

The

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SHORT-WAVE MAGAZINE

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

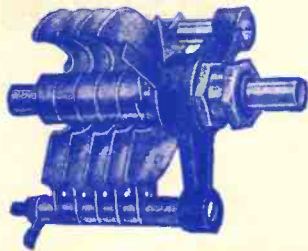
JULY

1938

VOLUME II

NUMBER 5

For
Dependable Service



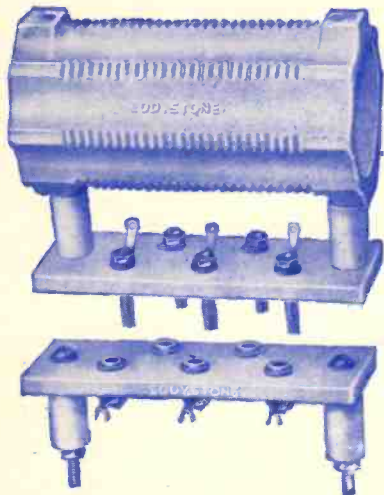
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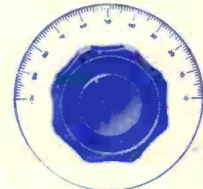
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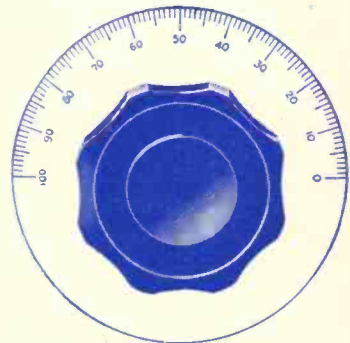
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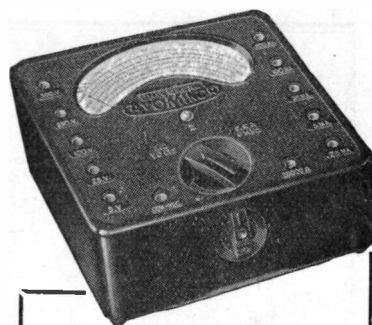


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G6FO

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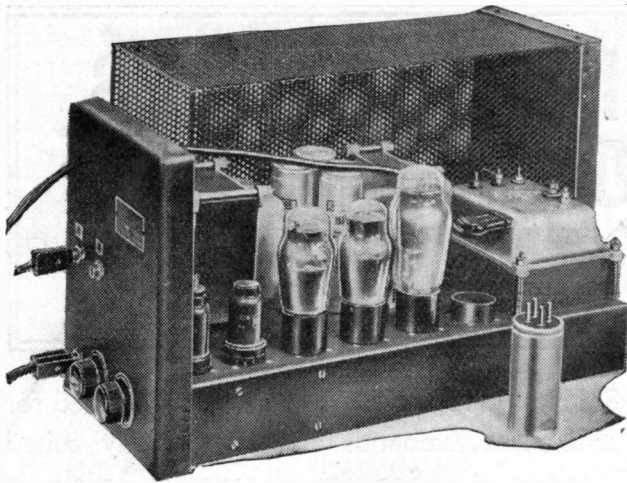
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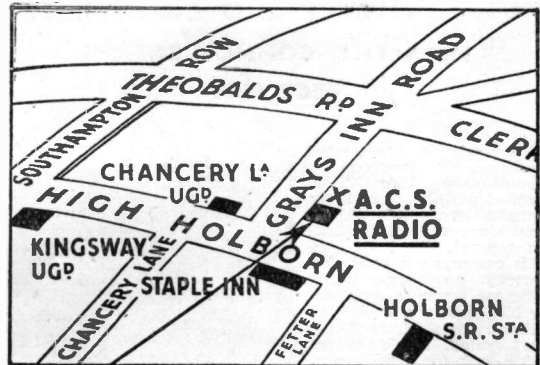
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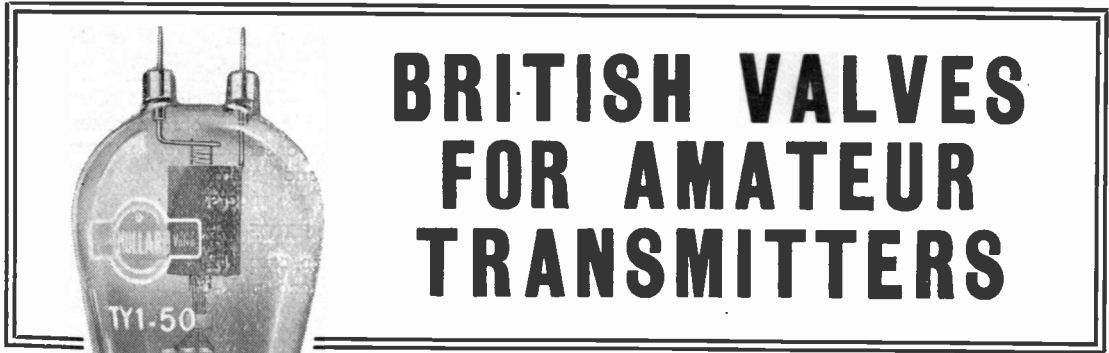
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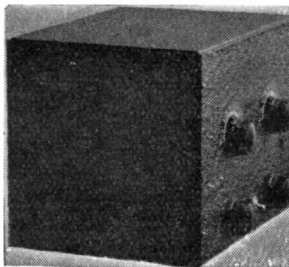
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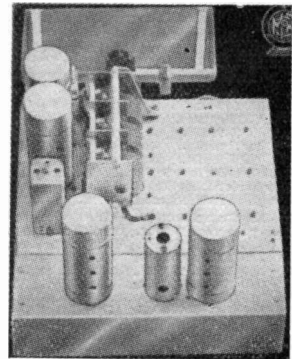
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THE SHORT-WAVE MAGAZINE

Vol. II.

JULY, 1938

No. 5

Editor: AUSTIN FORSYTH (G6FO)

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

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THE SOCIETY SITUATION

This heading does not refer to Ascot, Goodwood or Cowes, nor to local radio clubs, but to the several listener organisations in this country which claim membership from amongst our readers and solicit Magazine support for their publicity.

Of course excluding the R.S.G.B. which is in an entirely different position, there are something like seven or eight societies looking for membership from the SWL fraternity. Some of these organisations have foreign roots, and offer membership on a basis which, being practically free, cannot carry service advantages.

