great deal of mud has been slung at the users of this much-abused band. However, it is our considered opinion that the quality of operating, both 'phone and CW, is on the up-grade as far as this country is concerned. Less tripe is being talked, and fists are steadier and more intelligible; there is greater chance of obtaining a reply to a question when CW is being used. We feel sure that the average amateur is more "operator conscious" to-day than in past years and is more ready to offer advice on operating technique to the beginner. All to the good; may this improvement continue.

### ● Esperanto

Mr. C. Grant Dixon, 2BDQ, Ghyll Bank, Whitehaven, Cumberland suggests that Esperanto be adopted instead of "radioese" for contacts with other amateurs. He says that the utility of an international language must be obvious to all, and Esperanto has been used over a period of 50 years as a clear medium of expressing thought; furthermore, it is finding increased support. A large International Congress is to be held in London in August, and Mr. Dixon would like to communicate with any interested readers with a view to the formation of an Esperanto Club to encourage the use of this language among amateurs throughout the world. Write direct to Mr. Dixon,

# The Other Man's Station

## G2BI

WE HAVE pleasure this month in introducing Lt.-Col. W. L. Palmer, Elm Field, Calne, Wilts, who was licensed as long ago as June, 1924, under call G2BI; a real old-timer, who has been through the whole gamut of Amateur Radio experiences in his fourteen years of steady activity.

In those early days, operation was confined to 200 metres, the transmitter being a self-excited Hartley "thriller." Then, in 1925, Colonel Palmer was among the pioneers who led the way to 45 metres, his first DX on this band being Newfoundland C8AR, with a few watts from dry batteries and a BTH-B4 valve. CC work was started in 1928, with crystals ground from "pebble lenses"—some of them are still giving good service!

Aerials have always been of great interest to G2BI, and there will be many readers who are either using, or know of, his famous modification of the Windom, called the "G2BI Aerial."

Recently, the local power company went over to AC, which gave Colonel Palmer the opportunity (and the excuse) to re-build the whole station, and he now has separate transmitters for the three bands



1.7, 3.5 and 14 Mc, on which he is normally active. The 14 Mc rig is the QRO job, CO-FD-BA-PA, with 100 watts input to the pair of '10s in the push-pull final amplifier.

Immediately beneath the operating room there is a well-fitted workshop, with a power-lathe, drilling machine and all the other tools necessary for turning out good work in wood or metal. Indeed, everything that can be is made in the station, including the glass-fronted cabinets holding the transmitters; the latter are built in unit form, link-coupled.

The present receiver is 0-V-1, 1.7 to 28 Mc, and G2BI's next venture is to get going on 56 Mc—on which he has already done some work using ICW gear and quench sets—with a stabilised transmitter and straight CW receiver.

A final interesting point is that only one single telephony transmission has ever been made from G2BI—and that was on Jan. 13th, 1929.

# LETTERS TO THE EDITOR

## Can Anyone Help ?

Since November, 1936, I have been endeavouring to perfect an automatic sound locator for anti-aircraft work, utilising radio valves, and my purpose now is to invite, on a co-operative basis, the assistance of those of your readers who have had experience of PA circuits, microphones and thermionic relays. In case a large response is forthcoming, perhaps willing readers would kindly enclose a stamped addressed envelope when writing to me on the subject.—A. BRADSHAW-PETHYBRIDGE, 25, Drakefell Road, London, S.E.14.

## The Amateur in Emergency

Further to your May editorial, in February, 1937, I worked out an Emergency Network Scheme for A.R.P., for use solely in case the telephone system became over-burdened or disorganised. I have just had the decision of the Home Secretary, Sir Samuel Hoare. He states that "He is advised that for technical reasons connected with traffic-carrying capacity and mutual interference difficulties the use of wireless for A.R.P. communications is not practicable and A.R.P. authorities are being circularised that the telephone must be considered the normal means of communication and relied upon as far as possible, with a messenger service as a stand-by."

This ruling may be the means of stopping patriotic amateurs not only from wasting their time but also breaking licence terms, should they contemplate offering to run their stations for A.R.P.—N. P. SPOONER, G2NS, 17, Swanmore Road, Boscombe, Bournemouth, Hants.

## Whither Calls Heard ?

Many contributors mention "lack of space" or "space does not permit" in Magazine articles, yet pages are wasted on Calls Heard. Although I see this is to be limited to two pages only in future, are you satisfied that such lists are wanted? At least two or more pages could be better utilised by publishing a station log, these lists to contain very much more data and a greater number of stations than any other published list.—G. COLLETT, Bunkers Hill Top, Wragby Road, Lincoln.

## And Another !

I like the Magazine very much, and naturally it is impossible to please everyone, but I suggest that readers might let the Editor know from time to time what they do want. I like the idea of readers' advertisements, and look forward to the constructional and transmitting articles, but the part of the Magazine I do not like is the Calls Heard section. I do not see the fun of compiling long lists just for show, and though I have been interested in radio since pre-broadcasting days, I have yet to send for a QSL card. Yet I daresay I get as much out of the short waves as the people who collect wall-paper! I also suggest you publish a "Black List" of transmitting amateurs who spoil the bands by badly operated and adjusted outfits, including the

people who use duplex for hours on end gossiping about nothing.—T. J. EVANS, 2DFX, 5, North Parade Terrace, Monmouth.

## More Suggestions

I feel I must write and express my appreciation of your excellent Magazine, and also somewhat diffidently proffer a few suggestions. (1) That you publish each month a short table showing the optimum times for DX listening on the various short-wave bands. (2) Please give us a few articles on directional aerials for the 56, 28 and 14 Mc bands. (3) Let us have more constructional articles of a similar nature to the 56 Mc Receiver in the May issue. To my mind, the straight receiver is still the back-bone of short-wave radio. (4) A practical corner, giving therein various lay-outs and circuits with which to experiment. (5) a plea! Not too many transmitting articles, please. (6) There is scope for a Magazine such as yours to improve receiving technique. I have visited nearly every Club in the London area, and one fact is obvious—the man chiefly interested in receivers is not wanted. I am not keen on making a general collection of QSL cards, but I have a few of 1925 vintage.—R. W. ELLIOTT, 70, Longthorne Street, London, S.W.6.

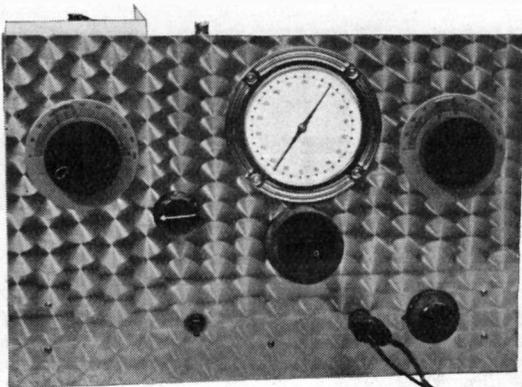
## A Norwegian Polar Expedition

A polar expedition is scheduled to leave Norway about July 1, and they plan to establish a base in N.E. Greenland, operating a short-wave station (call not yet issued) as well as having short-wave transmitters on their aeroplane and at advance camps. The purpose of this expedition is weather observation, and their base station will work to LGN, Bergen, Norway. The home address of the expedition is "Norsk Fransk Polar Ekspedisjon 1938, Willy Knutsen Og Comte Gaston Micard, Svalbardkontoret, Oslo, Norway."—LYMAN F. BARRY, Director RSSL, 16 E. 43rd St., New York.

## Aerial Coupling for the "Simplest Transmitter."

The Magazine, which I eagerly await each month, has re-kindled all my early enthusiasm, and I have built the "Simplest Transmitter" described in the December issue. I should like to know the best way of connecting a doublet or a "W3EDP" aerial to the tank coil.—G. D. MATTHEW, 86, Woodland Terrace, Dundee, Scotland.

[A doublet can be coupled by means of a three-turn coil—the size is a matter for experiment—located at the centre of the ceramic former. The turns can either be stiff wire inside this former, or flex wound over the coil itself. The first method is preferable, but not very easy to arrange. For the W3EDP aerial, use a five- or seven-turn winding which can be varied in relation to the anode end of the tank coil. A former mounted on one insulator only can be pivoted to give variable coupling.—Ed.]



# The Amateur Three

By

AUSTIN FORSYTH, G6FO

(Editor)

## A three-stage receiver for DX listening, or amateur working

THE RECEIVER described and illustrated here should be of interest to those constructors, experimenters and amateur transmitters who require a good up-to-date design, cheap and easy to build, which will not only give selective tuning on the amateur bands from 1.7 to 28 Mc, but will also cover the intervening wave-ranges to provide broadcast and commercial station reception.

To this end, we set out to produce a receiver which fitted as far as possible all these requirements. The result is shown in the circuit diagram and photographs—a sound, straightforward job which will give the best possible performance within the capabilities of three valves. We did think of a superhet., but a good one is not cheap to build and the lining up for consistent results over a wide frequency range, together with the coil difficulty, cannot be overcome in such a way as to guarantee that the average home-constructor will be sure of getting the best out of the set. This is not in any sense a criticism of the intelligence of our readers, but rather consideration for the facilities they have available and their requirements as shown by our general correspondence.

If this receiver was in the lines of a multi-valve single-signal superhet., with all the latest refinements, it would be merely of academic interest to the vast majority, and very few would actually be built on the score of expense alone. We therefore prefer to offer a design rather less ambitious, but none the less right up to the minute of its type—and easy to construct.

So much for that . . . In thinking the matter over, we came to conclusion that what was likely to be of most interest would be a three-valve arrangement, incorporating band-spread, of course, which could be used on an ordinary aerial. Further, it would be desirable to minimise the constructional work in the way of coil-winding and so on, and by using standard and readily obtainable parts on a ready-drilled chassis and panel assembly, make the whole thing easy to put together and wire. The wave-range to be covered was obviously 10 and 200 metres, since between these limits are all the trans-

missions which interest most listeners, experimenters and transmitting amateurs—broadcast, commercial, ship-to-shore 'phone, police, and last but not least, the five amateur bands in general use. We should have liked to include the 56 Mc band, but there are no standard coils at present available covering this range; however, we are carrying out some tests using home-made coils on formers similar to those used in the set, so that we expect shortly to be able to give the necessary data for extending the range to about 4½ metres.

For simplicity and efficiency, there is still nothing to equal plug-in coils; the stated wave-range covered by the manufactured types is roughly 9-170 metres with five separate units, so that problem was easily settled by adopting the B.T.S. standard kit.

### ● The Circuit

This is what is known as the TRF 1-v-1, tuned HF, detector and LF, which for many years yet will be the basis of all simple receivers. As shown in the circuit diagram and photographs, the HF stage is tuned separately, doing away with any possible inefficiency due to incorrect tracking or unmatched coils, and also allowing any aerial to be used without having to worry about what effect it has on the HF tuning. In order to get the greatest gain from this stage on the higher frequencies, and also to prevent instability and hand-capacity effects, it is necessary that it should be effectively screened. This is taken care of in the manner shown, while the lay-out adopted ensures the shortest possible leads.

The detector circuit we have used is unusual in two respects—the reaction capacity is fixed at .0001 mF (C7) and actual control is by variation of the detector screen potentiometer R6. The reason for this is that the tuning is not then affected by reaction adjustment—a very bad fault on many receivers at the higher frequencies—while the absence of a variable reaction condenser helps to improve lay-out; a secondary result is that the detector is automatically operated in its most sensitive condition. We might have used cathode regeneration, but the drawback here is that a filament choke is necessary.

The other point about this part of the circuit is the use of a small split-stator (or twin) condenser C6 for band-spreading. The two stators are connected across the tuned circuit, one to the grid end of the coil and the other to earth, but the rotor is left free. The result is absolutely noiseless action, as there is no rotor connection, and the absence of a pigtail or other source of variable contact makes tuning easier and smoother on the frequencies above 14 Mc. The value of this split-stator condenser, 30 mmF, has been chosen so that the 7 Mc amateur band is covered by the whole 180-degree movement of the main tuning dial. The coverage for 14 Mc is about half this, and 28 Mc two-thirds or more, while both 3.5 and 1.7 Mc can be comfortably tuned on the band-setter C5, using C6 as a vernier.

Notice the two condensers C9 and C10 from detector screen to earth—one of them looks as if it is wasting its time. Actually, however, they are both necessary. C9, .006 mF, is the right mean value for an HF by-pass over the frequency-range to be covered, while C10, 2 mF, acts as a silencer for the travelling arm of the potentiometer. Leaving one or other out won't do any good at all.

The LF end, using a Hivac Y.220 output valve, is impedance-coupled to the detector, resulting in a good match and high gain. In fact, the signal strength "full out" is surprising, and "phones on the table" reception is easily possible on all but the weaker DX signals.

graph of the chassis should be studied in order to identify and locate the various components, and be careful to mount the valve- and coil-holders so that they appear as shown in this photograph—otherwise the wiring will go wrong.

Neglecting for the moment that uncomfortable-looking bend in the band-set condenser drive, there are one or two constructional points to note carefully. C1 must be insulated from the chassis, and ebonite bushes for the purpose are supplied with the mounting bracket. These are a bit tight for the condenser used, and it will be necessary to reamer them out a little to get an easy fit. Also, the back-locking nut of the bearing on the condenser will have to be taken off to give enough depth of thread for the fixing nut to get a grip. All this is quite easy, and will be evident on inspection of the components. It also shows in the photograph.

Looking at the close-up of the HF stage, the black blob to the right and above C1 is C2, the HF stage by-pass condenser, which earths to the chassis at the hole provided in the screen.

Next, there is the band-spreader C6, which is the split-stator condenser already discussed. Its rotor must be insulated from the chassis, hence a B.T.S. mounting bracket is used. The centre-line of the drive from the J.B. main tuning dial does not quite hit off the spindle of C6, so that the bracket holding the latter is raised off the chassis by the thickness of one 6.BA. nut on each fixing screw securing the

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*The Magazine designs an easily-constructed band-spread receiver covering 9-180 metres, particularly suitable for amateur reception*

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Other general points about the circuit are the use of Hivac SG.220.SW valves for both HF and detector positions—these having a ceramic base and the grid to the top cap—decoupling in every HT lead before the LF stage, this being a very necessary precaution (which also allows the set to be fed from one high-voltage tapping and thus further reduces the likelihood of audio back coupling), choke-filter output and complete HF by-passing. We were particularly careful about the latter in regard to the choice of capacities, which in any case can only be an average value, as previously mentioned.

The set will operate a speaker quite easily, but where the moving coil type is used, it will be necessary to fit a matching transformer if one is not incorporated in the speaker assembly.

### ● Construction

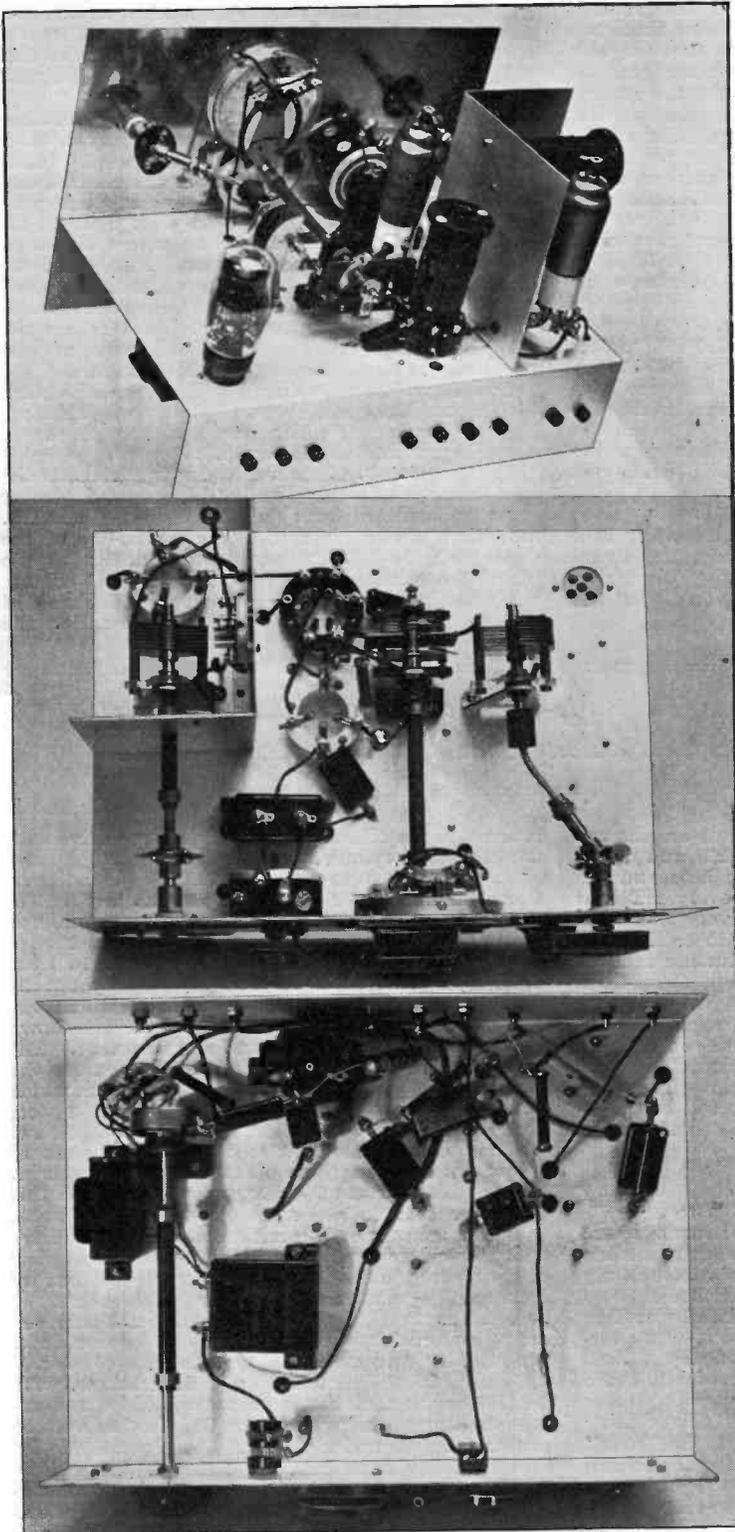
The photographs show the general arrangement quite clearly and, as we have said, arrangements have been made for the production of a completely drilled panel and chassis for the convenience of those readers who do not feel like making their own. This is being supplied by Messrs. Peto-Scott, and overall dimensions are: Panel, 14-ins. long by 9½-ins. high; chassis width, 10-ins., depth of sub-space 3¼-ins.