In many cases, due to the slow expansion of the field and a total effective membership of all these leagues of less than 3,000, it is difficult for them to make progress or offer worth-while facilities, and there is much unnecessary friction and petty jealousy due to the competition for membership.

We would therefore offer the suggestion that, for the good of the whole cause, it is high time a move was made to see what can be done about amalgamating the listener societies.

We are prepared to assist in any reasonable way towards this end, and in proof of what can be done, an announcement appears elsewhere regarding the recent merger of the B.S.W.L. and N.R.S. Every member concerned received an explanatory leaflet and ballot form, and it is interesting to note that in spite of predictions to the contrary, the mass vote was 80% in favour of amalgamation.

In the interests of all concerned, however, the Magazine can only give support to a society organised on a sound basis, and so constituted that the membership has proper representation.

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Annual subscription — Inland, 8s.;
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HAVE YOU HEARD...?

I HAVE been criticised, even censured, because of my persistency in writing of "Latin-Americans"! Naturally, having had some little experience of journalism, I am not in the least bit perturbed! In fact, I welcome it as an excuse to explain precisely why I annoy the critics in this manner!

I am conscientious enough never to cease trying to produce something of interest to fellow enthusiasts, very much like any other zealous club member would do, although there are times when it is difficult to find fresh news. Sometimes daytime listening is entirely out of the question, as with the majority of listeners, and my only alternative to operate at night. The North Americans are then invariably excellent, but obviously it is quite useless to report reception of stations that are so very consistent, stations that adhere to one schedule for months on end without the slightest variation. Consequently attention has to be turned to stations that are inconsistent, that are notorious for changing from one frequency to another, for commandeering other channels, or compatriots' slogans, and so on. Such broadcasters make *news*, furthermore they are frequently supplemented by others that spring up in mushroom fashion, proving perhaps difficult but extremely fascinating to separate and identify, a real test of skill, far more so than amassing long lists of 14 Mc amateurs. Then later there is generally the joy of an unusual QSL card, another scalp to the wall, and so different from the usual verification, as those possessing cards from such transmitters as TI4NRH, "Radio Martinique," H1N, HI5N, PRA3, etc., will readily agree. Admittedly, there are non-Latins equally interesting, but comparatively very few and far between, and we can be certain that at least five so-called "Latin-Americans" will make their ethereal debut to one from all of the other continents put together; ergo, I unwittingly give the impression in both articles and log-book that nothing else is worthy of attention, an idea that is far from the truth. For proof I will turn to Asia, from whence there is at last some news worth publishing!

● Delhi well heard

VUD2, Delhi, now using 10 kw on 31.28 m., is particularly well received, being at its best between 17.00 and close-down either at 18.30 or shortly after. A studio clock may be heard chiming the hour (IST) at the half-hour BST, news and weather forecast in English and an occasional brief talk from 17.00 until 17.20 or so, the remainder of the programme being comprised of native music and singing. Reception reports may be addressed to "All-India Radio," Delhi, India. A VUD3 with 5 kw will shortly be inaugurated on 19.79 m., I understand, and one may also expect to hear tests from either a new or re-vitalised VUC under the call-sign VUC2, which is to replace the existing 49 m. transmitter. Little has so far been recorded of VUB2 in this country, although I well remember the amazing performance of VUB on 31.36 m. just four years ago.

● No Palestine S-W BC

There has been controversy concerning some alleged broadcasts or tests by "Radio Palestine" on short-waves, and in reply to my enquiries I am

informed by the authorities that (1) official short-wave tests have not been undertaken, (2) at present there is no proposal in hand to carry out regular broadcasts on short-waves. And that dispels yet one more rumour.

From Tan Bin Hussain, Ipoh, Perak, I have received a cutting of outstanding interest, telling how Singapore's short-wave radio station, built by two staff engineers of the British Malaya Broadcasting Corporation, and having a power varying between 400 and 500 watts, will shortly be carrying out tests under the calls ZHO (49 m., 6,012 kc) and ZHP (31.48 m., 9,530 kc), with programmes derived from the medium-wave ZHL. It is confidently expected by the B.M.B.C. that these broadcasts will be well heard throughout Malaya. No schedules are yet available.

● European activities

There is little of outstanding interest to report from Europe. OZF, Skamlebaek, 31.51 m., has modified its schedule and may now be heard between 02.00 and 03.30 with programmes intended for South America and the Far East, and from 03.30 until 05.00 for North America and Greenland. An OZH can be received occasionally on 19.78 m. between 14.00 and 19.30. LKC, Jeloy, has reverted to its use of the 31.48 m. channel during the evening, thus causing additional confusion to an already chaotic band. The Zeesen DZA was observed one Sunday on 30.93 m. until 20.00, at the conclusion of what appeared to be a relay to the Egyptian State Broadcasting Service.

● Russian Broadcasts

Broadcasts in the English language from Moscow will take place as follows and until further notice, according to J. Shaw, of Leeds: Daily at 01.00 on 19.89 and 31.25 m., and 04.15 on 25 m.; also Sun. at 12.00, 16.00 and 22.00 on 25 m.; Mon. at 22.00 on 25 m.; Wed. at 12.30 on 25 m., and Fri. at 22.00 on 25 m.

● Two interesting verifications

In May I introduced LRA; since then I have received his QSL, presumably that of the medium-wave station of the same call, suitably modified and giving the short-wave frequency as 9,690 kc, or approximately 30.94 m. The full title is "LRA Radio del Estado" and reception reports should be addressed to "Direccion General de Correos y Telegrafos, Estacion de Radiodifusion del Estado, Buenos Aires, Argentina." Accompanying the QSL (sent by registered mail) was an interesting programme booklet indicating that short-wave transmissions of the Ministerio de Relaciones Exteriores are made on Fridays only at 17.00 or 22.00 BST, until 23.15.

From Salvador comes the rather unique card of YSD. Details are as follows: Slogan "Alma Cuscatleca," Radiodifusora Nacional; frequency 7,894 kc and address "Radiodifusora Nacional YSD, Director Gen. T.T., T.T. and Radio Nacionales, San Salvador, C.A." Salvador is claimant to the producer of the world's best coffee, although I seem to remember that both Guatemala and Colombia also

Broadcast band events of the past month, Readers' Forum, and Reminiscences, compiled and presented by F. A. BEANE (2CUB)

proclaim this on their QSLs and postmarks! Incidentally "Alma Cuscatleca" continues to radiate an amazing signal and should be searched for prior to 05.00.