The specified components will fit this drilling accurately, the holes that are found to be "over" after everything has been mounted being for chassis connections and leads going down into the sub-space, of which there are only nine. The plan-view photo-

graph of the chassis should be studied in order to identify and locate the various components, and be careful to mount the valve- and coil-holders so that they appear as shown in this photograph—otherwise the wiring will go wrong.

Now we come to C5, the band-set condenser, which puzzled us for a bit owing to the fact that in the interests of efficiency it should be as near as possible to C6 (in order to shorten the lead) though in so doing it was evident its drive would foul the main dial. Eddystone showed us the way out by producing their new flexible-wire drive, which can be bent into even funnier shapes than the one shown in the photograph. And it will still turn true. The wire must be cut to a length of 1¼-ins. from the boss, this being done by taking off the union which fixes to the condenser, holding the wire in a vice, and performing the operation with a sharp hacksaw. As the twisted wire tends to uncoil, it is necessary to enlarge its fixing hole a little to get it back in. To complete this angle-drive, it is essential in this particular case to get extra "flex" on the whole thing by using a J.B. flexible coupler at the drive end. These couplers are particularly useful in view of their exceptional pliability—so much so, that by turning the mounting of C5 through about 60 degrees, so that its spindle is looking towards the drive, an ordinary extension rod can be cut down and used instead of the Eddystone wire coupler.

C1 and C5 are mounted on J.B. brackets, with flexible couplers of the same make, Eddystone extension controls being used for C1, C6, the volume control R8 (see under view) and the special one for C5 as already described. In fixing C1, it will be found necessary to cut down to 2¼-ins. both the bakelite tube and the brass insert on the Eddystone



extension set. Slow motion is fitted, again by means of Eddy-stone driving heads and dial assemblies, to both C1 and C5. The mounting of R8 will be clear from the under-chassis photograph; remember that a B.T.S. bracket must be used here, to get both the correct height and the required insulation.

The fixing of all the other components can be followed from the various photographs; C10 is immediately in front of the Varley screen resistor R6, above the chassis, while two views show that the main dial lamp-holders have to be wired in on both sides, since they are insulated from each other and the dial itself. The black insulators which appear in nine places in the chassis under-view are rubber grommets (Bulgin), which go into the  $\frac{1}{4}$ -in. holes drilled for them. They can be worked in with a small screw-driver, and lap the chassis on both sides, thus providing extra insulation for the wiring going through to the sub-space. One is also used in the same way for the lead through the screen.

The two LF chokes are beneath the chassis, Ch2 being that closest to the volume control and LF valveholder, and Ch1 to the right, where the HF choke can also be seen.

#### ● Panel Arrangement

This is shown in the heading photograph, the HF stage tuning condenser being on the left, the next knob is the reaction resistor, followed by the main tuning dial, J.B. dual-ratio with sensible knobs, and band-set condenser C5. Along the bottom, in order from left to right, are the filament switch, 'phone jack and volume control. The tops of HF and detector valves are also just visible.

*The top picture is a half-rear view of the "Amateur Three," with everything in place. Coils in position are for the 12-26 metre range. The twin condenser near the detector coil is C6, the band-spreader.*

*Centre photograph shows the placing of all over-chassis components. Note the HF stage coil holder mounted on the side of the screen. The band-set C5, on the extreme right, earths through its mounting.*

*The lower view pictures what the receiver should look like underneath. Leads to the insulated sockets along the rear panel should be soldered.*

The only other point to mention as regards construction is the order of fixing of the Clix insulated sockets on the rear panel. Looking at the appropriate photograph, and reading from left to right, we have LT minus, GB minus (LF), GB plus, GB minus (HF), LT plus, HT minus, HT plus, earth and aerial. These sockets are complete with corresponding plugs, resulting in a neat row of connections.

### ● Wiring

This again will be quite easy to follow from the circuit and different views. It is carried out in Bulgin "Quikwyre," the insulation of which can be slipped back to get at the ready-tinned wire. Note that the lay-out and components chosen ensures all the HF wiring being kept above the chassis, with only feed leads and LF connections underneath. This helps with stability and is one of the reasons why even on ten metres, there is a total absence of hand-capacity with this receiver.

In the circuit diagram, it will be seen that the base-line is shown heavier than the rest; this represents the chassis, to which all "earthy ends" should be taken direct at the nearest convenient point. The actual connection is made by bolting, and  $\frac{1}{4}$ -in. 6.BA screws and nuts are likewise used for bringing together condenser tags with resistor wire-ends, or as the case may be. This minimises the soldering required.

In two cases, those for C7 and C9—both visible in over-chassis views—holes are specially provided to earth these condensers, as there is not one handy. C9 is connected between the screen terminal of the detector valve-holder and the chassis, while C7 shows in the photograph taken from the back of the set as the fixed condenser between the detector coil-holder, earthing just below the spindle of the split-stator tuning condenser. Note also in this view that the HF choke wire-end is soldered to the appropriate pin on the coil-holder; the rubber grommet nearest the rear edge of chassis shows where this lead comes through.

The close-up photograph on this page makes the wiring of the HF stage clear; if the coil were removed, it would be seen that its holder is mounted so that the grid terminal is vertically upwards. The (anode) pin immediately below goes straight to the aerial—that is the lead behind the middle of the tuning condenser—while the two filament terminals of the holder are connected together, and so to the tuning condenser rotor and bias. The .006 mF bypass condenser comes between this same rotor lug and the screen.

The B.T.S. coils specified are packed in wrappers which give the base connections, so that what cannot be readily seen from the photographs can be taken from these diagrams.

A final point about the wiring is that both R6 and R8 are connected so that clockwise movement increases reaction and volume respectively, while it is important to make sure that the grid-leak R4 returns to LT positive.

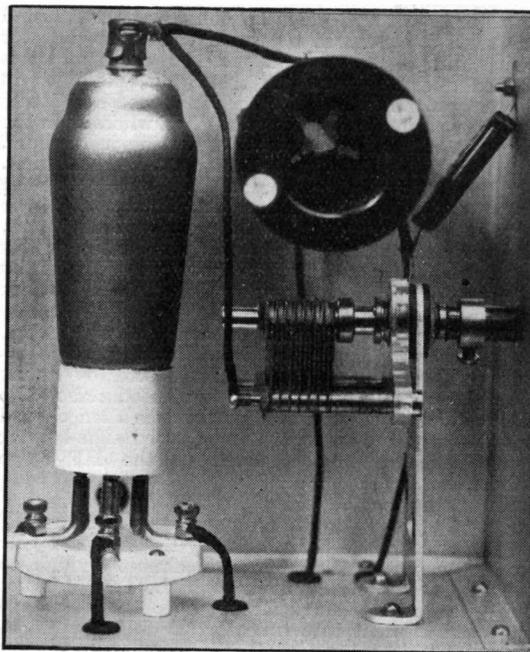
### ● Operation

With the bias and HT supplies shown in the circuit diagram, the total current consumption is  $4\frac{1}{2}$  mA only! Yet signal strength on an average commercial CW station was overpowering on 'phones with the volume control about half-open. We were a little surprised at this ourselves, as with 120 volts

HT and -6v. on the grid, the Y.220 is held right back. We therefore carried out a short HT/bias test, with the results shown in the following table. The HF stage was given its correct bias of  $-1\frac{1}{2}$  volts under all conditions:

HT V.	LF Bias	Total mA
120	-6	$4\frac{1}{2}$
	$-4\frac{1}{2}$	6
140	-6	$7\frac{1}{2}$
	$-4\frac{1}{2}$	10
150	-6	$9\frac{1}{2}$
	$-4\frac{1}{2}$	$12\frac{1}{2}$

Under all conditions, reaction was smooth and silent, and signal strength at its best with 150 volts HT and -6 volts bias, giving a total consumption of 10 mA. Increasing bias further resulted in a noticeable drop in output. With 120 volts HT and -6 volts bias, signal strength on the lower frequency bands was less by only a scarcely perceptible amount



Close-up of the HF stage. Note the insulating bushes on C1, the HF tuning condenser.

compared with the higher voltage, but on 28 Mc, it was evident that the detector would be better with something like 130-140 volts on the plate.

Taking it all round, therefore, it can be said that the receiver behaves extremely well with 120 volts and the higher bias, when the consumption is only  $4\frac{1}{2}$  mA, but for best results, 150 volts should be used. In either case, it will not be necessary to open the volume control right out on the average signal when using headphones.

The actual tuning of the set is perfectly simple when it is grasped that C6, the split stator band-spreader, is the main control. The table on the next page gives the dial settings for the various

amateur bands as determined on our model, though these will change slightly in individual cases. Note that these readings assume finding the LF end of the various bands, with the main condenser, C6, all-in, and then tuning across the band by rotating C6 towards zero; on 1.7 and 3.5 Mc, the main condensers are used for actual tuning, with the band-spreader as a vernier or to search parts of these bands. This is, obviously, because a condenser which just covers 7 Mc with a bit to spare is not large enough to tune right over 1.7 Mc. On these lower frequency bands of 1.7 and 3.5 Mc, the value of C1 and C5 is such that, combined with the slow-motion fitted, easy and selective tuning is possible.

It will be found that a given signal can be received with the HF condenser right off tune, but when C1 is adjusted to peak the signal, a large increase in signal strength results; also, that with HF and detector circuits in tune, a reaction peak effect is obtained. That is to say, with the detector side of the tuning at a given setting, say 65 degrees on C5 and anything on C6 (which is very much smaller in comparison), and the reaction control set so that the detector is just not oscillating, on swinging C1 round the scale a point will be found where the detector comes into oscillation and goes out again as C1 is turned on. The width of this peak, reckoned in degrees on the dial of C1, can be reduced by cutting down reaction, till a point is reached where with the two condensers dead in tune, oscillation just occurs. Then the receiver is in its most sensitive condition.

When tuning across the range of any particular set of coils, it will be found that if C1 and C5 are kept in step after this reaction peak has been found, the reaction setting on R6 will hold more or less constant. This applies particularly to reception on the low-frequency amateur bands; on 1.7 Mc, both condensers would be used in this way.

For amateur band reception on 7, 14 and 28 Mc, it is better to operate rather differently. The required band is located on the band-setter by tuning to its LF edge and the HF stage resonated in the manner described above. Searching is then carried out on the band-spreader, any desired signal being strengthened up by a touch to the HF stage condenser.

The point to get hold of here is that as the frequency increases, so the resonant peak of the HF stage flattens; in other words, by the time one gets to 28 Mc, one setting of C1 is almost enough to resonate the whole band—though the tuning is not quite so flat as that! Hence, once the HF stage has been brought into tune for the LF edge of 14 Mc, say, this setting of that particular condenser will be found not to require much alteration for peaking at the HF end.

This might be supposed to indicate that tuning the HF stage is hardly worth while—to which understandable contention the answer is that even if the tuning appears flattish over small portions of the total tuning range (and 14 Mc is small in relation to the range actually tunable on that particular pair of coils), there is still a very considerable gain in signal strength by being able to resonate the HF stage somewhere near the desired frequency. This is easily demonstrated by tuning in any signal on the detector side, at about half-scale on C5 and with

C1 at zero or maximum, and then bringing C1 into tune. Up comes the strength!

All this may sound very complicated, but when you've got the set going and have sorted out the operating data given here—supposing you are unaccustomed to a two-circuit receiver or a tuned HF stage—you will find it's quite all easy and straightforward; nothing in it, and anyway this receiver is practically single-control on the HF bands.

One final point—give the set and yourself a chance by using a good pair of 'phones. We have specified headphones of 8,000 ohms resistance because they give the best possible match with the output. The circuit is balanced right through to the 'phone jack, so if you don't use Brown's as suggested, see if a matching transformer improves results with the ones you have.

#### CALIBRATION POINTS FOR THE "AMATEUR THREE"

Band	Coils	HF C1 Dial	B-set C5 Dial	Coverage	
				B-spread C6 Tune	C1, C5. Tune
1.7 Mc	76-170 M.	90°	90°	vernier	30°
3.5 Mc	41-94M.	70°	65°	vernier	23°
7 Mc	22-47 M.	70°	56°	180°	-
14 Mc	12-26 M.	40°	38°	90°	-
28 Mc	9-14 M.	25°	9°	120°	-

*These points assume the LF edge of each band, hence coverage of 3.5 Mc would be from 65 to 42 degrees on C5 and 70 to 47 degrees on C1; in the same way, the coverage for 14 Mc would be from about 140 to 50 degrees on C6 alone. These figures will not necessarily hold for every individual receiver, but are near enough for locating the bands.*

We have endeavoured to give in this article a complete description which will enable readers building the set to go straight ahead with it. As the parts list on the next page will show, everything we have used is easily obtainable, and due consideration has been paid to the two very important matters of cost and quality.

As we have said in connection with other apparatus described in the Magazine, experienced constructors would probably get equally good results if they have to modify the lay-out or components used in order to suit particular requirements or parts they happen to have on hand. But we most definitely do not advise it, and naturally cannot be expected to assume any responsibility for such deviations from the design.

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## 10-WATT CRYSTAL CONTROLLED C.W. TRANSMITTER

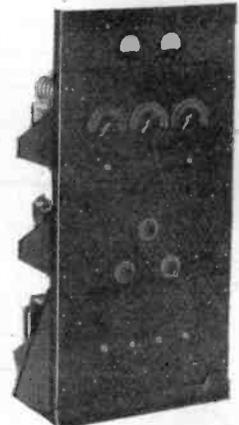


Completely mains driven. A.C., D.C. The ideal Transmitter for the beginner, any frequency required in the 7 m.c. band. Complete with 2 valves, barretter, coil, crystal, meter, and key.

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Circuit supplied for licensing purposes.

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Standard Relay rack construction is followed in three 19-in. wide panels and chassis finished black crackle.

Price, with all tubes, crystal and coils (as illustrated).

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The 25 watt rig is a 6L6 driving T20, to extremely high R.F. efficiency, which is anode modulated by a pair of 6V6's in push-pull, class AB1, giving 12 to 15 watts, with negligible harmonic distortion. The construction is similar to the 10 watt TX, being built in our small relay rack, in three 10½ in. x 19 in. units.

Standard black crackle finish. Price with all tubes, crystal and coils.

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7.5 v. 3 a., C.T. 8/6; 10 v. 3-4 v., C.T. 11/6.

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1,000v. 250 m/A. ...	...	£5. 15. 0
1,500v. 200 m/A. ...	...	£7. 15. 0
2,000v. 150 m/A. ...	...	£8. 10. 0

# More Power for 56 Mc

A discussion on the use of the Mullard TY1-50 for transmission on this band

By A. J. DEVON

WHILE MANY readers may feel that as matters stand at present, a transmitter outfit running at up to 100 watts input on 56 Mc is something of an extravagance, it is yet true that the use of rather more power than is commonly employed in this country will help us in exploring the possibilities of the band.

On the other hand, inputs of 25 or 30 watts can quite easily be obtained using standard valves—in the sense of the cheaper ones designed for amateur work on the HF bands—and there are many who consider that quite a lot in the way of exploration can be done with these lower inputs. With this view we are fully in agreement, and we have already shown in recent issues that it is a simple matter to get to 56 Mc with three valves and five tuned circuits, with reasonable inputs and high efficiency in the output stage.

However, the QRO angle should not be neglected—we mean “amateur QRO”; the Cairo Conference called one kilowatt low power on 56 Mc—and as we have recently been doing some work with the Mullard TY1-50, it is intended in this short article to discuss the circuit arrangement and practical points to be borne in mind, and in the July issue to give constructional details of a 56 Mc PA stage using this valve, together with a suitable power pack for it.

The TY1-50 is a hard triode, with both grid and plate connections brought out at the top of the glass bulb. It has an American 4-pin base, which is only of interest in so far as it brings in the 7.5 volt, 3.25 amp. LT supply, and it likes about 1,250 volts on its carbon anode on five metres. The mutual conductance is 2 mA/V, the amplification factor 10.5, and the impedance 5,250 ohms.

## ● Drive

The point which concerns us most is, of course, the drive required to get full output; with its rated dissipation of 50 watts and Class-C CW working, the safe input would be around 120 watts at 1,250 volts, giving an output of about 70-75 watts—which is quite a lot of RF on any band.

For operation under these conditions, a rectified grid drive current of something like 25-30 mA is necessary; we find that the RK-34 amplifier described last month, when driven from the Exciter, will give this with plenty to spare, so that the nett result is a QRO 56 Mc transmitter, with 100 watts in the output stage, through four valves and seven tuned circuits. A line-up of this kind is what many of us would normally expect to use to get a 100-watt final amplifier on any band. The TY1-50 is of course very suitable for operation on the lower frequencies, so that it is undoubtedly an investment for the QRO man who will wish, some time or other, to get going on 56 Mc with a stabilised rig.

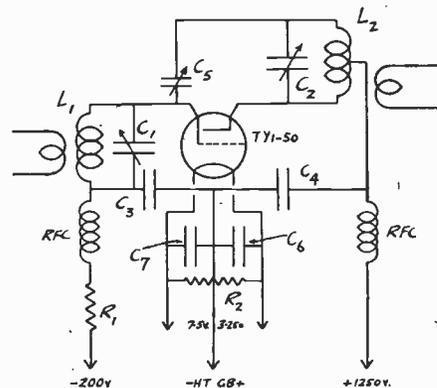
## ● Neutralisation and Bias

The stated anode-grid capacity of the TY1-50 is 2.8 mmF, which means that the actual neutralising value required will be something between 3 and 4 mmF; luckily, there are British neutralising condensers now available in the Eddystone products which will handle this at the working voltage.

The bias voltage required is, however, something of a problem. The figure of -200 shown on the circuit herewith is for Class-C CW working, which means that as a modulated Class-C amplifier, about -300 volts would be required on the grid. These voltages can be obtained from batteries in the usual way, but for stable operation, it is preferable to provide a bias voltage pack. The power unit for the amplifier, which is built from All-Power components as regards transformers and smoothing chokes and uses Osram mercury-vapour rectifiers in a full-wave circuit, therefore incorporates a bias voltage supply giving up to -350 volts by means of a valve rectifier. This QRO pack, which obviously has many other applications, will be illustrated and described more fully next month.

## ● Circuit

This is quite straightforward, in spite of the way it is drawn; we show it like this because that is how the valve looks. As in all 56 Mc apparatus,



Circuit of the QRO 56 Mc PA using the TY1-50, fully discussed in the text.

the points to watch are lay-out and the avoidance of coupling between grid and plate circuits. We have varied our lay-out several times, and the result, though unconventional in appearance, gives excellent results and complete stability.

It is essential to get all leads as short as possible, with low-C—not more than about 15 mmF—in both grid and plate capacities C1 and C2. The former

affects the drive and the latter the efficiency, and it is surprising the percentage difference resulting from over-long leads or high-C. By-pass condensers C3 and C4 are of the utmost importance; they must both be mica-type, .0001 mF, and it should be noted that C4 has to withstand a peak RF voltage of something like 2,500. C5 is the neutralising condenser, and C6, C7 the filament by-pass capacities, always necessary with directly-heated valves on the high frequencies. R2 is for centre-tapping the filament; it should be done in this manner, as near as possible to the valve, rather than on the heater transformer winding.

The bias resistor R1 is 5,000 ohms and rated 15 watts, while the chokes RFC in both grid and plate leads keep RF out of the supply side.

The only other point to mention for the moment is the inductance values; at present, we are using an Eddystone Microdenser for C1, with about 17 uuF actual capacity and a 4-turn coil. On the plate side, the coil is 5 turns, and the condenser C2 a "J.B." special, consisting of one of their single-ended USW types with keramot insulation and the spacing increased to 3/16th-ins. As both sides are "hot," an extension control is necessary for adjustment. The capacity range of this condenser is 5 uuF minimum and 17.5 uuF maximum.

One final point concerns a query arising from last month's article on the RK.34 PA. Under the conditions stated, the no-load plate current (resonance minimum) is 8 mA with 450 volts on the anodes of the valve. The figure of 47 mA at the foot of col. 1, page 21 in the May issue is the plate current with the aerial on, not off!

And so—till next month,

## AT THE RIGHT PRICE



The new G.E.C. type 4051 cathode-ray tube, illustrated herewith, is the sort of thing for which amateurs have been looking for a long time. Taking the two most important points first, its price is 45s. and the screen diameter 1½-ins.

Further attractive features are the low operating voltage, 500 volts maximum, a reasonable cathode rating of 0.9 amps. at 4 volts, and good sensitivity. Two sets of deflector plates are provided, so that this tube will do everything that can be done on the larger types, the only difference being one of scale. The screen fluorescence is green, and the base-fitting standard B.V.A. 9-pin.

The 4051 can be used under any of the conditions which we have described in past issues relating to cathode-ray tubes in general; it has thus many applications for the experimenter.

We shall shortly be describing a complete unit built round this new G.E.C. production, which is obtainable from The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

## A DUAL PURPOSE SUPERHETERODYNE

THIS IS A SET which will appeal particularly to the listener who wants good speaker results on a selection of what is going on the long-, medium- and short-wave bands.

The circuit is somewhat ambitious for this type of receiver, even though it is very reasonably priced—RF, FC, IF, BO, D-D Pen. 2nd detector incorporating AVC and output in one valve, and rectifier. The actual wave-ranges covered are in four steps: 10-25, 22-65, 200-550 and 800-2,000 metres. This gives all the broadcasting and the 7, 14 and 28 Mc amateur bands.

There are various interesting features about the general design of the set which are worth mentioning. The provision of a separate beat-oscillator enables CW reception to be obtained, while the image rejection and selectivity factors are good due to the tuned RF stage, which is used on all four ranges. The A.V.C. action can be brought in or switched out at will, and separate audio and RF gain controls are provided. The latter has a form of "tune-standby" switch incorporated, in that at minimum setting of the control, HT is taken off the whole receiver, i.e., the heaters only are left running.

The lay-out of the components is very well arranged, and from the mechanical point of view, the design of the set leaves very little to be desired. The tuning scale is of a generous size, and accurately calibrated in metres. Other points to notice are the suspension of the tuner unit in rubber to overcome microphony, the provision of both di-pole and plain aerial input connections, a headphone jack, and a built-in speaker.

The finish is pleasing, as the receiver is housed in a crackle-cast metal cabinet.

As to results, we found the set performed up to expectations for one of this type. A large number of amateurs on both CW and 'phone were well received on the speaker, using the 7 and 14 Mc bands. DX on "ten" was such as not to make it possible for us to give it a fair test, though we did hear several W stations under what were obviously very poor conditions. A noticeable point for comment was the quiet background and the absence of hum and electrical noise when using 'phones.

For general listening, where band-spread it not perhaps a prime necessity and the lack of the 1.7 and 3.5 Mc amateur ranges is of secondary importance, the set can be recommended. We feel, however, that to deserve its title of "Communication" this receiver should have been fitted with electrical band-spread, full coverage of the five amateur bands, and, as a minor convenience, the "tune-standby" switch arranged separately from all other controls. Provision of a beat-oscillator only is scarcely enough to make it suitable for amateur-station working.

The above may be regarded as rather carping criticism when we say that the price of the set, complete with valves, is only 11½ guineas. It is designed for operation from 200-250 volt AC mains, 40-100 cycles, is listed as the "Dual Purpose Communication Receiver," and is obtainable on hire-purchase if desired from Messrs. Peto-Scott Co., Ltd., 77, City Road, London, E.C.1.

# Map Your Radiation

An interesting method of checking radiation characteristics

By ARTHUR C. GEE (G2UK)

Do you know exactly where your signals go? In what direction does that new aerial of yours really radiate? Is it behaving according to theory or does that sharp bend in your 132-footer upset the calculations?

Questions such as these put to a number of transmitting amateurs produced answers which showed that many would welcome a simple method of getting some idea of the directional properties of their radiating systems without having to go to the trouble of plotting field strengths with a field-strength meter.

Some experiments recently conducted at this station in mapping the field of a 66-foot aerial used on 7 Mc may be helpful to readers who are interested in the important subject of aerial radiation.

No field-strength meter was available and even if it had been, the location of the station does not lend itself to scrambling over the adjoining back gardens to plot radiation diagrams; so another method had to be evolved.

A study of the log book revealed that during the previous three months quite a number of R7 and R8 reports had been obtained from as far afield as Spain and Portugal in one direction and Finland in the other. The best D report was R6, but no Irish stations at all had been contacted. A bit of DX had been done but always either late at night or early in the morning when conditions were favourable for such work, whereas the other reports were obtained in the late afternoon or early evening. Also, this DX was worked on much higher power than that used for the "local" QSO's.

So it was decided that during the next three months, the input to the PA would be cut down to exactly ten watts and a series of tests carried out each evening. All QSO's which gave an R7 or R8 report would be shown by means of a pin stuck in a map at the QRA of that station. To this end, a map of Europe was pasted to a piece of three-ply wood and a stock of "map marking" pins laid in. Then the fun began.

On as many evenings as possible the transmitter was put on the air with an honest-to-goodness ten watts CW. The aerial used was 66 feet, end-fed, running NW and SE. In spite of using only ten watts instead of the usual twenty-five, signal strength reports kept well up, and during the three months a number of R7 and R8 reports were received. All those within a hundred miles were ignored and the rest were located on the map.

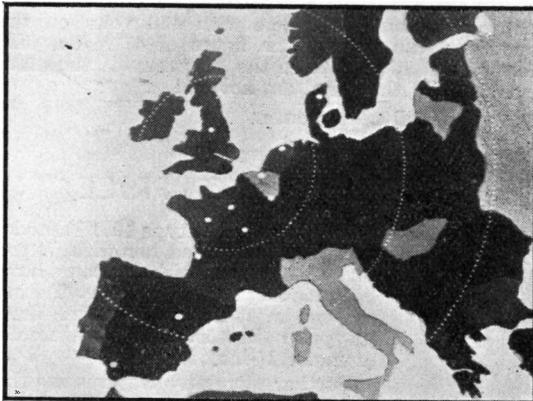
## ● Results

By the end of the second month the map began to look like the one illustrated herewith. The

white line represents the direction of the aerial and, as can be seen, the best reports come from stations broadside on to the aerial. This is what one would expect from theory as a half-wave antenna radiates best at right angles to its length if suspended free from nearby screening objects.

During the last month of the tests, it was decided to look out for some low power DX. CN8AC came back to a call one evening and on another occasion a station in Moscow replied to a test call; several reports were also received from the USSR. Attempts to hook an SV or SU were, however, unsuccessful, and from all this it was evident the aerial was radiating in a NE-SW direction rather than NW-SE.

To have made the experiment complete it would have been ideal if the radiating system could have been moved through 90° and another set of QSO's plotted with the aerial at right angles to the first position, but unfortunately this was not possible.



If large headed pins are used, the final map can be photographed, the resulting prints being valuable and accurate records of the radiation characteristics of the various aerials used from time to time.

The plotting of radiation characteristics is one of the most absorbing and instructive factors in experimental work on aerials. There are endless types which can be tried out, in all sorts of positions and under almost as many feed conditions. While for the lower frequency bands like 7 and 14 Mc most amateurs are necessarily restricted to horizontal erection, it is on 28 and 56 Mc that one has scope for playing about with the plane of the aerial . . . and its angle of tilt has a great deal to do with results on any band.

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# Reception on the 1.7 Mc Band

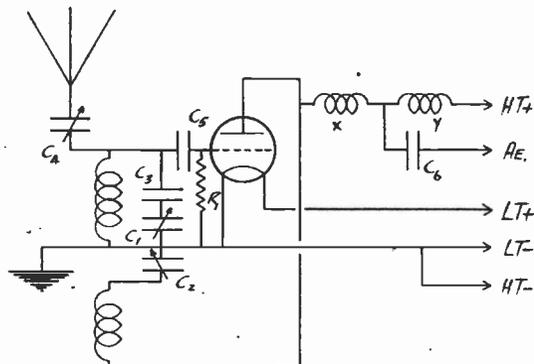
By J. P. HAWKER, 2BUH

THERE ARE comparatively few listeners to-day who are able to receive signals between 3.5 and 1.5 Mc, and interesting transmissions are thereby missed. The number of stations operating between these frequencies is considerable, as apart from the amateurs, there are the Police and Coast Stations and innumerable trawlers. While many listeners boast of having received the American 32 Mc Police, how many are there who have heard their British counterparts on 2.2 Mc? Many interesting messages can be heard from these stations daily; try listening about 8 p.m.

One of the interesting features of this wave-range is that, contrary to the HF bands, the stations best heard are the nearest. Thus, a listener can keep in touch with local activity and on an average Sunday morning 15 to 20 amateurs can be received, most of whom welcome comparative reports and QSL promptly.

## ● A suitable Converter

With these points in mind, the writer has designed a 1.7 Mc converter, which can be used with almost any modern receiver. The junk box or an old



A simple converter circuit as discussed in this article

medium-wave one valver will provide most of the components, and below 2 Mc there is no real need for ceramic insulation on condensers and valve holders. Compared with HF receivers the layout is unimportant and the converter can be made to fit almost any handy cabinet.

The circuit is very simple but if good results are to be obtained care has to be taken over the tuning system. The coil should be wound on a former of diameter not less than 1½-ins, and an old dual range coil has been successfully adapted for the purpose by stripping off the windings. The grid coil consists of 25 turns and the reaction 15 turns, but some variation may be necessary. For an aerial coupling condenser .0001 mF is a good value. The tuning condenser should either be a .0002 mF or a .0005 mF in series with a .0003 mF fixed condenser. The two high frequency chokes are important, and X should be of short wave type, and can be made up of 100 turns on a 1 in. former. Choke Y should be

of the ordinary medium and long wave type. The other values are: C2, .0003 mF; C5, .0005 mF; R1, 2 Megohms; C6, .002 mF.

## ● Operation

In operating the converter the BC receiver should be tuned to about 2,000 metres, and it will be found that, as in any such arrangement, every station will be received at two points on the dial, separated by twice the intermediate frequency. Thus heterodyne whistles are a little troublesome. However, any particular station can be cleared by altering the IF, or BC receiver tuning, from 150 kc to (say) 165 kc. For CW reception, a good plan is to adjust the main set to Hilversum and then to beat the required signal against it. Finally it must be remembered that no signals can be received unless the converter is in oscillation.

## NEW BRITISH COMPONENTS

We have recently seen some excellent parts for amateur short-wave work, both transmission and reception, in the latest additions to the Eddystone range, which is already very extensive.

Two items, the midget split-stator condenser and pillar neutralising condenser, have already been individually advertised in this Magazine, but the flexible-wire coupler, No. 1096, deserves special mention. This driving unit is designed for front-panel control of components which are awkwardly located—as in the case of, say, a reaction condenser underneath the chassis which it is necessary to couple to a dial on the panel and above chassis level. The cable, which is 5½-ins. long, will drive through 90 degrees, and there is the minimum of “whip.” The necessary couplings are provided at both component and panel end, and Eddystone slow-motion assemblies fit it, of course. At 3s. 6d., this flexible coupler is a good buy.

To the transmitter, the frequentite former and base units will be of particular interest. The former is 5-ins. long by 2½-ins. outside diameter, spirally grooved to take 26 turns of any gauge of wire up to No. 12. A thoughtful point is that holes are provided for tappings. To go with this there is a prong-base with five heavy plugs, and a mounting base carrying a similar number of sockets. The price of the coil-former, which can be used alone, is 4s.; the prong-base costs 3s. 6d. and the mount 3s. 9d. Coils for any band up to 3.5 Mc, with taps and link couplings, can be accommodated on the complete assembly.

A new type of pillar insulator is also introduced. This stands 3-ins. high, and has a socket fitting to take the heavy plugs which have been standardised for the coil-former already mentioned. The insulation resistance is higher than even the most ambitious amateur would hope to provide—for these pillar stand-offs are tested at 30,000 volts. The price is 1s. 8d. complete with a loose plug; a variation is the same insulator with wing-nut connection, costing 1s. 6d.

Then there is the unique midget air-trimmer, having a capacity range of 1 to 30 mmF, and which works on an entirely new principle. The over-all size is 1½-ins. by ½-in., and it can be mounted in the run of the wiring. The price is 1s. 3d. only.

All these and many other components are described in the 1938 Eddystone catalogue, which can be had for the asking by writing Messrs. Stratton & Co., Ltd., Bromsgrove Street, Birmingham, 5.



wired across R2 for plugging the microphone and still further left is a Clix control panel for gramophone entry—these are not shown in the theoretical circuit but both are wired in parallel across R2 and the microphone circuit from this point is outside the actual amplifier. The Clix control makes it possible to cut off the pick-up input by a twist of the plug; any tone control for the gramophone is added outside the amplifier.

Due regard must be paid to wiring, for high-gain amplifiers are prone to hum pick-up. If good gear is used and the grids kept in the clear this trouble should not arise. In this particular unit very bad hum was at first encountered and a hectic time spent in tracing it seemed to offer no solution. First suspect was the potentiometer because the switch incorporated was used for the mains. The wires were taken away from this point but not the slightest improvement was effected, which says something for "Lab" pots! Another condenser across the smoothing reduced the annoyance considerably and eventually a fault in the wiring showed that the anodes were connected to the wrong side of the smoothing choke!

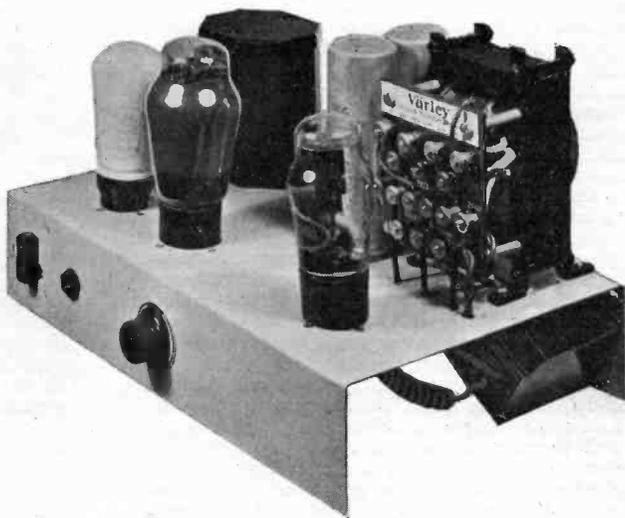
The two main points to watch for are the screening with earthed cable of all leads up to the first grid and the distance between microphone transformer and amplifier. If you would know how bad hum can be just try standing the microphone transformer on the chassis—you won't try it twice!

With the accompanying list of parts and photographs construction should be easy and if the complete scheme is followed exactly you will have a dead silent amplifier that has multiple usefulness in any station. A neat appearance is finished off with a couple of coats of Woolworth's grey Chinese lacquer which should be put on the aluminium after all holes are drilled. And use more than this coating to insulate the condenser nearest the rectifier (C6); a pad of paxolin above the chassis hole sufficed in the original.

It is not suggested that condenser and resistance values are final and no doubt improvements could be made if more output is required. However, these values work out very well in my case. It may also be suggested that the "Varimatch" transformer is a luxury where a 1:1 would perhaps do. The answer is that as the former will give practically any matching combination from a 200- to 29,800-ohm secondary almost any load can be fed, thus further enhancing the utility of the amplifier.