● **Guatemalan Broadcasts**

The mighty TGWA (30.95 m.) has maintained its remarkable consistency and may be heard from 04.00 (it will be observed that it heterodynes TI4NRH at that time) until 05.30. TGQA (46.88 m.) generally participates in TGWA's Saturday evening concerts (actually Sunday morning here), a feature of the National Network of Guatemala. From 04.50 or 05.00 TGQA, "La Voz de Quezaltenango," continues with its own programmes, often consisting of orchestral music and glorious Strauss waltzes, popular items in Central America. TG2 (48.47 m.) is similarly absorbing, but generally inferior in quality.

The broadcasts, or dedicatories of TI4NRH, Heredia, 9,670 kc, were undoubtedly an outstanding success and I derived tremendous pleasure from hearing the familiar voice of Senor Cespedes acknowledging reception reports from many of my acquaintances. Our congratulations to the operator upon the completion of ten years of *amateur broadcasting*.

Other points of interest include: PJCI, of the Curacao Radio Club, Curacao, Nederlandsche W.I.; listen on 33 m. around 01.00; various languages, including English, are employed and occasionally a chime signal. CXA8 (31.12 m.) although spasmodic, is frequently excellent and may be heard announcing as "LR3, Radio Belgrano y onda corta CXA8," with a vibrophone note signal at the quarter-hour. Japan's European broadcasts are now available through JZK (19.79 m.) and JZJ (25.4 m.) between 20.30 and 22.00. HP5J (31.23 m.) and "Radio Martinique" (30.93 m.) are still exceptional signals, the former giving an interesting news bulletin at 01.05, and announcer George Williams says that he will send verification cards to reporters.

Further Station Addresses.

LAHTI S-W BROADCASTER, Oy. Suomen Yleisradio Ab., Lahden Yleisradiosema, Lahti, Finland.

SM5SX, Royal Technical University, Stockholm, Sweden.

SPW and SPD, Polskie Radjo, 5, Mazowiecka, Warsaw, Poland.

TFJ Rikisutvarpid, P.O.Box 547, Reykjavik, Iceland.

MOSCOW BROADCASTERS, Radio Centre, Moscow, U.S.S.R.

IZA, Radio Sofia 19, Moskovska Str., Sofia, Bulgaria.

LKC, LKJL, etc., Ministere du Commerce, Administration des Telegraphes du Royaume de Norvege, Oslo, Norway.

CS2WA, Estacao CS2WA, Radio Coloniale, Lisbon, Portugal.

CSW2 and CSW3, Emissora Nacional, Lisbon, Portugal.

"RADIO RENASCENCA," Emissora Catolica Portuguesa, Rua Capelo 5, Lisbon, Portugal.

GERMAN BROADCASTERS AND EXPERIMENTAL STATIONS, Raichs-Rundfunk, G.M.B.H., Deutscher Kurzwellensender, BERLIN-Charlottenburg 9, Germany.

FRENCH GOVERNMENT BROADCASTERS, 98, Bis Boulevard Haussman, Paris VIIIIE, France.

● **Readers' Letters**

Our American friend Warren H. Stark obliges us with a few other pieces of interesting information, remarking about the difficulty in securing the verification of TIEP (recently well heard again at 05.00 on 44.8 m.) and adding that an American 5 cent. stamp should be sent to stations in Nicaragua or Ecuador when a verification is requested. He inquires about a newcomer on 13,995 kc, using a three-note wood-wind instrument signal and an unidentified language, apparently a commercial 'phone. From Ricardo F. Rubio (Havana) comes a complete list of all the Cubans, but, unfortunately, lack of space forbids its inclusion. Chief points, however, are that COCD is now officially listed on 32.08 m., or 9,350 kc, and this news of COCU, the 30.15 m. relay of medium-wave CMCU: Slogan, "de Garcia Serra"; QRA, Estrada Palma No. 25, Vibora, Havana; power, 500 watts and schedule, 12.55-07.00 daily.

LONG DISTANCE LISTENING

Chief topic of the day, be it with old-timer or layman, is doubtless the Test Matches, yet I wonder how many of us short-wave enthusiasts are aware that it is possible to enjoy an almost unbroken commentary via the short-waves? Yes, the B.B.C. is improving and becoming really conscious of what the listener desires, with the result that GSP (19.6 m.) and GSD (25.5 m.) may be heard with a ball-by-ball description of events, the former from 15.00 to 16.30 and the latter 16.45 to 18.40; thus, with judicious collaboration of both medium-wave and short-wave bands it is possible for the listener to cover the greater part of the proceedings. Hardly long distance listening, perhaps, but very convenient to those fortunate enough to be at home! If such local listening does not satisfy the whim of the more experienced DXer he may wait until 18.25, when Howard Marshall's brilliant resumé of the day's play will be available from VUD2, presumably a relay of the Empire programme.

● **Highlights of the coming month**

Mention of sport reminds me that baseball enthusiasts, who must by now number quite a few in this country, may follow this great American game by turning to W8XK (19.72 m.) at 22.15, while Leo Bolley's Sports Review from W2XAF (31.48 m.) at 23.45 on Mondays and Wednesdays, should prove of outstanding interest to followers of international athletics. "Your Hit Parade" is a programme that has just come to my notice, the C.B.S. broadcast that may be heard via W2XE at 03.00 on Sundays, and one which I highly recommend to those seeking late night entertainment.

LATE NEWS

An Australian reader, R. Simpson (Concord West, N.S.W.), submits one or two rather interesting items, including the following: "Radio Burma," 6,007 kc, comes on the air daily 13.30 with news bulletin at 15.15, and verifies by letter. XGOW, Hankow, China, is active daily around 12.30, giving the station call in English at 13.00; frequency varies between 9,100 and 9,300 kc. JIB, Formosa, continues to radiate news in English at 15.00, also over JFO on 9,625 kc. "Radio Noumea," New Caledonia, 6,100 kc, operates daily 08.30-09.30, pro-

grammes being commenced and concluded by the "Marseillaise" and consisting of recordings and interspersed advertisements. All announcements are in French. Mr. Simpson's DX record is indeed a remarkable one judging by his letter, and I hope that he become a regular contributor to these pages.