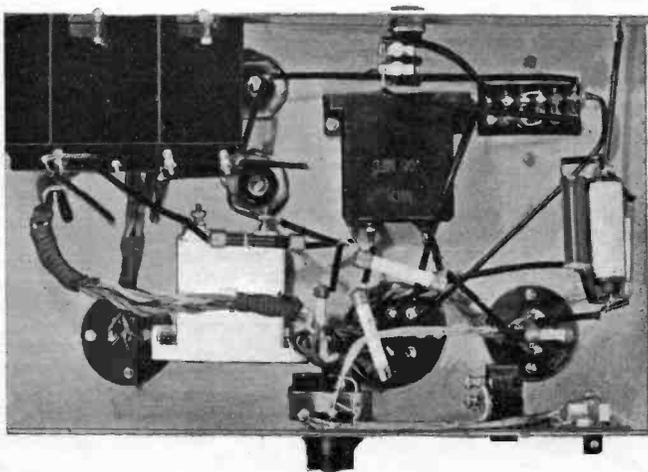
### ● Better results

As so often happens with the beginner, but not without disadvantage, we go back to our original efforts to modulate the Hartley and this time feed an amplified speech input at the same point as before; that is, the output is connected across the condenser C4 in the original diagram on page 14 of our March issue. This time things *did*



### PARTS USED FOR THE AMPLIFIER.

- Transverse-current microphone, separate transformer (Webbs). The drain from a 6-volt battery is about 20 mA, so it should be switched or disconnected at B. V1, AC/HL; V2, AC/2/Pen; (Mazda). V3, Osram U12. Chokes (Varley DP23), 20 henry. Output transformer (Webbs "Varimatch" VM-O). R1, 10,000 ohm; Rs, .25 meg. potentiometer with single-pole switch 'S' ("Lab," Radio Resistor Co., Ltd.); R3, 1,000; R4, 10,000; R5, 50,000; R6, .5 megohm; R7, 1,000; R8 150 (3 watt). C1, C4, 25 mF (Dubilier type FT, 25-volt working); C2, 1 mF (Lissen); C3, .05 mF (Dubilier 50); C5, C6, (Dubilier 902, 8 mF). Mains transformer, 250 volts at 60 mA; 4 v. 2 a; 4 v. 4a. (Varley EP20, consumption 40 watts). Two Igranic jacks and plugs (Webbs); one Clix control panel. (Microphone input, output and gramo' input respectively). Two 5-pin and one 7-pin valve-holders (Clix chassis mounting—centre pin on rectifier not used). Aluminium chassis 12 x 7½ x 2½ inches (E. Paroussi).



happen: On speech peaks the AA lamp flickered, simultaneously with kicks of about 25 per cent. increase on the mA meter. If a sustained whistle could be maintained long enough the aerial ammeter reading would also increase, but due to lack of wind or lack of practice it was impossible to get correctly the percentage of modulation; full control is indicated by a rise on the aerial ammeter of about 22.5 per cent. and it should be understood that this means *theoretical 100 per cent. modulation* for a transmitter like the Hartley. 50 per cent. average depth is ample, so that ammeter peak readings of plus 15 per cent. will be near enough. Anyway, it was somewhere near this figure and there was now some method of making adjustments all round whilst playing a record.

The receiver was transported to various points with a view to testing quality and after deciding upon a position just outside the room (to reduce pick-up of mains noise, etc.) it was easy to dodge in and out during each adjustment, which consisted of coil tapping and screen voltage variations, until the now interested family had to admit really good quality and also that the wayward one was not so "crackers" after all, though he still whistles peculiar dits and dahs between his teeth!

So far the two methods of obtaining modulation have been via the grid, and once again this month a *faux pas* has been committed in that suppressor modulation was contemplated until it was realised that the valve used in the transmitter had no external connection for this! However, better results over the grid method were obtained by breaking the screen lead and insertion here of the amplifier output. The same meter indications are apparent but the transmitter is more lively. According to best circle gossip this should not be as good as grid modulation and for the time being we must leave it at that. The impedance tapping used for grid control was 6,800 ohms and for screen modulation about 15,000 to 20,000 ohms.

The literature available with the "Varimatch" is in the form of a treatise on matching which readers are advised to apply for from Messrs. Webbs, at the same time mention of this note will ensure the correct pamphlet being sent.

In all these tests, frequency modulation was carefully avoided and a rough way to test for this is to listen at zero beat on the monitor. If speech is clear at this setting and no wandering of the carrier takes place then it can be assumed that reasonable frequency stability is attained; no guide to quality is possible by using this form of monitoring and it is best to use a 'phone monitor, details of which will be given next month—in the intervening period a receiver tuned to the transmitter band will serve.

The method of modulation used here is very effective, but there are several other systems, such as anode modulation, or choke control. In this case, the output side of the matching transformer would be placed in series with the HT feed to the oscillator. After experimenting on the lines offered above readers will find these methods will come easier when the time arrives for deeper exploration. After all, we set out to make a one-valve transmitter that could be adapted for 'phone working and having done so, we come to the next stage of our experience, which is to examine forms of crystal control on the higher frequencies.

\* \* \* \*

There is just room for one reply of general interest to the question: "What is an approved log?" Holders of AA licences will of course know the GPO requirements as to recording all experiments in a book (not loose leaf), but no information on the licence shows the form a log may take, so here is a facsimile of G6DS's copyright, sold by him at 3s. 9d. each 350-page book. Copyright need not prevent a reader from writing out his own book providing there is no question of its sale—a laborious task that is not worth this effort anyway.

Observations

STATION LOG

Page No.

DATE	G.M.T.	Called	Called by	CW Fone	Freq.	His RST	My RST	Message Received or other Remarks	Dial Setting	QSL	
										In	Out

WE HEAR THAT . . .

The Post Office has recently been asking amateurs thought not to be active if they still want their licences. We can think of no comment to go with this.

\* \* \* \*

VK2NO, Sydney, has irrefutable proof that his 56 Mc signals were in fact heard in North Wales last year. The report of this reception roused a great deal of controversy, the echoes of which have not died down yet. Don Knock has been good enough to explain the details, which are such as to convince us also that the reception was genuine.

\* \* \* \*

The licence curves are rising so rapidly that the authorities are beginning to wonder where it is all going to end, and if the amateurs will eventually QRM themselves out of existence. In the mean-

time, let us have cleaner signals, better operating, good receivers and snappy QSO's—to say nothing of more occupancy of the lesser used bands like 1.7 and 56 Mc.

\* \* \* \*

Messrs. Bulgins have now got a very useful range of vibrator packs listed, for inputs of 4-, 6- and 12-volts, and giving up to 50 mA at 150 volts, ready smoothed, and in certain types efficiencies up to 90 per cent. are obtainable. These packs are conservatively rated; though a life of 1,000 hours only is specifically claimed, many give up to two or even three thousand working hours. Electrical noise-suppression and mechanical silence are both considerably better with these new types, and it is probably safe to say the vibrator method of obtaining HT now has no equal, not only for car-radio, but for country districts and portable work generally. The new Bulgin catalogue is ready.



## ● The MacGregor Arctic Expedition

C. Gibbons of Herne Bay, Kent, requests details of W10XAD. We feel sure that he has misread this, as W10XAB is the call of the MacGregor Expedition to N.W. Greenland (OX2QY is also used). The operator is W2QY, to whom QSL's should be sent, and R. H. Greenland, 39, Kensington Road, Barnsley, tells us that the input is 400 watts. The Expedition hopes to remain at Reindeer Point for another month from the time of writing before packing up and shipping to New York. Great difficulty was experienced in setting up the station, as terrific gales blow and the aerial masts had to be held in position by piling rocks round the bases; it is not possible to dig holes in solid rock! Reg. Greenland heard K7AOC at 17.42 BST and PK4DG in Sumatra at 19.15 BST.

## ● 3.5 Mc DX

Here is some interesting news from a remote part of the world. Tan Bin Hussain, Kinta Sanitary Board, Ipoh, Perak, F.M.S., writes in with details of reception of DX 'phone on 3.5 Mc. Tan Bin challenges Bob to a 'phone contest on this band, and now read the things he has heard: W6DEP, W6HPY, W6BHF, W6ESX, W6KWT, W6JUT, HA4A, FA3QV, G5JO, G5CU, G6LK, GM5IM, GM5ST, GM6SR and GM5NW. Furthermore he has received cards from GM5NW, EI9D and SM2VP to prove his reception. I am afraid that this contest will have to wait till our winter starts, but it should be good fun!

## ● Good News

D. C. Chamberlain of Thornton Heath, Surrey, is pleased to tell us that he has received a card from VR6AY in the first batch that has arrived (there are others too, Dennis!) He describes the card as follows: "It is in several colours with a picture of the complete assembly at the top. A map appears on the bottom half showing the distances to the nearest islands. On the reverse side is a short history of the discoverers of Pitcairn." We heard that the first shipment of cards and letters to the island comprised three heavy mail bags, as much as one man could carry; the largest individual mail ever to be received! We imagine that a cargo of ink will now be required by the next boat!

## ● Shack Photo

Arthur Newall is a member of the BSWL and you will see his receivers look efficient enough to hear anything. The one in the middle is a G.E.C. 6v. battery super and on the right an Ultra S.W.2 can be seen which is used on 56 Mc, so we may get a log on this band from him! Arthur wishes to exchange SWL cards.

## ● Misread Calls

We are sorry to bring this subject up again, but it is still with us. Some of the American calls sent in will not appear in the call book for another two years or so; the latest call book shows that W6PON was the last call issued in the sixth district so "W6T" and "W6U" in the three-letter class can only be misread. W. D. Andrews, 2DHM, 5, Steep Street, Chepstow, Mon., who is annoyed that calls are misread, also reports something far more serious than this. Let us quote him: "A few months

ago a log was published in the Magazine so much like mine for that month that I went to the trouble of checking it entirely with my own—I found it agreed in every detail! A few weeks earlier I had written to the SWL who sent this log and had told him what I had received; he does not read Morse but there was a ZL in his list (the only one I had ever heard at the time). I think this proves that some of the logs submitted need not be taken too literally" (We are watching logs very closely these days.—ED.).

## ● Reporting Amateur Signals

Following on our remarks last month some interesting ideas have been sent by H. Sugden, 15, Armcliffe Terrace, Legrams Lane, Bradford. The chief concern on the part of the SWL should not be the coveted card, but rather the degree of usefulness of his report; he suggests that to be of real service the report should cover reception over a week, with a detailed account for each day. Of course, this cannot be done in the case of very rare stations, but even so, it should be possible to report on a complete contact for as long a period as possible. Mr. Sugden adopts the following complete reporting method: QSA, QRK, QSB, QRN, QRM, with call-sign of interfering station; quality and distortion (if any present) and probable cause, i.e., conditions of actual transmission; call of station worked; noise level and geographical situation at the receiving end; weather conditions with wind direction, and it is stated that the "R" figures are aural only; exact times and dates are given and the frequency band is clearly stated. W. Davey, 2, Fingal Street, Woodvale, Belfast, N.I. also suggests as an addition to the above that SWL's should report on the bad quality of stations and offer their opinion as to whether it is due to selective (high-speed) fading, or feed back from the PA, also say whether the signal is badly modulated (under or over), degree of background hum, and whether the speech lacks "top" or "bottom" or has echo. In other words, tell the transmitter exactly what you think his transmission sounds like; motto—don't be afraid to be candid.

## ● Take Cover, Mr Downing!

And talking of being candid reminds us of Desmond Downing's very forceful opinions on QSL'ing last month. W. Davey (also from Belfast) is most wrathful about it. "The collecting of QSL's is not selfish, nor is it the work of a braggart—at least, there must be a terrific number of braggarts in the kingdom if collecting QSL's constitutes such a person. According to the dictionary, a braggart is 'a person who makes vainglorious statements.' As a matter of fact, I consider the use of such a word insulting, but perhaps as Desmond is only sixteen one can forgive him. Does he not realise that it is only by competition that records are created? For many of us the mere sight of Bob Everard's logs is enough to make us don our 'phones (or switch on our loud speakers!) and try to emulate him." In other words, Mr. Davey, you mean we must prove our claims before this mundane world!

## ● Home Made Cards

Before we leave QSL's we must mention a novel idea submitted by I. W. K. Smith, 264, Malden Road, New Malden, Surrey. Over a bit of transparent paper he places a piece of tissue paper of the same size, with the bottom side covered with

wax. The two sheets are then put in a typewriter and the wax is impressed on to the transparent paper by hitting the keys hard. Any design can then be drawn on in wax and the whole is covered with black ink, which will not mark the waxed parts. The result is a perfect negative which can be used to print off as many post-card sized cards as required. He sends us an example which we can recommend to all. If you wish to insert a small "shack photo" in one corner this can easily be done by sticking a negative in a small cellophane envelope on to the card negative.

### ● Dishonest Reports

H. Willets, 1, Moorfield Grove, Tonge Moor, Bolton, Lancs., thoroughly agrees with "Another Silent Listener." He and his friends in Bolton are quite sure that many SWL's actually send a fictitious report to a rare station being worked by the station they can hear, even though they cannot find the rare station; this means that if they receive a card confirming the fact that the reported station was actually in QSO with the station they really did hear, it confirms reception that never took place. We do know that well-known British transmitters frequently get cards claiming QSO's that have never happened! The idea behind this little game is to obtain a false verification of contact with a wanted country. A transmitter is foolish who does not check all reports with his log before verifying.

### ● Pirates

Commonly known as "bootleggers," these pests will always litter the amateur bands. My remarks last month about ZAICC have brought the obvious from G. W. (Bill) Horton, 149, St. Ann's Road, Rotherham, Yorks. He says that he heard ZAICC state on the air that he originated from Albania! We know, and so does ZAICK, but until proof is forthcoming in the shape of a QSL posted in Albania, we refuse to believe that either of these stations is in that country. One of our duties in running this column is to tell you when we have good reason to think a station is bogus. Bill would like to correspond with SWL's in his district. Hugh McKinnon, Drumchastle, by Pitlochry, Scotland, asks whether licences are granted in Albania as he has heard both the above-mentioned calls. The answer is that there are still quite a number of European countries who do not issue licences to amateurs: Albania is one, Italy is another. Therefore, it is much safer for transmitters in Italy to use the Albanian prefix! F. H. Martin, 45, Cooksley Road, Redfield, Bristol, 5, has been asked by W2CC to tell readers that he has been receiving large numbers of SWL reports for 'phone reception which should go to W2ZC (2 zee cee). W2CC has never used 'phone in his life. Just another case of careless listening and consequent disappointment!

### ● Reports wanted

We are always glad to reserve space for any station requiring reports. Ted Rowley, G6TC, 29, Leason Lane, The Scotlands, Wolverhampton, was licensed last September at the age of seventeen, and he uses a 45 CO driving a 46 PA with 400 volts HT (10 watts?). He wants reports on his 7 and 1.7 Mc signals ('phone or CW). His aerial is 132-ft. straight tapped, which incidentally is frowned on by the GPO. Try tapping the aerial on to a separate tuned circuit, Ted.

John Burt, Reckitt House, Leighton Park School, Reading, has heard the rarest State of U.S.A., Nevada (6GUW, Ely), and also another rare country, VP7NC and 7NT in the Bahamas. He listens on 'phone and CW and is of the opinion that a listening contest would be unfair for many of us, as the man who could be on the whole duration of the contest would receive most stations. He likes the set-listening periods but thinks that two hours is too long. We have cut down the time this month to suit more of you who feel the same. John wants to hear from Gordon Birrell of Dundee about the stations heard in VP3, FY8 and PZ, as you will remember that Gordon heard all S. American countries except ZP and CP. I think your DX Scribe can help. VP3AA is the new licensed call of ex-3BG, 3NV. No other amateurs are known to be active in British Guiano. ZP2AC and ZP6AB have been heard in recent years, and PZ1PA is one of three or four very unlicensed stations in Surinam (Dutch Guiana); FY8AA, 8AB and 8AC are frequently heard from French Guiana.

### ● South Africa

Another "Burt," Ronald Burt, BSWL 809, 101, Railway Cottages, Salt River, Cape Town, S. Africa, is a welcome reporter to our page. He has had cards from PK1MF, 4AU, XZ2DY, ZL1DY, VK2OG, 3AL, 3LR, 3WA, 6WS, VS2AK, XE1LK, 1HA, and W6IDY. G5ML and G6DT reach R9 at times. He would like to correspond with anyone, especially Europeans and Australians, as would Ronnie Forward, 2DAP, 8, Willow Road, Farsley, Leeds. R. Dudley Montague, of Ilford, Essex, has received QSL's from CT1PK, CO5EO, LX1AY, OA4R, PY5AQ, SP1CC, HB9BR, W5BMM and W6AM. D. F. Chatt, NRS541, 23, North View, Sherburn Hill, Co. Durham, intends to QSL XZ2EZ and ZN1AB. We should warn him that XZ2EZ has become sick of reports and he may not be lucky. ZN1AB is the unofficial call of a British ship which, recently transmitting in the Mediterranean, has since gone QRT owing to the risk involved! NRS541 has just started Morse and heard JUM, which is the call of a Japanese commercial. The prefix "W10" is for special experimental stations. N. J. Rutter, NRS131, 23, Bouverie Avenue, Swindon, sent in a long and most interesting letter, which we would like you all to see if we had space, complete with the exact wiring diagram of his receiver—a real masterpiece of draughtmanship. He remarks on the reception of VP1BA, British Honduras, who has been very active on 14 Mc 'phone.

Space is low, so we must now acknowledge very interesting letters from the following: K. Holyland, of Harrogate; K. Huxley (aged 14), of Birkenhead; C. Kemp and P. Brand of Stamford, Lincs.; J. H. Symons, of Market Drayton; Raymond H. Pounder, of Thornton Heath; Leslie Morgan, of Bournemouth; William Warner, of Exeter; George Thornby, of Holbeach; Bob Roberts, of Liverpool; William A. H. Welsman, of Maida Vale, London, W.9; B. J. Roberts, of Gidea Park; N. Stevens, of London, N.W.10; C. D. Hammett, of Greenford, Middlesex; H. M. Graham, of Friern Barnet; Percy V. Jacobs, of Goodmayes; L. G. Pairman, of Dunoon; S. F. M. Edwards, of Hornsea (whose tip will be used next time); all of which we appreciate and regret not to have been able to give them fuller mention. Our space has been fixed at three pages now, so we have to get you all into that!

# CALLS HEARD

## Set Listening Periods

A. HEALD, 23 Bengarth Road, Southport, Lancs. May 7, 21.00 to 23.00. Converter and 5-valve SH.

14 Mc 'phone—FT4AN. K4 ENY, EVC. LAIG. PY2CK. SM2VP. SU1RK. W1GKY. 5DNV, DSY, 9LCD.

G. F. KEEN, 20 St. Leonards Road, West Hove, Sussex. May 8, 14.00 to 20.00. 0-v-1 at Devil's Dyke, Brighton. 56 Mc CW—G2HG; 'phone—G6VA.

RONALD H. FORWARD, 8 Willow Road, Farsley, Leeds, Yorks. May 7, 22.30 to 23.00. 14 Mc 'phone—G4PW, 6QS, 8CG. WIHKK, 3FU, 14 Mc CW—SU1MN. XU6LN. LU6CN. LA8C. WIKLT, 5CNG. SP1LM. CO2WW. May 8, 22.30-23.00. 7 Mc 'phone—G2KK, 3NS, 5FP.

7 Mc CW—ON4GUJ. W3S3N, 8RUC, RX. SM1LP. F3IE. HB9BS G3AI, HG, 5CI, RL, YP, 6FZ, 8AL, BW, CZ, JJ, LO, RO, ST.

May 8, 10.00-12.00 B.S.T., 1.7 Mc 'phone and CW—G2IN, QM, 6RX, KU, PL, SN, 8BT, CB, CF, JD, SJ, TF, WG.

J. C. FLETCHER, 4 Cyril Road, Bexleyheath, Kent. Super Skyrider SX16.

May 8, 10.00-12.00, 1.7 Mc 'phone—G2MI, XG, XP, 3CQ, 5FJ, IL, QK, WW, 6CD, HG, KV, PA, VC, 8AB, JM, KO, TL, WV. CW—G8TIL.

BOB ROBERTS, Liverpool. May 7, 21.00-23.00. Pilot AW.

IKKCC. CT1IH. FT4AN. LAIE. CT1QV. OZ5BW. W2JKQ. F3LL. HB9CK. CT1PA. SPICE. F8JQ. LY1AI. SP1CN. F8BJ. K4ENY. W4DNJ. F8ACC. 2T. CN8BA. SU1AK. CT1QA. SM1YP. LP. W8ENY. CN8AN. K4EVC. W1BR. HH5PA. CO2LY. W2ATO. LX1MB. WIHKK. LA8C. CN8 AM. PY1GJ, 5BJ. CT1ZZ. VP3AA. CT1OZ. 11MP. YV5ABQ. HK1JC.

M. D. LIPSCOMBE, 83 Stafford Road, Seaford, Sussex. 0-v-2. May 7, 22.14-22.33.

14 Mc 'phone—WIHKK. SU1RK. K4 EVC. SM2VP. FT4AN.

1.7 Mc 'phone, May 8, 10.00-12.00—G5FJ, IH, PR, 6RQ, 8AB.

C. D. HAMMETT, 37 Torrington Road, Greenford, Middlesex. "Skybuddy." May 7, 21.00-23.00 B.S.T.

14 Mc 'phone—F3QA, RC, 8AS, BE, JO, VP. LA1G, 7P. CN8AM, BA, MB. SP1CC. CN. G3HA, II, 6LW, RW, XP, 8HN, IH, MA, QH, SB. CT1NE, PA, QG, QV. FT4AN, AR. VO6D. F43LZ, 8CC, NC. WIHKK, ILB, 2JEC. 2ZC. SU1RK. K4ENY. SM2QB. PY1GJ. 2BT, CK. HH5PA. VP3AA. CO2LY.

May 8, 06.00-08.00, 7 Mc 'phone—F3RP, SK, SP, CS, SS, MR, CI, BY, QA, QF, DE, 8GJ, ZW, PK, ZJ. CT1EA. ON4AB, DU, JC, NK, TW, WXW. G2KK, 5FP, PF, 8DF, NR.

A. K. WALL, 11 Hill Crescent, Bexley, Kent. 0-Pen.-Pen. 21.3.38-10.5.38.

14 Mc CW—LU3DH, EV, 4AD, 5AN, 6JB, PY1AZ, DH, HM, 2DC, GS, HN, 5AG, BO, 7AF. CM2AZ, DO, XO. VP2AB. CX1BG, NE. YV5AP. HC1AZ.

VE3AFD, BO, DA, DD, FB, QI, 4AE, AEO, AGP, AT, HM, MB, OR, OX, QF, 5ACN, JK. W5ACA, AP, ASX, BWX, CWW, CXQ, DNS, ECU, FBO, FON, GBX, GGD, GJC, GO, GQP, GRE, KC, OH, PJ, 6AHZ, AJD, ANN, AX, BUO, CBW, CGP, CGQ, CMG, CVW, DIO, DTB, EA, EEP, EMK, EML, EXQ, FAL, FNY, FSJ, GAL, GCM, GCX, GK, GNZ, GOZ, GT, HFB, HIP, HJT, HKA, IBZ, IFQ, ITA, IYN, JMR, KDP, KIP, KJK, KUT, KP, KW, KWA, KWC, LCD, LDD, LEA, LHW, LLD, LNU, LRH, LRC, LEV, MCG, MEL, MJY,

MLD, MLY, MNA, MSM, MTC, MVK, MVO, MX, MXN, MZH, NAM, NHA, NIK, NPL, NVN, NYA, OAV, OBO, OFC, OFO, OMI, ONQ, ORT, OTP, OUL, OVW, PFI, PKA, QD, TI, ZS, 7AMO, AMX, AYO, BTB, CMB, DVY, EGE, EHL, EHO, EL, ELX, EOI, FUL, GK, GXM, JB, MK, EZC.

ZS1AH, 2AW, 6CK, W. ZEIJN, JI. CR7AU. VQ4KTA, KTF. J2KG, KN, LK. VU2FV. VS7MB. UK8AY. U9AL. VK2ADS, ADV, AIB, AIL, CB, DG, HV, KZ, JO, OE, VU, 3AEK, BV, DM, EW, NS, QK, HG, SZ, VF, WL, ZD, ZJ, ZR, 4CG, HR, KW, RF, ZR, 5FL, JS, JT, LL, WL, WR, 6AF, SA, 7CM. ZL1HY, JZ, LM, MQ, 2AZ, BX, CI, FA, FR, GN, LA, LB, MN, OU, UB, 3AB, AP, AZ, FH, GC, 4AF, AZ, BR, DO, FB, FK, FV, GM, RF. K4AF, DTH, EVC, EVD, FAB, RJ, 5AH, AN, 6QGF, PDQ, 7GIE.

AHMAD NAWAZ, 53 Lawrence Road, Lahore, India.

14 Mc 'phone—GM5NW, 2UU, DI, 6RV. G2NA, AK, 5IF, ML, BW, QN, 6XR, WT, DT, BR, KW, 8LP. ZE1JA, JR, JB, JF. Y12BA. VE1VA. VS6AB. VQ8AE. E12L. VK7CL. ZS2AH, AF, 6CZ.

J. G. WARDHAUGH (2DTT), 20 Hallgates, Hepham, Northumberland. 7.5.38-12.5.38. 1-v-2.

1.7 Mc 'phone—G3HL, 5IU, CZ, OA, 6KU, NB, TL, 8BI. GM8PM. CW2BG, 5BI, JK, 8CT.

1.7 Mc CW—G2JK, 5QV, 6BQ, TR, 8NF. GW6YQ. GM8PM.

MARTIN G. BOURKE (2AOU), "Credition." Samarcs, Jersey, Channel Islands. Over last two years.

14 Mc 'phone and CW—CE1AH, AM, AR, 2AB, 3AI, AS, 7AA. CM2PW, 7AI. CO2KY, BZ, LY, OQ, SH, WM, 60M, 7VP, 8EC. CP1AA. CR7AB, AC, AF, AK, AU, CT2BC, BL, BO, 3AB, CX1AA, AJ, AK, FB8AA, AF. F18AC. FM84D. FN1C. FP8PX. FQ8AA. FR8VX. FY8A, C. HC1ET, JW, 2RL, HM2B, 3L, 5PA. H12KN, 4O, 5X, 7G, I. HK1GC, 3LDC. HPIA. HS1BJ, PJ, RJ, 17AA. J2DI, IS, JJ, KG, OV, 5CC. K4AOP, BTL, DDH, DRN, EDS, EIL, EJP, ENY, EPO, FCG, KD, RJ, SA, 5AA, AC, AG, AI, AM, AN, AU, 6BNR, FKB, GAS, KGA, NZQ, OQE, 7AOC, FBE. KAIAN, AX, BH, ME, YL, ZL. LUICA, DX, WA, 2BW, JW, 3EJ, 4BC, BH, CZ, 5AN, TI, 6DJK, 7AZ, 8CR, DJ, EN, 9AF. MX2B. NY1AA. OA4A, AA, AR, B, K, R. OQ5AA. OX2QV. PK1MF, MX, 2WL. PX2B. PY1CK, DU, GJ, 2AC, DC, HJ, KX, LM, 3AW, JN, 4BY, CT, 5AG, QG, 6AL, 7AN. ST2CM, LR, 6KR. SU1A, AX, CH, DB, FS, GP, GT, JM, JT, KG, MW, RD, RH, RK, RO, SG, TM, WD, WM, 2TW. TF3C, 5C. TG9AA. TI2RC, HP. U9AD, AG, BX, ME, MF, MI, ML.

VE5ACN, ER, ES, GT, OT, OP. VK2ADE, ADV, ANX, AQ, BK, GV, KX, NO, NP, QI, KG, TF, VU, WR, 3AEK, BJ, CX, EK, EO, JK, KU, KX, MV, NR, OK, IW, VU, WA, WL, WO, XD, XG, XN, XU, ZD, ZR, 4EL, JU, RF, SD, 5JO, JS, RT, SW, WK, WR, WW, 6AF, PK, 7CM, RX, 9DM. VPIAA, BA, 2AB, AT, 3AA, 6B, NV, THE, 4GA, 5BR, GM, PZ, 6FO, MR, TR, 7NC, 8D, 9G, L, O, R. VQ2FJ, CM, 3FAR, TOM, 4CRI, KTB, KTF, 8AA, AF, AS. VR2FT, 4AD, 6AY. VS1AI, 2AK, 6AH, 7GJ, JW, MB, RA, RF, RP, 8AA. VU2AN, AU, BA, BQ, CA, CQ, CR, DA, ED, EN, FQ, FV, GB, JN.

W5ACA, AMX, BJO, BOC, CDC, CXH, CXQ, DM, DNV, EHP, DVE, FFW, FK, FLD, GKC, GJC, HP, KC, 6AH, AX, BAM, BUK, CD, CIL, CVW, COI, ERM, FTT, GK, GRL, HFB, HSG, IBZ, KQL, LEV, LUR, NTC, OKZ, ONQ, TI, 7AFS, AMX, BVO, CJK, ENR, ESN, FKW, FMK, GX, GJ, GWD, SL, 9AVO,

CBU, FUH, UXG (all Colorado). XE1GF, GK, LK, 2FC, 3AR. XU3FK, 6SW, 7MM. XZ2DY, 2EZ. YV1AA, AG, AK, AP, CU, 5ABY, ADV, AZ. ZC6AA, AQ. ZE1JA, JB, JG, JJ, JR, JZ. ZL1FE, 2BI, BL, FA, FI, GN, IW, GW, LA, LB, PB, QR, SM, UB, VM, 3AJ, AP, BI, DJ, GR, HZ, JR, KY, SM, 4AC, AF, BR, DO, DR, FB, FD, FS, FV. ZS1AC, AH, AU, AV, B, CC, CO, 2AM, J, O, X, 3F, 4L, 5U, Q, 6CX, DK, DM, EM, EO, EU.

N. J. RUTTER, 23 Bouverie Avenue, Swindon, Wilts. 2.4.38-1.5.38. 0-v-1.

14 Mc 'phone—CO2HY, WM, 5EO, 7VP. CT2AB, BD. CX2AK, 3BL, FT4AI. HC1FG, JW. H15X. HK3LDC. K6NZQ, OQE, KA1BH. LU1EX, HI, 8JF. OA4R. PK1MX, 4BG. PY1DS, GJ, HJ, 2AC, BJ, CK, DC, ER, GC, IT, KT, 5AQ, BH. SU1GP, RH, WM. TI2AV. U3BC. VE3 AAL, AHN, 4DU, KF, ZK, 5EF. VK2 XU, 3KX, WA. VP1BA. VQ4KTB. VR6AY. W5BMM, DNV, DVE, EHM, FCM, FFF, 6AH, AHP, BPK, CQI, DUW, FTU, GRL, IDY, IKO, MLG, NCW, NNR, NPW, NTX, OCH, OI, OSY, PER, SJ, SZ, YU, 7BVO, CHT, GAE, 9UJS (Colorado). XZ2EZ. YV1AP, 5ABY. ZE1JA, JR. ZS2AF.

S. J. MITCHELL (BSWL 780), "Whindale," 32 Biggin Hall Crescent, Coventry. 10 valve SH.

14 Mc 'phone—CO2WM, 5EO. HC1FG, JW. HK3LDC. HR5C. K4DNY, EVC, 6KLN, NZQ. OQ2E. KA1BH, ME. LU1AB, HI. OA4C, I. PK1MX, ZZ, 2AY. PY5BJ, SU1KG, RK, RV. TI2HB, U3BX. VE5AJ, OF, 5ACN, EF, MO. VK2QO, VV, XF, XG, XU, 3KX, XD, VP1BA. VQ4KTB. VR6AY. VS2AK. W5ACY, AKZ, ATB, EHM, FDE, FMO, LEE, NNO, VJ, 6AHH, AHP, DUW, FJ, FS, HAW, JFU, LYM, MCW, MZD, NNR, OCH, PER, SZ, 7AMQ, BCU, BVO. XZ2EZ. YV1AP, 5AF. ZE1JA.

H. SUGDEN (NRS 238), 15 Arnelcliffe Terrace, Legrams Lane, Bradford. 10.4.38-8.5.38. 5v. SH.

14 Mc 'phone—CO2CC, CO, HS, KL, OK, RF, WV, 5EO, 7EV, AG, 8JK. CE3CO, AC. CX2AK. FB8AH. HC1FG, HJ, HM2B, X, 5PA. H13N, 5X, 6O, Q. HK3LDC, 4AR, 5AR. K4EMG, EVC, 7AOC, LU1DA, 2CA, 3AT, 4AW, CZ, BC, KA, 5CZ, 6KE, 7AG, AZ, 8AB, 9PA. NY2AE. OA4AI, AL, C. PK1ZZ. PY1BK, EI, EO, FR, FX, GK, GR, 2ER, BA, BI, BW, CK, G, 5AT, BF, BJ, QI, QL, 6AH, AG. TG9AA. TI2FG, HP, RC. VE3AAL, AEV, APD, AHN, AIB, IX, LV, OI, 4LX, 5ABD, BF, HI, JK, PE. VK2BZ, CJ, OO, 3KP, PZ, TL, WA, XZ. VP1BA, 3AA, 6MR, TR. W5ASG, AXA, BEN, PT, DEW, EEN, EOW, FNH, FIV, HAJ, PT, YJ, 6AH, AHP, AM, APS, BPM, BYB, CQI, CUG, DEP, DET, FTU, HOW, HKQ, IXJ, JTW, IJR, MGT, MLG, MLD, MFS, MVQ, MWD, NCW, NHB, NNR, OCH, OMJ, OSY, PER, PPK, TT, YU, 7B1Z (Montana), BVO, BVI, DX, EKA, FMR, 9UJS, FUH, DNP, UEL, WIJ (Col.). WEE, ARL, CXE, KYV (Kans.), 10XAB (Macgregor Expedition, Greenland). XE1GF, 2BJ. XZ2EZ. YV1AQ, 5AB, ABQ. AE, AN, AR. ZE1JA, JR.

CONRAD C. TILLY (BSWL 319), 95 Chesterfield Road, Bristol, 6. Eddystone "Everyman 4" 10.4.38-7.5.38.

14 Mc 'phone—CE3AC, BH. CO2CO, HS, LY, WM, WV, 8JK. CR7AU. CT2AB, 3AB. CX1AA, FA, AK, 3BL. EA8AE, 9AH. FB8AD, AH, FT4AH, AI, AN, AR, AU. G2FR. HC1FG. HK3LDC. KA1BH, DH, ME. K4DDH, ENY, EVC, FAY, SA (75 metres). LU1DA, FC, 2CA, 4CZ, KA, 7BH, BK, 8AB, 9BV. PK1JR, MX, ZD, 2WI, 3GD, 4DG. PY1BI, CK, DK, EO, FR, FX, GJ, GR, GO, HJ, 2BA, CK, DK, LM, LO, MI, 3EN, 4BD, BU, CT, 5BJ, QI, 7AI. SU1AM, CH, GP,

KG, RD, RH, RK, RO, RS, WM, 2TW, 8MA. T12FG, RC. VE3LW, 5PE. VK2BK, HF, KR, XU. VQ4KT. VR6AY. VS2AK, 7GJ. VU2CA, CD, CO, LL, W5DVE, 6AH, AHP, EJC, FTU, IKQ, NCW, OSY, 7AXS, BOZ, BVO, XZ2EZ. YV1AP, 4AA, AL, 5ABY, AK, AZ. ZE1JA, JR.

E. HARTLEY, 78 South Royds Street, Tottington, Nr. Bury, Lancs.. 2.4.38-8.5.38. 1-v-1.

28 Mc 'phone—CO2RH. H12T, 7G. K4DDH, EJC, EZR, SA. LUI1D, 4BC, 7AZ, SUICH, RD, RO. TG9AA. VE3AIW, AKY, DG, KE, ZL. VU2CO. VP3MG, NV, W5AXP, EB, EBY, 6BEN, CKR, GRX, GUO, LUB, MPS, NAP, NLS, OZP, SE. YV5AK. ZE1UR. ZS2N, 6AA, AJ, P, Q, T.