From South Africa comes news from R. A. F. Burt (Salt River), a very enthusiastic DXer. Mr. Burt states that ZRK, Klipheuvcl, has been broadcasting its 05.45-17.45 on 31.23 and 49.2 m. simultaneously, and reports ZTC, Cape Town, testing on 50 m. with 80 watts power. Also DJS on 13.99 m. regularly; DJF (25.47 m.) has been discontinued. Sydney E. James (Croydon) sends complete details of the Schenectady transmitters adding that the G.E.C. hope to inaugurate broadcasts from their new Pacific Coast station shortly. Prior to going to press the writer observed HVJ, Vatican City, testing on approximately 25.53 m., around 16.50, and a new Costa Rican broadcasting on 25.15 m. (immediately below CD1190 in wavelength) between 23.30 and 04.15 onwards. Call appeared to be TI?X, Apartado 1729, San Jose, and slogans included "La Voz de la Republica," "Radio Pilot," "Radio Philco," and mention of General Electric, the call being announced at thirty-minute intervals, while on one occasion a siren wail was radiated.

A NEW TEXT-BOOK

Readers with a mathematical bent and a taste for probing into the reasons why things happen will find "Radio Frequency Electrical Measurements" of exceptional interest.

While all the methods of measuring and testing which are described in this book are fully analysed mathematically—necessitating rather more than a knowledge of Ohm's Law for really comfortable reading—there is a great deal of practical data which is well worth the attention of any amateur; by which we mean the man who has so far confined his radio measurements to the watching of the plate meter.

We were in fact extremely pleased to find not only that the basic theory of the many methods treated is explained in simple language, but also that all values are given and construction suggested for the various pieces of apparatus described. This is unusual in a book of this nature, and brings it immediately within the mental field of the average amateur, who cannot be expected to absorb mathematical analyses if he has never been trained to do so.

On the other hand, for those to whom mathematics are as music, there are enough formulae to make even the most involved investigation perfectly clear.

The 383 pages of this second edition of "Radio Frequency Electrical Measurements" cover the whole subject from the determination of circuit constants to the latest applications of the cathode-ray tube. The author has seen to it that a good index is provided, and dedicates his book to W9YH, amateurs of the University of Illinois, where Mr. H. A. Brown is associate professor of electrical engineering. It costs 24/-, and is obtainable from the McGraw-Hill Publishing Co., Ltd., Aldwych House, London, W.C.2.

CLUB HISTORY

We present this month the third in the series of brief accounts of selected organisations. Club secretaries concerned will be asked in turn to supply information for use under this heading.

WHITSTABLE

The club called Whitstable Radio Amateurs was founded in 1933 and celebrates its fifth anniversary in August this year. It is about the only society in existence in East Kent and owes its inception to the combined efforts of Messrs. Sale and Kensdale who, unfortunately, soon had to relinquish any active interest. In early 1934 Mr. W. Crossland took over the running of the club and has maintained a very active interest ever since.

Originally all interests were catered for, but since the members are chiefly concerned with short-wave work, the club now confines its activities to short-wave reception, and transmission on amateur frequencies.

As many members have shown great interest in the ultra-high frequencies, a number of tests have been organised and 56 Mc transmissions made under various calls, including G2OL and G6FV. Further tests are planned for this summer, using the call G5CI working portable.

Most of the members also belong to The Radio Society of Great Britain, the activities of which have been wholeheartedly supported. Every year a visit is paid to the District 16 Provincial Meeting, and the W.R.A. has always given its fullest support to such functions. A series of films have been made of W.R.A. field day activities by Mr. H. W. Robinson (2BBT) and these, together with the current R.S.G.B. N.F.D. films, form a very successful annual public film show.

Meetings are held monthly at 13, Queens Road, Tankerton, usually on Saturdays, when talks and demonstrations are given regularly by leading amateurs; any readers are welcome, the only qualification being enthusiasm! There is no subscription, as the Club transmitting and receiving apparatus is purchased by a levy which has so far proved almost negligible. A privilege which has been introduced by the generosity of the town council is a free supply of QSL cards. The design is a local view overprinted with the appropriate callsign, the back being devoted to matter selected by the Club, no advertisement whatsoever appearing.

There is now a total of seven fully licensed members, five AA licence holders, and many BRS and SWL enthusiasts.

During the course of the June meeting contacts were made on 7 Mc CW with some of the R.S.G.B. National Field-Day Stations, followed by a Morse class. The next meeting will be held on July 9 at 7.30 p.m.

Intending members should communicate with the Hon. Secretary, Mr. W. Crossland, 13, Queens Road, Tankerton, Whitstable, Kent. Visitors are specially invited to attend club meetings and to take part in the many other activities.

Adventures of an Op. _____ "SHOCK"

No. 7

By N. P. SPOONER (G2NS)

A WELL-EARNED rest took us to Buire where our spare time was chiefly spent in swallowing pints of inferior French beer, devouring large quantities of egg and chips or whispering sweet nothings in "army French" to the farmers' daughters behind the nearest cow-shed.

We returned all too soon to the line and upon being detailed to collect rations from a main-road dump one evening were more than surprised to come across unfamiliar "caterpillar" tracks in the mud. A Sergeant informed us that some new kind of armoured car was to be used in the coming attack upon a village in front of us called Flers. And right up to the very eve of their appearance in action for the first time only a favoured few knew the true details of construction, appearance and fighting qualities of the machines that a few hours later became known to the entire world as Tanks.

During the preliminary bombardment we were pulled out of a cosy funk-hole by a speechless bombing squad Leader who pointed into the grey mists of dawn. We saw a lumbering machine lurching towards us on caterpillar pedrails and from slits in its sides the ugly noses of machine-guns looked out. The panting thing calmly took our narrow trench in its stride and flattened out a maze of barbed-wire as if it had been so much rotten garden fencing. It slithered into a large shell-hole and we were about to rush to its rescue when it dragged itself out again like some prehistoric monster emerging from its lair.

A perspiring face, streaked with oil and half hidden by a tousled mop of hair, suddenly poked out of a small door. "You blokes will have to run like hell to catch Fritzies, after he's seen us!" shouted the man and those of the Club who heard the remark answered with a roar of delight.

● The effect

The events of that unforgettable day, the immediate success of those first tanks, the spirit of the small parties of infantrymen following in the wake of those first land-ships and the rout of a bewildered enemy are facts that became known to the whole world a few hours after the capture of Flers. Few who were in that attack will forget the effect that the sight of those new monsters had upon war-worn enemy nerves.

We came across an abandoned tank that had come to a standstill upon the parapet of an enemy trench. Immediately below its dipped nose we found a funk-hole and, inside, two dead enemy infantrymen stood frozenly upright. An argument thereupon arose between us and it was only settled by stripping the corpses and thus proving that neither had received the slightest trace of any wound.