14 Mc 'phone, 1.4.38-8.4.38—CE3AA. CT2AB. FB8AD. HC1FG, JW. HH5PA. K4DDH, ENY, 6LKN, OQE. KA1ME, 2OV, LUI1H, 2BG, 4AW, CA, 7AG. NY2AE. OA4R. PK1JR, MX, ZZ, 2WL, 4DG. PY1CK, FR, FX, GJ, GO, HJ, 2CK, LM, 4BI, BU, PT, 8AG, AI, SUICH, GP, RH, RK, WM. TG9AA. U3BC, BX, VE3LW, 5JK, OT. VK2AHA, BQ, HS, NO, OQ, XU, 3KX. VP1BA, 6LM, MR, 9L. VQ4KT. VR6AY. W6ABS, AH, AHP, FFN, FPU, GAT, GRL, IKQ, MPK, MPS, MWD, NCW, NHB, SZ, 7AMQ, AXS, BCU, BVO, DX. XZ2EZ. Y11AP, 5AK. ZE1JA. ZS1B.

N. STEVENS (NRS 109), 59 College Rd., Kensal Rise, London, N.W.10. 7v. Super.

14 Mc 'phone—CE1BE, 3DW. CO2CO, HS, LY, RA, RV, WM, EG, JJ, 5EO, 6OM, 7CX, VP, 8BC, JK, VZ, MA. FB8AD, AH. HC1FG, KW. HH2B, X. HK3LDC. 4AG. HR5C. KA1BH, CS, HF, ME. K6BAN, NZO, OQE, GAS, KAG. LUI1H, 2BG, 4AJ, AW, CZ, 7BK, BV. OA4A, AI, C. PK1MX, JA, ZZ, 2WL, 8AA, JF. PY1FR, GJ, HJ, 2CK, LM, 8CP, 5AQ, DJ. SU1GP, KG, WM, 2TW, 8MA. VE3ST, PJ, WY, GK, BK, ZM, DD, FB, ACK, 4LX, KP, KM, SS, BC, AW, 5BK, EF, OT, PE, ACN, 9AT. VK2ADE, HF, MK, NQ, OQ, OV, XU, GU, 3KU, KX, WA, ZJ, ZL, MR. VP1BA, 3AA, 6TR, MR, LN. VQ4KT. VR6AY. VS1AT, 7GJ. VU2CA, CO. W5AAJ, A1H, BCU, BEK, DNV, DVE, AKZ, YU, 6LP, GLL, MLL, AM, GRO, GTB, MPS, AH, RJ, IDY, AQ, AHT, FJ, CTH, HCW, DER, AI, IKQ, AHP, FZL, MWD, LHQ, LUR, HOE, NNR, EJC, VKY, FWC, MVD, CO, OSY, IXZ, TT, COI, GE, GCG, GRL, ITH, MVO, AM, FFN, MZD, MWD, PER, SJ, DUW, KHC, LYM, TEMP, EMO, FAQ, BVO, EKT, CEA, CHP. XE1BC, 3AR. XZ2EZ. YV1AP, AO, 4AB, 5AA, AK, AM, AZ, ABO, AC, ZE1JA, JR. ZS6Q.

14 Mc CW—CR7AU. SU1MW, SG, SP, GT, TM, 2TW. TF3C. U6SE, 9MI, ML, MN, AV, BK. VE3AG. 4RO. VK2NS, 3CX, HY, VF, CB, 5YS. VQ4KTF. VU2FV. W5ECU, 6MKG, HFC, 7BVI, EOI, MCG, JU. ZE1J, JG. ZS6EO, W. ZL2SX, DJ, 4FK, FV.

Recent QSL's—VP6TR, LN, 5PZ. K4 EMG. SV1CA. VE3AAZ. KA1BH. HH2X. ZS1AX, B.

S. F. EDWARDS, Humbleton House, Hornsea, Yorks. 12.4.38-9.5.38. Trophy Mains Three.

14 Mc 'phone—W6GRL, AH, MLG, 7BVO. KA1ME, JZ. LU2CA, 4BC, 7PA, 9BK. U5MB, BC, BX. VS1AD, AI. VU2CA, AN. PK1MX, JR, 4BD. VK2XU. 3GD. HC1XT, 2HF. CE3CO, DW, AA. CO6OM. CX2AK, EA, 3BL. PY1FR, DK, 2FO, 3BX, 4CT, BU, BI, 5AQ. H1SN. W10XAB. ZE1JR. Y12AB. TG9AA. VP2AA, 9L. CT2AA.

T. B. PAISLEY, 19 Bute Gardens, Glasgow, W.2. 1.4.38-11.5.38.

14 Mc 'phone—CE1BK. CT2AB. CO2CC, LY, WM, 5EO, 7CX. CX2AK, 3BL. F18AC. HC1JW, FG. HH2B. H13N. HK3LDC. HR5C. K6OQE. KA1BH, MG. LUI1H, 7AG, PK. OA4AI, AI, C.

PK1ZZ, 2WL. PY1GR, GU, 2BJ, CK, GC, 4BI, CP, CT. SU1KG, RH, RK, 8MA. U3BX. VE3AAL, AAR, FO, 4LX, SS, VD, 5EF, OT, PE, RT. VK2AHA, BZ, LA, NQ, VK, VV, XU, 3KX, ZX, OI. VP1BA, 6LN, 9L. VR6AY. VU2CA, CO. W5BCU, BEK, BEN (Portable 9), BEW, BJO, BMM, DNV, DVE, EHM, FSS, YW, 6AHH, AM, BYB, BYR, CLS, COG, COI, DRS, DUW, EJC, GAT, GRL, IKQ, ISH, ITH, LCI, LYM, MLG, MPS, NCW, NTX, OCH, OSY, SJ, SZ, YU, 7AMQ, BVO, CHT, 9U1S (Colorado), VEL (Colorado). XE1GF, 2FC, 3AR. YV4AL, 5AN, AV.

LESLIE J. J. MORGAN, 45 Parkwood Road, Bournemouth, Hampshire. Hallicrafters "Sky Chief." 12.4.38-11.5.38.

1.7 Mc 'phone—G2DQ, 5CU, IU, PR, 6CL, 8QC, TR.

14 Mc 'phone—CE3DW. CO2LY. CT2AB, BD. FB8AH. FT4AL, AN, AR, AU. HC1FG, JW. HH2B, 5PA. HK3LDC. HR5C. K1EJF, 4EMG, ENY, EVC. KA1ME. LUI1H, 6KE. OA4C. PY1FR, GR, HJ, 2CK, 3BX, 5AQ. SU1AM, CH, GP, KG, RK, RO, 8MA. VE3SS, 5OT. VK2BZ, XU, 3KX. VP3AA, 6LN, MR. VR6AY. VS2AK. W5AXA, BMM, 6AH, IKB, 7AMQ, BVO. Y12BA. YV1AP, 4AL, 5ABY, AK.

GEORGE THORLEY (2DLC), Spalding Road, Holbeach, Lincs. 1.4.38-10.5.38. SX11 Super Skyrider and 6v. Superhet.

14 Mc 'phone—CO2UG. CX2AK. HH2X. K4EMG. KA2OV. LUI1D, 3AX, AQ, 4AW, 5AN, TV, 6KE, 7AG, 8AD, 9BV, PA. PK2WL. PY1GJ, FX, 2CK, JC, LM, FF. VE3AEX, BY, KL, QJ, ZN, VK, MD, ZM, KF, AHN, AEL, 4EK, GL, 5HI. VK2HF, HV, 5BF. VP2AB. W5 DEW, ECL, FHJ, DVE (Portable), 6GRL, COI, AM, BYB, NTX, MJK, PER, 7BWI, 9ARL (Nebraska), EOZ (N.D.). YV5AG, AZ. ZS1BV.

28 Mc 'phone—PY3BP. T12FG, RC. VE1JV. W5FFF, EB, BOC, FOD, 6YU, MWD, 9BYV (Colorado), WIQ (N.D.), ZNA (Nebraska).

K. HOLYLAND, Swincliffe Side, Hampsthwaite, Harrogate. Battery 0-v-0.

28 Mc 'phone—VU2CO. W5EPX. FA 3JV.

14 Mc 'phone—W5DNV, BEN, 6AHT, DEP, DUW, EJC, FFN, GRL, LBW, MBQ, MMS, MJD, NCW, NMI, OI, PER, PPK, PR, SZ, 7AMQ, AOC, BVO. VE4ZK. VY1AG, AP. 5ABQ, ABY, AC, AD, AK, AN, AX. PY1FR, GR, 2CK, FO, CJ, 4CP, 5BJ. T12BC. CO2LY, OK, 8VB. K4DDH, EJC, FAY, HH2B. H15C, X. XE1FC, GF, 3AR. VP3AA, 6LN, MR, VB. HK3LDC, 4AG. VK2XU, 3KX, WA. VR6AY. XZ2EZ. FB8AH. VU2CO. SUIAR, CH, GP, KG, RD, RH, WM, 2TW. ZE1JA. VQ4KT. FT4AA, AE, AH, AN. CT2AB, BC.

C. GIBBINS, 59 South Road, Herne Bay, Kent. 1-v-1. 2.4.38-1.5.38.

W5BMM, BEK, DNV, 6NWV, MNR, NCW, HOW, MLE, OCH, EJC, GRL, AM, YU, AHG, DUW, AH, 7ANQ, BVO, BWI, 9DNP, EOZ, GGS, RBI, UJS, 10XAD (Greenland Expedition, 14,295 Kc approx.). VE3KR, HY, AEV, RR, 4GD, KF, 5JK, EF, HI, ACN. K4DDG, EME, EMG, 6NZO, GAS. YV5AA, IAP, AQ. PY5AQ. LU2BG, 6AO. HC1JW, FG, 3LDP. VP2AT. 3AA, 6MO. CO2EG, WM, RH, 7CX, 8VZ. VK2XU, VV, 3KX. ZS6AJ. SU1RD, RK. PK1MX. VR6AY. U3BX.

J. C. FLETCHER, 4 Cyril Road, Bexleyheath, Kent. 19.4.38-8.5.38. Super Skyrider SX16.

14 Mc 'phone—SUIKE. VK2XU, VV. VP1BA. W6AHP, IKQ, NNR, 7BVO. XZ2EZ. ZE1JA.

14 Mc CW—CR7AC, AU, RB. F18AC. J2JJ, KG, KN, 5CC. K4FWS, 5AA, AU, 6BNR. PK1MF. PY7AC. SUI1B, MW,

RO, SG, SW. SX3A. TAI1AA. U9BK. VE4AAM, AEO, 5PT, OB. VK2AHA, AY, NO, OE, OW, PX, 3OK, VB, ZR, 3EL, HR, JB, RF, SD, 5JS, LW, WR. VQ 3HJP, 4KTC, KTF. VU2CR, DR, FV, FX. W5CHU, 6AP, AZO, CD, CVW, EEP, FAL, GHU, HFB, KRI, KUO, LJD, LRH, LUN, MCG, MR, MTC, NDF, NLU. 7L. XE1AG. XU8MR, XA. ZC6AO. ZE1JG, II, JZ. ZL1MR, 2CI, GW, LB, OU, 3GR, HW, 4AR, DF, FB, FV, GM. ZS1AC, AG, AH, BG, BK, 2AM, AV, X, 5Q, 6DM, EO, EU.

Recent QSL's—F18AC. FR8VX. VK7YL. VP5PZ. VQ2CJ (14,134 Kc, 8 watts) 4KTC (14,300 Kc, 7.2 watts) VU2EO (14,091 Kc, 10 watts), FV (14,100 Kc, 10 watts), LJ (14,300 Kc), ZC6AO (T1PTG), ZE1JC (20 watts), ZS4H (50 watts), 5Z (14,252 and 14,392 Kc, 25 watts).

RONALD A. F. BURT (BSWL 809), 101 Railway Cottages, Salt River, Cape Town, South Africa. 11v. Pilot SH.

14 Mc 'phone—CR7AE, AU, MF. FB8AH. K6OQE. PK1DJ, RL, MX, 2DF, WL, 3AA, 4JD. KA1BH, HS, ME, YL, ZL. PY2CK. VU2CO, LL. VS2AE. W6 COM, ESX, EYE, IDY, ISH, ITH, JI, JZS, LY, MHL, MZD, MZQ, OSY, PPK, 7BCU, MKP, MVD.

GORDON BIRRELL, 1 Renny Place, West-Ferry, Dundee, Angus, Scotland. 10.4.38-10.5.38. Battery 0-v-1.

14 Mc 'phone—CE3BH, CO. CO2LY, OK, RH, WM, WW, 5EO, 6OM, 7VP, 8BZ, JK, YB. CX1DD, 2AK. FB8AA, AD. HC1FG, JW. HH5PA. H17G. HK 3LDC, 4AG. HR5C. K4DDH, EJC, EJC, ENY, EVC, 6OQE. KA1ME. LUI1EX, FC, JE, UA, 3AB, AP, 4AI, AW, PB, 7AG, BK, PK, 8AB, 9AF. OA4AI, AJ, C. PK1JR, MX; ZZ, 2WL, 3WV, 4EE. PY1DH, DK, DU, EO, FR, GJ, GR, HJ, 2AM, BA, BH, BJ, CK, EA, ER, FK, FO, GC, HS, HV, JI, KR, KT, LM, 3AG, EK, EN, 4BI, BU, CB, CG, CH, CT, EP, 5AQ, BI, OI, 7AI. T12FJ, HI, RC. VE3AA. AIB, IX, NB, 5AJD, EF. VK2AHA, BZ, HS, HP, NC, NQ, OI, OQ, TR, VV, XS, XU, 3KS, KX, OK, OK, WI, ZB, ZZ. VP1BA, 3AA, 6LN, MR, 9L. VR6AY. VU2LL. W5BEK, BUG, DEW, DVE, ERL, FGO, 6AH, AHB, AQN, BUW, BYB, BYW, COI, EJC, FTU, GRL, GUR, HAC, IKO, ITH, JC, KN, LJR, LYM, MBE, MJO, MLG, OVL, PPK, SJ, SZ, YU, 7BVO, EYD, 9FUH (Col.), UJS (Col.). XE1BT, 3AR. XZ2EZ. YV1AA, AP, 4AB, 5AB, ABO, ABY, AD, AN, AZ. ZE1JA. ZS1AU, AX.

In addition to those published above we have received logs from

J. A. Bateman, Phila., U.S.A.  
P. L. Chamberlain, S.W.16.  
D. F. Chatt, Sherburn Hill.  
W. E. Davey, Belfast.  
Mrs. S. Dyer, Bournemouth.  
S. Foster, Londonderry.  
R. M. Hall, Topsham.  
F. Harrison, Birmingham.  
D. R. Hill, S.E.15.  
H. Huxley, Birkenhead.  
N. Kalya, Liverpool.  
C. Kemp & P. Brand, Stamford.  
R. D. Montague, Ilford.  
L. W. Morris, Dagenham.  
G. J. Osborne, Oxford.  
L. Pairman, 2DKF, Dunoon.  
R. Pounder, Thornton Heath.  
B. T. Roberts, Gidea Park.  
J. H. Simons, Market Drayton.  
I. W. K. Smith, New Malden.  
W. Warner, Exeter.

# CLUB ACTIVITIES

## **BOOTLE and District Amateur Transmitting Club**

Secretary: C. E. CUNLIFFE, 368, Stanley Road, Bootle, Liverpool, 20.

The club is open to all interested in amateur transmitting, short-wave reception, quality amplifiers and radio engineering in general. Lectures, demonstrations and visits are being arranged. A beginners' transmitting course is to be inaugurated. The subscription is 6d. per week on Monday evening attendance, plus an initial subscription of 2s. 6d.

## **BRADFORD Short-Wave Club**

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

Bradford now possesses a full licence. A library and a construction committee have been formed, the latter to deal with the building of club apparatus. The annual field day will shortly take place as will a similar joint effort organised by the Halifax Society.

## **BRIGHTON Branch—World Friendship Society of Radio Amateurs**

Secretary: FRED R. JUPP, 12, Brading Road, Brighton, Sussex.

The subject discussed at the two meetings held on April 22 and 29 was "Low-powered Transmitters." While most of the circuits demonstrated used English valves, the American 12A7 and 6F7 were also mentioned. All present took part in successful CW practice, and a new key, made by the hon. sec., proved to be efficient in use. Details were arranged for a 24-hour field day to be held on June 11-12; receivers covering all amateur bands, particularly 56 Mc, and various aerials will be used. 56 Mc schedules will be welcomed.

## **CARDIFF and District Short-Wave Club**

Secretary: H. H. PHILLIPS (2BQB), 132, Clare Road, Cardiff.

"The Newsreel" is again to hand and No. 2 is well up to the standard set by the previous issue. contents include a long lines transmitter, recent 20-metre DX, receiving experiences, international prefixes, and sundry notes of general interest which all point to a good outlook for Cardiff's future. New members will be welcomed.

## **DOLLIS HILL Radio Communication Society**

Secretary: Mr. E. ELDRIDGE, 79, Oxgate Gardens, Cricklewood, N.W.2.

At the last general meeting a new committee was elected, and past activities reviewed. The present yearly subscription remains at 2s. 6d., from date of joining, and the policy first agreed upon is to continue. This, in effect, is an invitation to membership for anyone with an interest in radio and certain allied subjects, and the society will endeavour to give assistance by lectures and open discussion. This society enjoys close co-operation with the Golders Green Radio Society in its numerous field-days and meetings of special interest, and also has among its own members several stations active on 56 Mc. Members (numbering 53) are given many opportunities for testing portable apparatus in different localities, and with the assistance of the president are now engaged in the building of an

experimental laboratory. Meetings are held fortnightly as from May 31 at 8.15 p.m. at Braintcroft Schools, Warren Road, Cricklewood, N.W.2.

## **DULWICH Radio Club**

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

The club has excellent facilities for work of an experimental nature and is open all the week. At present members are concentrating on self-quenched receivers for receiving the television sound programmes, and have achieved some interesting results in the operation of this type of receiver. Morse classes are under the direction of 2BKK. The hon. organiser, Mr. C. Newton, 105, Underhill Road, S.E.22, would welcome enquiries from any genuine amateur.

## **EASTBOURNE and District Radio Society**

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

At a meeting in the Science Room, Cavendish Senior School, on April 25, it was decided that construction of the 5-metre transmitter should be entrusted to Mr. E. Wingfield (G3CX). By general consent, meetings will now be held at fortnightly intervals, the next being June 13, when tuning up of the 5-metre set will be undertaken by members.

## **EDGWARE Short-Wave Society**

Secretary: F. BELL, 118, Colin Crescent, Colindale, N.W.9.

On April 27 Mr. R. Dent gave a lecture on his 5-metre transmitter and receiver. Mr. Nixon of the General Electric Company presented a film show on May 4, illustrating the manufacture of valves, together with a demonstration of the photo electric cell and relay; the new pentode and 1-inch cathode ray valves were also shown. On May 11 Mr. Wilken, of Automatic Coil Winder Co., Ltd., gave a lecture on Avo products. Future engagements include lectures by Messrs. Belling and Lee, Ltd., and Messrs. Webb's Radio. There are four fully licensed and six AA members.

## **EXETER and District Wireless Society**

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

At a recent meeting the society's new amplifier was under test. Several minor faults came to light, and the members thoroughly enjoyed themselves in having these faults put right by some of the more technically minded persons present. It was shown that the reproduction which can be expected when the amplifier is complete will be of a high order.

## **FRAMLINGHAM, Suffolk**

Mr. H. Brand (BSWL967), Station Road, Framlingham, near Woodbridge, Suffolk, proposes starting a Short-Wave Club. Any transmitter near Framlingham who would be willing to offer his services as technical adviser would be welcome.

## **HACKENDEN Radio Club (East Grinstead)**

Secretary: EDGAR C. COOPER, The Alders, Hackenden, East Grinstead, Sussex.

New H.Q. are finished but proved much too small. In spite of this it was decided to make it do. Two

sets have been constructed—both broadcast receivers for use on long and medium waves. One of these has been laid out to facilitate the addition of a converter stage.

"We have now been offered some more wood, etc., and therefore an extension and partial re-building programmes will occupy almost the whole of May, but after that we'll show how to surmount difficulties and get results in Amateur Radio."

[For Episode 1 see page 13 of our April issue, then watch out for further thrills each month from East Grinstead.—ED.]

#### **KINGS LYNN and District Short-Wave Club**

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

Members have inspected a room which, it is hoped, can be acquired as a permanent clubroom, a receiver installed, and constructional work undertaken. Rapid progress is being made by the Morse class, which is held at the beginning of each meeting. A demonstration was given on crystal grinding. The lecturer emphasised that while with patience it was fairly easy to produce crystals in the 1.7 and 3.5 Mc wave-band, he did not advise trying 7 Mc.

#### **KINGSTON and District Amateur Radio Society**

Secretary: D. N. BIGGS, G6BI, 44, Pooley Green Road, Egham, Surrey.

The society continues to make headway and is now affiliated to the Radio Society of Great Britain. Good work is being done by eight transmitting members who are busy giving tuition weekly to the local Territorial Unit. On May 11 forty members listened to a lecture on measuring instruments given by Mr. S. Ward (G2QS) of the Admiralty Research laboratories. The society is operating a field-day station near Woking in connection with the R.S.G.B. National Field Day. In June a stand will be taken at the Old World Faire (Kingston Civic Week), at which a complete ham station will be on show. All meetings commence at 8 p.m. at the Three Fishes Hotel, Richmond Road, Kingston.

#### **LONDON Transmitting Society**

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

At a recent lecture entitled "The design of Aerials for Radio Transmitters," the secretary explained various derivations.

Among new members are:—G2AI, G8SB, G5FG, G6CB, G2NO, G3II, G6KQ, 2CXD, 2CFS, 2CSQ, 2CFQ, 2DLB, 2DII, 2DHL, 2CXU, 2DCN, 2DHF, 2DLY, 2BDZ, 2DSF, 2DTW, 2ASK, 2DAJ.

Meetings every Thursday at 8 p.m., enquirers should send their QSL card and self-addressed envelope. Membership is free and open to licence holders. Three applications are pending: affiliation to R.S.G.B., transmitting licence, and an offer to the A.R.P. officer.

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

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

On May 10 a general meeting decided that the society should continue its weekly meetings on

Tuesdays at 7.45 p.m. throughout the summer months, but that a definite programme should be provided only on alternate weeks, commencing May 24. Also, field days and visits to places of interest are being arranged. A call-book has been bought for members' use. A moving-coil milliammeter is on order complete with the necessary shunts and resistors to make it a universal test meter. The society intends to apply for a transmitting licence as soon as information is available.

#### **NATIONAL RADIO SOCIETY**

Secretary: C. F. BIGGS (2DQO), 86, Lordship Lane, Tottenham, N.17.

"By the time this appears in print renewal of membership will be due from many members. Please send in promptly to H.Q.

"I am sorry to say that Mr. Parks has decided to suspend the Official News Gazette owing to time and expense, and if subscribers care to get in touch with him, and enclose a S.A.E., he will answer enquiries.

"In view of the fact that all members will have by now received a ballot paper and details of a proposed amalgamation with the B.S.W.L. it is felt unnecessary to waste space here in recapitulation, etc., except to say our officials have an open mind and await members' views with interest."

#### **WEST SUSSEX Short-Wave and Television Club**

Secretary: C. J. ROCKALL (G2ZV), Aubretia, Seafield Road, Rustington, Sussex.

Owing to the resignation of Mr. L. Willard (chairman) and Mr. J. Williams being drafted for service in Egypt, changes have been made in personnel. Mr. C. J. Rockall (G2ZV) has been elected hon. secretary; Mr. E. C. Cosh now occupies the chair. On April 28 a further interesting address and demonstration of "Avo" instruments was given by The Automatic Coil Winder and Equipment Co., Ltd. Much interest was shown in the valve testing equipment, and the automatic safety device fitted to the Model 7 instrument.

#### **WIRRAL Amateur Transmitting and Short-Wave Club**

Secretary: J. R. WILLIAMSON, 13, Harrow Grove, Bromborough.

The club is to produce its own monthly bulletin which will be circulated to members free of charge. Transmitting and other members are asked to supply interesting articles and among those who have already promised to do so is Mr. W. E. Corbett, A.M.I.W.T., A.M.I.R.E. At the last meeting of the club Mr. R. Cumberlidge (G3CK), delivered an interesting talk on "Aerials," which was followed by an informal discussion. Meetings last Wednesday each month at Beechcroft Settlement, Whetstone Lane, Birkenhead.

**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.**

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

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

ALL G.M.T.

## MODIFICATIONS AND CORRECTIONS

**COCQ**, Havana, Cuba, has moved to approximately 30.85 m; concludes broadcasts at 06.00 with organ recording of "Siboney."

**TGWA**, Guatemala City, Guatemala, now utilizing 19.78 m. and 30.95 m. channels, and, possibly, 25.51 m. On the former from 17.45 until 22.15 and the 30 m. channel between midnight and 04.00 or 04.30. (For additional details see "Have You Heard . . . ?" elsewhere).

**XEXA**, Mexico City, Mexico, sends interesting booklet and letter verification in answer to accurate reports. Relays XEDP (1,080 kc) and broadcasts "Hora Nacional" daily 14.30—16.30; 20.30—22.30 and 01.00—06.00 except Sundays when the schedule is simply 01.00—06.00. (For additional details see "Have You Heard . . . ?" elsewhere).

**TIPC**, San Jose, Costa Rica, now operates daily 12.00—14.30; 17.00—19.00 and 21.00—04.30.

## XEWI, MEXICO CITY

(Mexico)

Metres: 25.21 or 49.88. Kilocycles: 11,900 or 6,015. Power: 250 watts.

**Operating schedule**: Sunday 02.00—05.00 and 17.30—19.00; Monday 20.00—21.00; Tuesday 02.00—05.00; Wednesday 00.30—05.00 and 20.00—21.00; Thursday 02.00—05.00; Friday 00.30—05.00 and 20.00—21.00; Saturday 02.00—05.00.

**Standard time**: G.M.T. less 7 hours.

**Distance from London**: Approximately 5,200 miles.

**Postal address**: "Estacion XEWI, Apartado 2874, Mexico City, Mexico."

**Identification characteristics**: Programmes in English, Spanish, French and Esperanto, strokes on gong, slogan "My Voice to the World from Mexico," signs on and off with English call and song "May Angels Guard Thee."

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

## XEFT, VERACRUZ

(Mexico)

Metres: 31.41 or 49.02. Kilocycles: 9,550 or 6,120. Power: 20 watts.

**Operating schedule**: Daily 15.30—21.30 and 03.30—05.30.

**Standard time**: G.M.T. less 7 hours.

**Distance from London**: Approximately 5,200 miles.

**Postal address**: "Estacion XEFT, Av. Independencia 28, Veracruz, Mexico."

**Identification characteristics**: Relays XETF; slogan "La Voz de Veracruz"; employs bugle call and chime signals; English announcements when closing; programmes begun and concluded with playing of a waltz.

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

## XEGW, MEXICO CITY

(Mexico)

Metres: 49.10. Kilocycles: 6,110. Power: 500 w.

**Operating schedule**: Daily 16.00—21.00 and 00.00—05.00 G.M.T.

**Standard time**: G.M.T. less 7 hours.

**Distance from London**: Approximately 5,200 miles.

**Postal address**: "Estacion XEGW, Apartado Postal 8403, Mexico, D.F., Mexico."

**Identification characteristics**: Relays XEJW (870 kc); slogan "La Voz del Aguila Azteca," 5 chimes, occasionally broadcasts English programme, signs on and off with a march.

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

## XEUZ, MEXICO CITY

(Mexico)

Metres: 49.02. Kilocycles: 6,120. Power: 2.500 w.

**Operating schedule**: Daily 15.00—18.00 and 00.00—07.00 G.M.T. Heard irregularly in Gt. Britain.

**Standard time**: G.M.T. less 7 hours.

**Distance from London**: Approximately 5,200 miles.

**Postal address**: "Estacion XEUZ, Apartado 2641, Mexico D.F., Mexico."

**Identification characteristics**: Relays medium-wave XEFO; slogan "Radio Nacionales," five chimes at intervals, uses English occasionally and signs on and off with a march.

**Verification of reception reports**: Believed to confirm by letter.

## XEUW, VERACRUZ

(Mexico)

Metres: 49.83. Kilocycles: 6,020. Power: Unknown.

**Operating schedule**: Daily 13.00—05.00 G.M.T.

**Standard time**: G.M.T. less 7 hours.

**Distance from London**: Approximately 5,200 miles.

**Postal address**: "Estacion XEUW, Av. Independencia 98, Veracruz, Mexico."

**Identification characteristics**: Slogan "El Eco de Sotavento desde Veracruz," signs on with march and off with tango "La Colondrina."

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

**XEBM, MAZATLAN**

(Mexico)

Metres: 19.61. Kilocycles: 15,300.  
Power: 50 watts.

**Operating schedule:** Daily 14.00—15.00; 18.00—19.00 and 01.00—03.00 G.M.T., but believed to be irregular.

**Standard time:** G.M.T. less 7 hours.

**Distance from London:** Approximately 5,500 miles.

**Postal address:** "Estacion XEBM, Apartado Postal 78, Mazatlan, Mexico."

**Identification characteristics:** Slogan "El Pregonero del Pacifico," relays medium-wave XEBL, interval signal 4 chimes.

**Verification of reception reports:** The compiler does not know whether it will confirm reception reports.

**YNPR, MANAGUA**

(Nicaragua)

Metres: 34.97. Kilocycles: 8,580. Power: 500 w.

**Operating schedule:** Daily 18.00—19.30 and 00.30—02.45 G.M.T.

**Standard Time:** G.M.T. less 6 hours.

**Distance from London:** Approximately 5,300 miles.

**Postal address:** "Radiodifusora YNPR, A. Majewsky, Gerente, Managua, Nicaragua."

**Identification characteristics:** Programmes commenced by playing of a march, slogan "La Voz del Radio Pilot," but generally abbreviated to "Radio Pilot."

**Verification of reception reports:** Sends card bearing call YN1PR. International Reply Coupons should not be sent, but U.S.A. 5c. stamps instead.

**XEBQ, MAZATLAN, SINALOA**

(Mexico)

Metres: 49.75. Kilocycles: 6,030. Power: 100 w.

**Operating schedule:** 13.00—14.00; 19.00—21.00 and 02.00—05.00 G.M.T.

**Standard Time:** G.M.T. less 7 hours.

**Distance from London:** Approximately 5,500 miles.

**Postal address:** "Estacion XEBQ, Apartado 95, Mazatlan, Sinaloa, Mexico."

**Identification characteristics:** Slogan "La Voz del Pacifico," 4 chime signal, commences broadcasts with "Luxembourg" March.

**Verification of reception reports:** Believed to send confirmation.

**YNLG (ex-YNVA), MANAGUA**

(Nicaragua)

Metres: 34.92. Kilocycles: 8,590. Power: 500 w.

**Operating schedule:** Daily 18.00—19.30 and 00.30—03.00 G.M.T. Seldom heard.

**Standard Time:** G.M.T. less 6 hours.

**Distance from London:** Approximately 5,300 miles.

**Postal address:** "Radiodifusora YNLG, Sr. Benjamin T. Guerra, L., Manager, Managua, D.N., Nicaragua."

**Identification characteristics:** Slogan "Radiodifusora Ruben Dario" used frequently. Does not adhere to official frequency.

**Verification of reception reports:** Sends attractive card bearing call-sign YNVA. International Reply Coupons should not be sent, but U.S.A. 5c stamps instead.

**XEBR, HERMOSILLO**

(Mexico)

Metres: 25.38. Kilocycles: 11,820. Power: 150 w.

**Operating schedule:** Daily 18.00—21.00 and 02.00—05.00 G.M.T.

**Standard Time:** G.M.T. less 7 hours.

**Distance from London:** Approximately 5,500 miles.

**Postal address:** "Estacion XEBR, Apartado 68, Hermosillo, Sonora, Mexico."

**Identification characteristics:** Relays XEBH (930 kc), slogan "Heraldo de Sonora," programme begun and concluded with "Over the Waves" waltz.

**Verification of reception reports:** Believed to send confirmation.

**YNOP, MANAGUA**

(Nicaragua)

Metres: 52.10. Kilocycles: 5,785.  
Power: 1,000 watts.

**Operating schedule:** Daily except Sundays 01.30—04.00 G.M.T. Seldom heard.

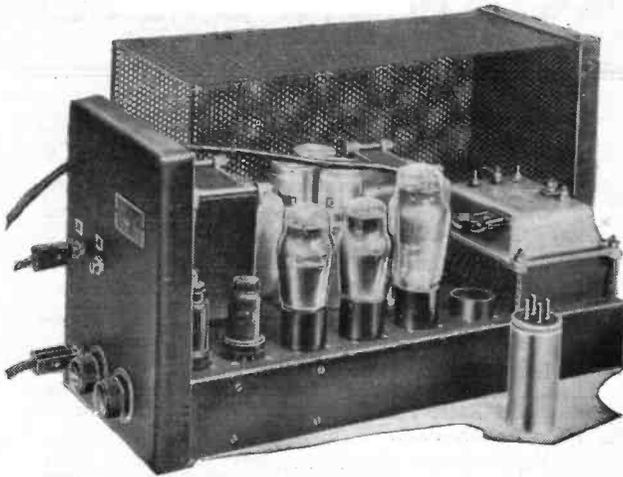
**Standard Time:** G.M.T. less 6 hours.

**Distance from London:** Approximately 5,300 miles.

**Postal address:** "Radiodifusora YNOP, E. H. Andreas, Managua, Nicaragua."

**Identification characteristics:** Slogan "Radiodifusora Bayer" at frequent intervals.

**Verification of reception reports:** Sends plain card. 3c. in unused U.S.A. stamps should be sent for postage.



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## T. & R. BULLETIN

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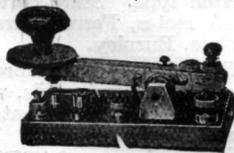
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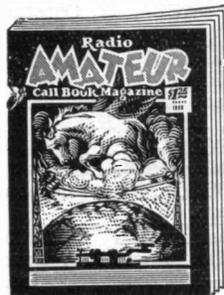
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- 2 A maximum of four lines only will be allowed, or about 28 words including name and address.
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Ferranti, AF5 7s. 6d.; AF3 5s. 6d.; pair B.T.H. phones 7s. 6d.; R.F.P.15 12s. 6d. and other SUR-PLUS COMPONENTS. State requirements.—G5QI, Otterton, Devon.

ERICSSONS HEADPHONES, 4,000 ohms, 5s. 6d.; Brown's type "F" lightweight, 5s. 6d.; perfect and guaranteed. Also state your offers LS5-LS5A-LS5B-LS6A.—Dawes, 451, Caledonian Road, London, N.7.

EXCHANGE—Chemicals 46, Apparatus 22, 32 new compt. "Chemistry in Commerce" for 0.50 0-100 mA, mike or 10 watt TX.—2DQB, 44, Hoop Lane, Lon-don, N.W.11.

ROTARY CONVERTER, electro-dynamic construc-tion; 150-250v. DC input, output 250v. AC, 200 watts, with filter and screen, £6, or offer.—C. Ruhier, 67, Hillside Crescent, Enfield, Middlesex.

WHAT OFFERS? P.W. Colt All-wave 3 specified kit and valves. Not junk. Cost £3 14s. 9d. In-quiries and offers to G. Preston, 56, Church Street, Riddings, Derbyshire.

Hohner Accordion Green Nacrolaque, 35, 24, case, cost £10, EXCHANGE SKY BUDDY, Auto. record changer, shotgun.—2CVR, 6, Maurice Road, Kings Heath, Birmingham.