Those two men had actually died from the shock given to war-weary nerves by the sight of that crawling machine crushing all obstacles in its path and spewing out a hail of death as it passed.

Rapid retreats have to be followed with rapid pursuit and the way chosen to keep in touch with the rear was by wireless.

We tripped over a fan aerial that somehow faintly reminded me of the weird and wonderful arrays attempted in the pirate pre-war spark days. The military fan looked something like Fig. 1 and a few square feet of wire netting buried in the slime and water of the nearest shell-hole answered as an earth.

● Real Wireless

A portable spark transmitter was neatly housed in a wooden case and consisted of an induction coil,

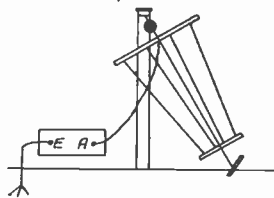


FIG. 1.

accumulator, key, aerial tuning inductance and spark-gap. A throw-over switch brought the receiving side into action and Fig. 2 shows the crystal detector, single head-phone and inductance.

Upon examining the induction coil we found that the primary was fitted with an interrupter that worked after the manner of an electric bell. As long as a high potential was produced other characteristics appeared to remain unimportant. The EMF obtained depended upon the number of turns and the rate of variation in the magnetic field. The more rapid the change, the greater the EMF, and

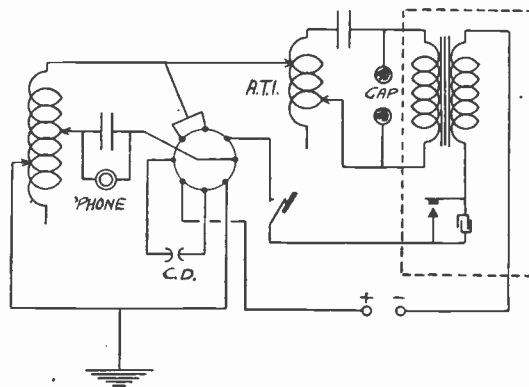


FIG. 2.

to assist in rapid interruption of the primary current a condenser was added in order to prevent loss of energy through sparking at the contact points.

Looking at Fig. 2 we see that upon pressing the key a current would flow in the primary circuit. When it reached a certain value the interrupter would break the circuit, and the induced current in the secondary then charged up the condenser and thus caused a breakdown of the spark-gap.

As a result, high-frequency oscillation took place. Owing to its iron core the inductance of the secondary was very much higher than that of the aerial tuning coil and the oscillations set up across the spark-gap were not affected by it. In due course the oscillations died down and the spring of the interruptor caused it to restore the primary circuit and so recommence the cycle, the induction coil giving the circuit one charge each time it was broken by the interruptor.

Roughly speaking, the part produced in the secondary winding was to that given by the accumulator as the number of turns in the secondary was to the number of turns in the primary. By having a very large number of turns in the secondary, an accumulator of only 6 volts could produce a secondary voltage of several thousand. Had there been no induction coil, to cause an inch spark in the air between the polished balls of the spark-gap would have required a pressure of something like 80,000 volts or in other words the employment of some 40,000 accumulator cells!! In small QRP sets the two windings were made in one, like an auto-transformer.

● Review

Turning to the receiving side, the tuning inductance had the old familiar sliders on it and the crystal detector was zincite and copper pyrites, sensitive but a sufferer from vibration. A service wavemeter was used with the gear and consisted

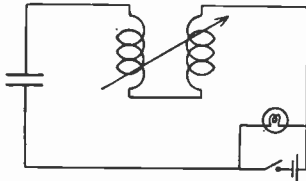


FIG. 3.

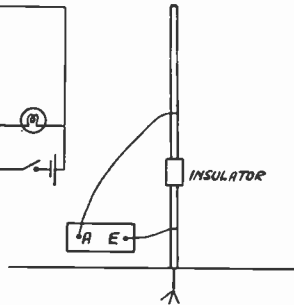


FIG. 4.

of a variable inductance and a fixed capacity in circuit with a flash-lamp bulb. The sensitivity of the bulb could be increased by heating the filament to a dull red with a single dry cell as in Fig. 3.

When in use the radiation from the transmitter, picked up by the wavemeter coil, set the wavemeter circuit in oscillation and thus raised the temperature of the flash-lamp filament. The wavemeter was then adjusted until the lamp gave its maximum brightness. An alternative method was to employ a crystal detector and head-phone.

● Aerials and Earths

We fell to discussing the vexed question of earths and aerials with the two Ops. and learned that the vertical rod aerial of Fig. 4 was sometimes used, as well as a horizontal radiator slung between masts. As an earth for small portable sets, an earth pin or even a bayonet was driven into the ground, and wire netting often made a rapid and fairly good earth.

One aerial for both transmission and reception was employed with small sets, as were also frames and loops. "Ground aerials" were used at times

and consisted of insulated wire simply laid on the ground which could be either a single wire in combination with an earth or earth net or alternatively two ground aerials could be used. The ratio of signal strength to interference was good and their properties were less directive than frames or loops.

With regard to aerial length, signal strength increased up to a certain limit after which further increases had little effect. For instance, the limiting length for a wavelength of 1,000 metres proved to be about 600 feet.

The chief disadvantage was that QRP depended largely on the soil moisture. Over dry ground the received signal was generally good but higher amplification was immediately needed to overcome the drop in signal strength produced by moist ground. "Buried aerials" were used at times, and had similar properties with an even better ratio of signal strength to interference, but were difficult to make neatly as the disturbed earth became very conspicuous from the air.

Alf Jones, the Cockney we have already met in these pages, was not of a telegraphic turn of mind and managed to drag us away in time to march out of the line at dusk; he led the Club in a little ditty known only to us, which ran, "the bells of hell go ting-aling-aling, For you but not for me . . . Oh! death, where is thy sting-aling-aling, Oh! grave, thy victor-ee?"

Next Month . . . No. 8: "RELEASE."

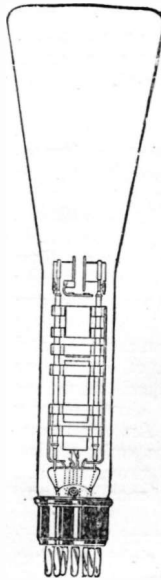
THE HIVAC C.R. TUBE

We are glad to bring to the notice of readers another cathode-ray tube, the Hivac CR3, with a screen diameter of 3-ins. It is so far the cheapest one, having regard to its size, that has yet been placed on the market; the price is 42/- only.