For Sale LANTERN SLIDE PROJECTOR (suitable for club use), would exchange for 0-1 full scale mA meter or useful gear.—2 BRU, 10, Belgrave Road, Bingley, Yorks.

Again Calling Hams! New timers es old timers! Red-hot bargain! MULLARD PM24D (list £2 5s.), new and guaranteed, 17s. 6d.—Dawes, 541, Cale-donian Road, London, N.7.

AVOMINOR 27s. 6d.; Ferranti AF6, 8s. 6d.; also OPM3c, p.p. 8s. 6d.; mA meters, 3-inch flush, 10s. 6d. each, also Ferranti 23s. 6d. all new recently.—G8DC, 104, Rectory Road, Burnley.

SURPLUS GEAR CHEAP.—Power packs, elimina-tor, carbon mike, formers, insulators, etc.; several "Triad" valves (new), 47, 59, 10 and others. Stamp list.—G8FI, King Street, Whalley, Lancs.

WANTED—Modulation transformer, P.P. output about 1-1 ratio, or Varimatch type. State particu-lars, price, or exchange mA meter, Ferranti trans-formers.—G8UA, Stoneyholme, Burnley.

For Sale: 2v. RECEIVER, det.-lf., bandspread, Ferranti transformer, choke output, 4-pin coils, with valves 15s., postage paid. Also components.—Clarke, 318, Dickenson Road, Manchester, 13.

For Sale.—H.M.V. Model 157 mahogany CABINET GRAMOPHONE, condition as new; cost 25 gns., will sell cheap. Offers.—2BNH, 17, Buller Crescent, Leeds, 9, Yorks.

For Sale.—EDDYSTONE HAM BAND TWO, in-cluding 3 coils, valves, £3; also 2 AF3, 5s. each; 1 OPM1, 10s.; type 47, new, 4s. 6d.—2AAM, Swan-wick, Derbyshire.

**QUERY COUPON**  
S.-W.M. 6/38.

# SHORT-WAVE BROADCASTING STATIONS

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

M.	KC.	CALL-SIGN, LOCATION, SCHEDULE.	M.	KC.	CALL-SIGN, LOCATION, SCHEDULE.
13.93	21,540	W8XK, PITTSBURGH, 12.00-14.00.	31.28	9,595	VK2ME, SYDNEY, S. 06.00-08.00, 11.00-15.00, 17.30-19.30.
13.94	21,520	W2XE, WAYNE, 13.00-18.00.	31.28	9,595	VK6ME, PERTH, w'days 12.00-14.00.
13.97	21,470	GSH, DAVENTRY, 11.45-18.00.	31.28	9,595	W3XAU, PHILADELPHIA, 17.00-01.00.
15.77	19,025	H8SPJ, BANGKOK, M. 14.00-16.00.	31.82	9,580	VLR, LINDHURST, w'days 03.35-11.30; S. 09.00-13.30.
16.86	17,790	GSC, DAVENTRY, 07.00-24.00.	31.32	9,580	GSC, DAVENTRY, 00.20-04.20 18.20-19.15.
16.87	17,780	W3XAL, BOUND BROOK, 14.00-01.00.	31.35	9,570	KZRAI, MANILA, M.-F. 22.30-24.00, 11.00-15.00; Sa. until 16.00; S. 10.00-16.00.
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.	31.36	9,565	WINK, MILLIS, 11.00-05.00.
16.89	17,760	DJE, ZEESEN, 06.05-16.00; S. 17.10-18.25.	31.38	9,560	DJA, ZEESEN, 06.05-17.00, 00.00-04.45.
19.52	15,370	HA83, BUDAPEST, S. 15.00-16.00.	31.45	9,539	DJN, ZEESEN, 22.30-04.45.
19.56	15,340	W2XAD, SCHENECTADY, 17.30-00.00.	31.47	9,534	VPD2, SUVA, 11.30-13.00.
19.60	15,310	GSP, DAVENTRY, 19.45-02.50.	31.48	9,535	LKC, JEJOY, 11.00-14.00.
19.63	15,280	DJQ, ZEESEN, 06.05-11.50 and 22.50-01.45.	31.48	9,535	W2XAF, SCHENECTADY, 21.00-07.00.
19.62	15,280	LRU, BUENOS AIRES, 13.00-21.00.	31.49	9,530	ZBW3, HONG-KONG, 05.30-07.15, 09.00-15.30.
19.64	15,270	W2XE, WAYNE, 19.30-23.00.	31.50	9,523	ZRH, ROBERTS HEIGHTS, 05.45-13.30.
19.66	15,260	GSI, DAVENTRY, 03.20-05.20.	31.51	9,520	OZF, SKAMLEBAEK, 20.00-00.40.
19.68	15,243	TPA2, PARIS, 11.00-16.00.	31.51	9,520	HJ4BH, ARMENIA, 13.00-17.00, 00.00-04.00.
19.68	15,243	WIXAL, BOSTON, 18.30-21.00, ex. Sa.; S. 15.00-16.00.	31.55	9,510	H8SPJ, BANGKOK, Th. 14.00-16.00.
19.70	15,230	OLR5A, PRAGUE, tests around 13.00.	31.55	9,510	G8B, DAVENTRY, 00.20-09.30, 22.15-00.00.
19.71	15,220	PCI, HUIZEN, T. 09.30-11.30; W. 15.00-18.00.	31.58	9,500	VK3ME, MELBOURNE, w'days 10.00-13.00.
19.72	15,210	W8XK, PITTSBURGH, 14.00-24.00.	31.58	9,500	NEWW, MEXICO CITY, 00.00-07.00 approx.
19.74	15,200	DJB, ZEESEN, 06.05-17.00 and 22.50-04.45.	31.63	9,484	EAR, MADRID, 22.0-01.00.
19.76	15,180	GSO, DAVENTRY, 07.00-03.30 and 22.15-00.00.	31.80	9,428	COCH, HAVANA, 13.00-06.00.
19.79	15,163	JZK, TOKIO, 20.30-22.00.	32.15	9,330	OAX4J, LIMA, 18.00-21.00, 23.00-07.00.
19.80	15,160	YDC, BANDEONG, 04.30-08.00 10.30-16.30; 00.00-01.30; S. 01.30-08.00; 11.30-16.00.	32.88	9,125	HAT3, BUDAPEST, M. 01.00.
19.80	15,160	SDG, STOCKHOLM, M. to S. 17.00-23.00; S. 15.00-23.00.	33.32	9,030	COBZ, HAVANA, 13.42-06.03.
19.82	15,140	G8F, DAVENTRY, 07.00-18.00 and 22.15-24.00.	33.50	8,950	HCJB, QUITO, between 13.00-04.15, ex. M.
19.84	15,123	HVJ, VATICAN, 16.30-16.45.	34.62	8,665	COJK, CAMAGUEY, 02.00-03.00.
19.85	15,110	DJL, ZEESEN, 06.00-08.00 and 14.00-22.25.	40.65	7,380	NECR, MEXICO CITY, M. 01.00-02.00.
20.04	14,970	IZA, SOFIA, 12.00-13.30; 19.00-21.15; S. 07.00-23.30.	41.94	6,675	HBO, GENEVA, S. 19.45-20.30.
20.64	14,535	HBJ, GENEVA, S. 19.45-20.30; M. 08.30-08.45.	45.00	6,666	HCR1, GUAYAQUIL, S. 23.45-01.45; W. 03.15-05.15.
22.00	13,635	SPW, WARSAW, 00.00-02.00.	45.25	6,630	HIT, TRUJILLO, between 17.15-02.10.
24.52	12,230	TFJ, RYKJAVIK, S. 19.40-20.30.	45.31	6,618	PRADO, RIOBAMBA, F. 03.00-05.30.
25.00	12,000	VZSPS, MOSCOW, from 12.00.	46.01	6,520	YV4RB, VIOLENCIA, 17.30-18.30, 23.30-02.30.
25.27	11,870	W8XK, PITTSBURGH, 00.00-04.00.	46.80	6,410	TIPG, SAN JOSE, between 13.00-05.30.
25.23	11,880	TPA3, PARIS, 07.00-10.00; 16.15-23.00.	46.88	6,400	YV5RH, CARACAS, 00.00-04.00.
25.29	11,860	G8E, DAVENTRY, discontinued.	47.10	6,396	YV5FK, CARACAS, 23.30-03.30.
25.34	11,840	OLR4A, PRAGUE.	47.15	6,362	YV1RH, MARACAIBO, between 12.30-05.30.
25.36	11,830	W2XE, WAYNE, 23.30-04.00.	47.28	6,345	YV1RG, VALERA, 23.30-02.30.
25.40	11,810	I2RO, ROME, 11.00-21.00 and 00.15-01.30.	47.85	6,270	YV5KP, CARACAS, 23.00-04.00, approx.
25.42	11,800	COGF, MATANZAS, 22.00-04.00.	48.05	6,245	HIN, TRUJILLO, 00.30-03.30.
25.42	11,800	JZJ, TOKIO, 20.30-00.30.	48.31	6,210	YV1RI, CORO, between 16.30-03.30.
25.42	11,800	OER3, VIENNA, 15.00-23.00.	48.78	6,150	YV5KD, CARACAS, between 16.30-04.00.
25.45	11,790	WIXAL, BOSTON, 21.45-23.30; S. 20.00-23.00.	48.80	6,150	CJRO, WINNIPEG, as CJRX (25.6 m.).
25.49	11,770	DJD, ZEESEN, 16.40-22.25 and 22.50-04.45.	48.83	6,140	W8XK, PITTSBURGH, 04.00-06.00.
25.52	11,750	GSD, DAVENTRY, 03.20-05.20; 07.00-09.15; 16.45-18.00; 22.15-24.00.	48.88	6,136	CR7AA, LOURENCO MARQUES, see CR7BI (25.6 m.).
25.54	11,730	COCX, HAVANA, 14.00-07.00; S. 14.00-18.00, 00.00-04.00 (Mon.).	48.92	6,135	VE9HX, HALIFAX, 16.00-06.00.
25.60	11,720	CJRX, WINNIPEG, 00.00-06.00; S. 19.00-04.00.	48.94	6,132	COCD, HAVANA, between 15.00-07.00.
25.60	11,720	CR7BH, LOURENCO MARQUES, 18.10-22.00; S. 16.00-20.00.	49.02	6,125	LKJ, JEJOY, 17.30-23.00.
25.61	11,710	TPA4, PARIS, 00.00-05.00.	49.02	6,120	W2XE, WAYNE, 04.30-05.30.
25.63	11,700	SBP, MOTALA, evenings.	49.10	6,110	VUC, CALCUTA, between 08.00-18.00.
25.64	11,700	HP5A, PANAMA CITY, between 17.40 and 04.00.	49.10	6,110	HJ6AB, MANIZALES, 00.00-06.00.
25.64	11,700	CB170, SANTIAGO, 17.00-21.00; 23.00-06.00.	49.15	6,105	ZRK, KLIPHEUVEL, 18.00-22.00.
26.01	11,530	SPD, WARSAW, as SPW (22 m.).	49.18	6,100	YUA, BELGRADE, between 07.00-23.00.
27.17	11,040	CSW2, LISBON, testing evenings.	49.18	6,100	W3XAL, BOUND BROOK, 02.25-06.00.
27.26	11,000	PLP, BANDEONG, as YDC (19.8 m.).	49.20	6,097	ZRJ, MARAISBURG, between 05.45-17.30.
28.93	10,370	EASAR, TENERIFFE, between 20.35-02.00.	49.26	6,090	CRCX, BOWMANVILLE, 18.00-02.00.
29.04	10,330	ORK, KUYSELEDE, 19.30-21.00.	49.31	6,083	VQ1LO, afternoons until 20.15.
29.34	10,260	PMN, BANDEONG, as YDC (19.8 m.).	49.40	6,072	HVJ, VATICAN, 20.00-20.15.
29.35	10,220	PSH, RIO DE JANEIRO, 23.00-00.00; 01.00-03.00.	49.42	6,070	VP3MR, GEORGETOWN, 21.15-01.15.
30.18	9,940	CSW3, LISBON, testing.	49.46	6,060	SBP, MOTALA, 19.30-23.00.
30.51	9,830	COCM, HAVANA, 14.00-05.00.	49.50	6,060	W3XAU, PHILADELPHIA, 01.00-04.00.
30.52	9,828	EAQI, MADRID, evenings.	49.50	6,060	WSXAL, CINCINNATI, between 10.45-07.40.
30.80	9,740	COCX, HAVANA, 13.00-07.00.	49.67	6,040	WIXAL, BOSTON, 00.00-02.00.
30.93	9,700	"RADIO MARTINIQUE," Fort-de-France, 17.15-18.45; 00.00-02.00.	49.75	6,030	HP5B, PANAMA CITY, 23.00-04.00.
31.06	9,660	LRX, BUENOS AIRES, 15.30-05.00.	49.75	6,030	OLR2B, PRAGUE, evenings.
31.09	9,650	CS2WA, LISBON, T. Th. Sa. 22.00-01.00.	49.83	6,020	DJC, ZEESEN, 16.40-22.25.
31.10	9,645	HH3W, PORT-AU-PRINCE, 19.00-20.00; 01.00-02.30.	49.92	6,010	OLR2A, PRAGUE, evenings.
31.13	9,630	I2RO, ROME, 21.00-24.00; 01.30-03.00.	49.92	6,010	CJCX, SYDNEY, between 13.00-02.30.
31.15	9,630	HJTAB, BUCARAMANGA, 00.00-04.30.	49.92	6,010	PRAS, PERNAMBUCO, from 22.00.
31.21	9,612	HJLAB, CARTAGENA, between 13.00 and 04.30.	49.92	6,010	COCO, HAVANA, 23.10-06.00.
31.23	9,607	HP5J, PANAMA CITY, 18.00-19.30; 00.30-04.30.	49.94	6,007	ZRH, ROBERTS HEIGHTS, 16.00-22.00.
31.23	9,606	ZRK, KLIPHEUVEL, 05.45-17.45.	49.96	6,005	CX2A, MONTEVIDEO, 22.00-01.00.
31.25	9,600	RW36, MOSCOW, evenings.	49.96	6,005	CFCX, MONTREAL, 13.45-07.00.
31.28	9,595	PCI, HUIZEN, S. 20.00-21.00; M. 01.00-03.00; T. 19.45-22.00; Th. 01.00-04.00.	50.00	6,000	NEBT, MEXICO CITY, 16.00-06.00.
			50.17	5,980	CS2WD, LISBON, from 22.00.
			50.60	5,930	YV1RI, MARACAIBO, 00.00-04.00.
			50.90	5,893	YV3RA, BARQUISIMETO, between 18.00-01.00.
			51.28	5,850	YV1RB, MARACAIBO, between 16.30-04.30.
			51.72	5,800	YV5KC, CARACAS, between 16.45-03.45.
			58.31	5,145	OKIMPT, PRAGUE, evenings.
			60.06	4,995	VUD, DEJHI, 12.30-18.30.
			90.77	3,330	VUB, DOMBAY, 13.00-18.30.

# WEBB'S

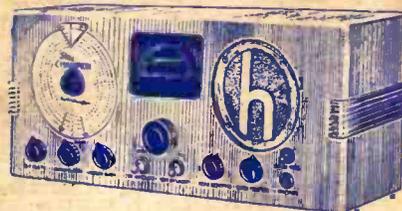
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RME & HARVEY**

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The Taylor T20 and TZ20 are increased in price to 17/6.

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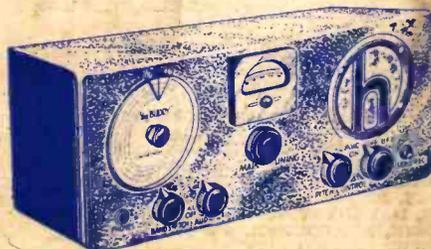


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- A.F. Gain Control
- Band Switch
- Sensitivity Control

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- Phone Jack
- A.V.C. Switch
- Beat Frequency Oscillator
- Pitch Control
- Separate Band Spread Dial

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Famous McElroy Standard Bug Key reduced from 38/- to 27/6.

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McElroy Hummer, 1,000 cycle mechanical oscillator for morse practice, again available from stock, 10/-.

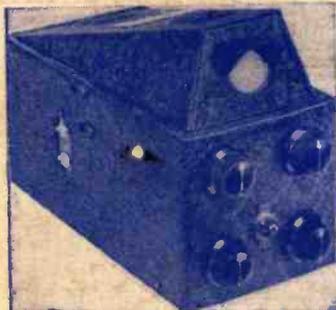
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**NATIONAL 1 inch C.R.M. OSCILLOSCOPE.** Gives graphic pictures of operative conditions such as percentage modulation, signal distortion and peak voltage. Unit is self-contained, power supply and controls being built-in. A 50 cycle sweep is provided. Physical dimensions 4 1/2 x 6 1/2 x 8 inches.

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T.40, TZ.40. NOW IN STOCK. Price 24/- each. Prices now reduced on 866 Rectifier, now 10/-, 866 Junior, 7/6, T.55, 45/-, 203Z, 52/6, 745, 65/-.

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ALL TYPES IN STOCK, 5-metre Q, complete, 27/6  
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Johnson 211 Tube Sockets, 3/6.

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Johnson 10 watt Base-Board Valve Holders, 3/6 (Miniature of the famous 50 watt base).

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U.T.C. Varimatch Input Transformers, PA52AX, 23/6, PA53AX, 26/-, PA238AX, 60/-.

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Hammarlund Tube Sockets, all types, ceramic, 2/6.

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Raytheon 807, Beam Power, 27/6.

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New 6E6 (65 m.c. double triode), 7/6.

Eimac RK21, 47/6. Eimac KY21, 55/6.

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Raytheon RK-25, RK-23, 802, 27/6 each.

Raytheon RK-35, 50/--. New Eimac 35T, 50/-.

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Raytheon First Grade Receiving Tubes in glass and metal, all types, from stock, including 6L6, 6L6G, 6V6, 6V6G, 6G5, 25L6, 6J5G, 6E6, 6A6, 6A3, 6Q7G, 6R7G, all 7/6. Most other types 6/6.

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