The characteristics are good, and the tube is fitted with a full set of electrodes, contrary to the practice of some manufacturers of the low-priced types, so that the Hivac CR3 can be used for every purpose within the scope of oscillographic work of an exploratory nature. The three-inch screen will be found more than adequate for all normal observations and measurements, yielding results comparable with tubes of larger size requiring expensive operating equipment.

The voltage range under which satisfactory operation is possible is 600 to 1,200 volts, and the heater takes 2.0 amps. at 2.5 volts. The base-fitting is standard 7-pin, and a special feature in the internal arrangement of the electrodes is the electronic shield between the horizontal and vertical deflecting plates, designed to eliminate angular distortion or "key-stoning."

An interesting descriptive pamphlet, with operating data and circuits for the CR3, is obtainable from Messrs. The High Vacuum Valve Co., Ltd., 111-117, Farringdon Road, London, E.C.1.



On The Amateur Bands

By OLD TIMER

THIS MONTH we have a sorry tale to tell. In our dotage we believed that there were hundreds of stations all over the British Isles working DX fairly regularly with QRP. We believed that this happened because the 10-watt licence holder respected his licence and really tried, by experimenting with aerials, to prove that good work can be done with 10 watts. We asked for details of results obtained and some sent in resplendent lists of stations worked; but we also received two letters from a correspondent who calls himself "Sapper," and appears to think that we have been too trusting in accepting the claims submitted! Before publishing them, let us quote our friend, because he appears to sum up the general feeling all over the country, and you can then decide whether we really *are* too credulous, or whether the "10 Watt" licence is merely a farce.

"... In the May issue of your journal you ask for details of real QRP DX. When these reports arrive, are we to believe these sagas of DX? I think that for the benefit of future hams most of these claims should be taken with the usual grain of salt. You have mentioned some stations as using a genuine 10 watts; unfortunately, I have been in certain stations where the same claim is made and if the gear mentioned below can be reconciled with QRP, I have no desire to become QRO.

1. A nameless 10 watt G, with 1,200 v. at 130 mils., class B modulated with 60 watts of audio.
2. A G2 with PP T55's, 1,000 v. at 180 mils.
3. G 2-5-6-8's with T55's, 1,000 v. at ? mils.
4. G 3-5-8's with RK20's and 1,000 v. HT.

"I was in one of the above stations when a W6 was contacted; the G was reported QSA5 R7 and was asked for details of his power, etc. The G replied 'a genuine 9 watts input'—that 9 watts was actually 1,000 v. at 120 mils.

"Please don't think I am decrying QRP—I am not—but how do we know it is *genuine*?

"And, finally, I have seen stations mentioned in your columns from time to time who are said to be QRP. Well, one uses 80, another 50, another 30 and the fourth 25 watts. Can you wonder I'm cynical?"

No, Sapper, we can't wonder any longer. We tried to believe in the ten-watt man, but have come to the conclusion that where an initial licence for this power is granted, and there are AC mains on the premises, the minimum installation for the power supply is a 500-0-500 transformer; many put in a 1,000-0-1,000 volt transformer and some of these on load will produce more than their DC rating (rectified). Only the other evening we were listening to HK3AL saying that his input was 40 watts at 400 volts; we can think of a G who would have claimed his input as 5 watts at the same voltage! Where there are DC mains (without generator), or no mains at all, there is a fairly reasonable hope that less than 10 watts is being used. Has anyone ever in-

stalled a 200-300 volt power supply for transmission with AC mains?

Please do not write and say that we now take the attitude that WAC is not possible with 10 watts. We know it is—"The Old Timer" worked all continents with 7 watts CRAC years ago. In this case chemical rectifiers were used straight off the 220-volt AC mains with no transformer.

In view of the above revelation, which are we to think is wrong, the amateur or the law?*

● National Field Day

This ever-popular event took place on all bands on June 11-12 with fairly good weather all over the kingdom. The Irishmen came into the fun this year and Egypt, Malta and Switzerland helped to swell the number of field stations. We would indeed like to know if the transmitter signing VR6AB was really a portable on Pitcairn. He worked many G's and G portables, coming through on 14,360 kc with a T6 note between 18.00-21.00 GMT. The operator was supposed to be WIBES, using a generator driven off batteries, and QSLs were requested via the ARRL. It is interesting to note that he worked on the two evenings of the contest and came over well when W's were hardly audible but while VK's were good.

● Operators

We suppose that some districts find difficulty in getting keen operators for NFD, or the good ones have to sleep and therefore delegate the person who is nearest to carry on for a couple of hours. We did notice some stations being keyed by people having only the barest knowledge of the code or of operating technique. Ten-minute "tests," stations being called for eight minutes without the sender signing, and the calls then given in such a way that they were unreadable! On the other hand, we did notice some very fine operating, especially in the middle of the night, curiously enough.

● The "Top Band"

This band has always had its faithful adherents, though many believe that the degree and standard of operating on 1.7 Mc is low. Actually the reverse is the case, the standard in the annual 1.7 Mc contest being particularly good, while any week-end will prove that fast single-sending QSOs may be obtained on CW. The 'phone operators are most willing to stand by (seemingly indefinitely) for any experiments or tests one may wish to carry out. Behaviour on the air is most correct (with the usual few exceptions) and we wish to recommend that all who have 1.7 Mc permits use them more often.

During NFD the operator of one 1.7 Mc portable heard a W8 in the small hours, and we cannot imagine a greater thrill than working across the Atlantic on this band.

[* The law should be observed.—Ed.]

Interference is never very troublesome and real 100% contacts are the rule. To those who fight the QRM on 7 Mc on Sundays and produce a few incomplete QSOs we say,—give 1.7 Mc a trial. 100-150 mile contacts are quite easy, even in daylight with QRP, and more than one NFD portable worked Europeans.

● 56 Mc

Switching from the low to the high-frequency end of the scale, we remind you that the RSGB Contest is still running and there was a field day on July 3. The fine weather is with us (or should be) and many will find week-end recreation in field work with portable apparatus on 56 Mc. We appeal to all to make transmissions as stable as possible. Most of the keenly interested participants in this contest are using straight or superhet receivers which do not like broad “wobblated” ’phones. To our way of thinking, it is time largely wasted to go climbing mountains to set up antiquated gear and, by using self-excited apparatus and quench receivers, nullify the possibility of receiving a weak but stable CW signal from a great distance. We are always hearing of the reception of weak, fading carriers; if only these were keyed *sometimes* we are sure something very exciting would emerge, and some amazing reception be recorded. It is another side of the old controversy (but we are not going to get caught in it) that CW will always carry further than ’phone.

● Poor Notes

Have you noticed that the number of poor notes does not seem to decrease on the Continent? We don't mean just the slightly chirpy blah-blip-blah-blip blah-blah-blip-blah ones, but the T5-6 zuzz variety; the intentionally modulated signals. This is a pity, because with increasing numbers of stations coming on our bands, the difficulty of reading an unstable signal through a “tearing calico” note is immense. Certain G's still persist in modulating their CC. It is true that the resultant note is more easily recognisable, but is this sort of thing making for the general good of all—we venture to suggest that it is extremely selfish, bad practice and worse style. With a good communication receiver, one can read several stable signals through the silent point of a strong or local CC transmission if it is PDC, and the sudden arrival of such a signal does not unduly upset the listener; but imagine a real “tearing” note coming on top of a weak station. It's all U.P., especially when the wretched thing is a creeper which crawls right over and through the station to which one is listening. Let us then try to tell the offender of his crime—a Utopian idea perhaps, but it may have the desired effect on some, especially those who are unfortunate enough to understand English. But keep your own note absolutely clean and stable.

If you have any suggestions or grievances on matters of general interest, then write to the “Old Timer” and he will air them for you, Editor permitting.

If the gentleman who is now making free use of the call G8JC will write J. Morris Casey, 1, School Road, Coalbrookdale, Ironbridge, Salop, enclosing a large stamped addressed envelope, he will receive a number of interesting QSL cards.

The British Short-Wave League and The National Radio Society

Amalgamation Effected

WE ARE GLAD to be able to announce that, following discussions between the representatives of the B.S.W.L. and the N.R.S., with the Editor of THE SHORT-WAVE MAGAZINE, it was agreed to circularise the members of both societies on the question of amalgamation.

The result of the voting was 80 per cent. in favour of the proposal, a somewhat unexpected development being that many N.R.S. members suggested retaining the name “British Short-Wave League” as the title.

It was pointed out in the circular, which gave nearly a fortnight for consideration of the matter, that since both societies offered practically the same facilities and differed only in the subscription rate, a merger was desirable, particularly in view of the fact that this difference in subscription is solely because the B.S.W.L. has its own four-page review, which is posted free to members in a copy of the Magazine.

In other words, the 7s. 6d. charged for membership of the B.S.W.L. covers all facilities, the supplement, and a copy of THE SHORT-WAVE MAGAZINE monthly.

● Facilities

The British Short-Wave League is the oldest and probably the best-known of the listener societies; it has certainly gained more recognition than any other, and in course of time has achieved a high status. The various certificates of proficiency granted by the League, such as the HAC and VBE (“Heard all Continents” and “Verified British Empire”), are only awarded on the necessary proofs being given by QSLs obtained, and that they represent an exceptional standard of efficiency on the part of the recipient is proved by the fact that only about 20 per cent. of League members hold such certificates.

Other membership facilities include the QSL Bureau, which has handled a very large number of cards and is officially recognised as a clearing centre by the R.S.G.B., several foreign transmitters' QSL agencies, and innumerable broadcasters.

B.S.W.L. members also have available sections giving free technical advice, general information such as QRAs, and an exchange for cards, stamps and correspondence.

Further information is available from the Secretary, British Short-Wave League, Ridgewell, Halstead, Essex, and enquiries will receive immediate attention if a stamp is enclosed.

A PAGE OF

LETTERS TO THE EDITOR

Co-operation, Please

I wonder if, through the Magazine, I could get in touch with any transmitting or receiving stations in the North of England and Wales who would be willing to carry out 56 Mc tests with me during July. I shall be using a crystal-controlled 25-watt five-metre transmitter, plate modulated, with an 0-V-1 receiver and beam aeriels.—J. S. T. RUDDOCK, G18TS, Broomhedge Rectory, The Maze, Lisburn, Co. Down, N. Ireland.

Clean Up The Bands !

I will mention a few things I would like to see in your pages. (1) A detailed treatment of crystal control. (2) A list of amateur prefixes. (3) A friendly criticism of those amateurs guilty of bad transmission. (4) Less about broadcasting. May I express my whole-hearted agreement with your policy regarding irresponsible transmitters who are damaging Amateur Radio by exceeding their power and talking on the air like children. I suggest you campaign for a tightening up of licence regulations, and in this connection I think your June editorial is excellent.—D. R. NEWTH, 121, Gough Road, Edgbaston, Birmingham, 15.

Calls Heard Again !

I take the Magazine regularly and find many things of great interest each month. I do, however, entirely agree with the opinions of Mr. Collett and 2DFX, whose letters appeared in June, referring to Calls Heard. Personally, I have neither time nor wish to read them, and I am sure the majority of readers are not really interested in knowing that Mr. Bloggins hears DX. One other feature is "Have You Heard"; could not this sometimes give place to something of more general interest?—D. SCOTT-JOB, 2DBW, 96, Lyncroft Gardens, London, N.W.6.

Why not 50 watts ?

I should like to reply to the remarks made in Old Timer's articles regarding misuse of power; at the same time I have no wish to be classed as a breaker of the law. It is a well-known fact that 90 per cent. of the stations licensed for 10 watts use more—I think the average would work out at about 50 watts. The amateur using over 10 watts will never be stopped, so why not allow a maximum of 50 watts. Instead of being held in contempt licence conditions would then be respected. There is no use anyone trying to conceal the fact that power in excess of licence is the general rule.

Please let us be certain that those who complain of excess power are not doing so from purely selfish reasons. Let it be known what power they are permitted to use, and be sure they do not seek to become a select few who, having what they want, seek to limit the ordinary amateur.—D. B. BRADLEY, G6HV, 89 Brandling Street, Roker, Sunderland.

What is an Amateur ?

It is nowadays possible to become a SWL by buying a kit and, without any technical knowledge whatsoever, to build a short-wave receiver which will produce logs well up to the usual standard. Does this amateur get as much out of radio as the man who designs and constructs his own receiver, largely with home-made gear? I have always made as much use as possible of old parts, but fellow-members of this club say it is false economy, as good parts are now obtainable so cheaply. My reply is that the "I made it" feeling still gives me a thrill, and that we still want the individualistic touch in radio.—EDGAR C. COOPER, Hackenden Radio Club, The Alders, Hackenden, East Grinstead.

Battery Transmission

I am a new reader and would be glad if you could inform me of a simple 'phone transmitter for battery operation on 7 Mc, preferably crystal-controlled.—S. H. AVERY, 32, Alcester Street, Redditch, Wores.

[A very effective battery transmitter was described in our issue of May, 1937, and methods of modulating it in December last. —ED.]

Which are the DX Zones ?

I am taking part in a club DX competition, and would be pleased if you could let me know how the world is divided up into zones; you mention that there are 40 of them.—K. E. ROBERTS, 2, Chestnut Close, Southgate, London.

[It is impossible for us to describe how the zones are arranged, because it would mean delineating in words the hundreds of boundary lines involved! We therefore suggest you get a "Radio" Zone Map of the World from the "Hams' Bookshop," as advertised in the Magazine.—ED.]

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

The Amateur Three

Some further notes

By THE EDITOR

SINCE LAST MONTH'S article appeared, the receiver has been in constant use, giving a very good account of itself.

It would be as misleading as it is futile to give a mere chronicle of DX heard. Suffice it to say that the set is quiet, stable, easy to operate and free of hand-capacity at all frequencies, while the LF gain available makes it possible to use a speaker comfortably on the American amateur 14 Mc 'phones when they are coming over reasonably well. This is not too bad for a straight three, and people who have heard the receiver suggest that we err on the side of under-statement. Actually, to allow for possible contingencies, we are careful to keep a bit in hand in the descriptions of *all* Magazine apparatus.

As the wave-range is continuous from 9-170 metres approximately, all the usual S-W BC and commercial stations can be received, also ship-to-shore 'phone, trawler, police and aircraft transmissions.

The set was specifically designed to pull in *everything* on the short waves, and a long period of intensive testing shows we can safely claim that it does so.

As regards amateur-band reception, the receiver is practically single-control on 7, 14 and 28 Mc, the reaction setting holding substantially constant over large slices of the band-spread condenser dial, which is the main tuning control. This dial, the J.B. airplane type 2131-A, has an illuminated scale and dual-ratio slow-motion. Large knobs were specially fitted by Messrs. Jackson Bros. at our request, and the result is one can tune through, say, 14 Mc, by spinning the outer knob with one finger. The HF stage is the key to this ease of control, while the signal-gain it produces finally disproves the old idea that tuning on the HF side below 100 metres is a waste of time.

● 28 and 56 Mc

On the ten-metre amateur band, the HF stage gives definite gain and peaks nicely. At the time of writing (late June), there is not much to be heard east-and-west on 28 Mc, but stations on a north-south line come in well when they are on, and we have heard (and worked) some quite interesting DX.

We are at present experimenting with a coil assembly which will tune 56 Mc, and though these tests indicate that the set will take straight CW and crystal-controlled telephony, we want to be certain that readers will be able to make up or obtain exact reproductions of our coils before giving further data, which will make the "Amateur Three" the first constructional design covering all six amateur bands.

In the meantime, readers may care to try the set on 56 Mc for themselves, by taking as the basis for experiment about one-third the amount of wire on the B.T.S. coils for the 9-14 metre tuning range.

● Accessories

As mentioned in the June article, in which a current consumption table obtained by checking total plate current against grid voltage was given, for best results 150 volts HT should be used; with -6 volts on the grid of the Y.220 output valve, the total consumption is then 9½ mA. Since the HT is taken from a single tap, and 150-volt blocks are not readily available locally, we looked into the matter with Messrs. Exide, and can recommend their Drydex HT battery, type H.1134, which gives 150 volts and embodies a tapped 9-volt section for bias.

On the LT side, the Exide Hycap indicator-type GFG4-C accumulator is of ample capacity to run the receiver for long periods without re-charging.

We have also had enquiries about a speaker, and the Premier Rola PM type is available with a tapped matching transformer, in various cone diameters. The one we like is the 10-inch size.

Other requests have been for blue-prints and wiring diagrams, and if the demand warrants it, we shall be in a position to produce these shortly. We think, however, that in view of the simplicity of the receiver from the constructional aspect, together with the fact that a full kit of parts, with a ready-drilled panel and chassis, is being supplied by Messrs. Peto-Scott, Ltd., readers who have only the slightest constructional ability should be able to build it without difficulty.

AMERICAN FACTORY-BUILT RECEIVERS.

We get a surprising number of queries asking not only for personal recommendations regarding American communication receivers, but also for advice on adjustment of the "works."

It seems that many people cannot resist the urge to take a screw-driver to the trimmer condensers in order to try and "improve results." What actually happens, of course, is that everything goes wrong. The performance from band to band becomes uneven, and image signals appear where they are not wanted.

We would remind readers who may feel impelled to write to us about fiddling with the IF that they will get very little sympathy! The fact is that every American set worth having is sent out factory-adjusted to the highest pitch of efficiency, and unless the user really knows what he is doing and has a test oscillator, the trimming adjustments should not be touched unless the book of rules expressly says what is to be done, and how.

Anyway, any such queries should in fairness be addressed to the makers or suppliers, and after this appears, we must regretfully refuse to handle further enquiries about these sets.

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PETO-SCOTT

1919

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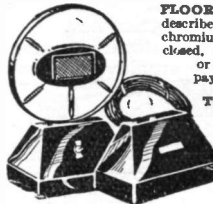
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Spanish Nationalist Radio

Interesting inside information

By W. L. CARTER

SINCE THE beginning of 1938 there has been considerable alteration in the operation of the Spanish Nationalist short-wave stations.

General Queipo de Llano, whose voice was formerly audible every night from 10 p.m. until 10.45 p.m., finally "signed off" for good in February when a change in the form of government occurred. In this case, the passing of a picturesque character of short-wave broadcasting coincided with the formation of a regularised government. It replaced the old "Tecnica Junta" which had acted since the commencement of hostilities. The General has not been substituted by any other speaker, and Nationalist short-wave radios now fill in the ½-hour period until 10.45 p.m., when Radio Nacional is relayed, with their own individual programmes.

Radio Malaga, which announces itself as such without any call letters, does not employ the frequencies with which it was listed as "testing." It will be found in the 40-metre band from about 9 p.m. onwards sandwiched between EAJ8 and EAJ28, i.e., Radio Espana in San Sebastian and Bilbao respectively. Malaga's actual power has not been revealed, but as received in the Midlands it is a consistently strong signal, and has not yet been observed to fade. It relays Radio Nacional at 10.45 p.m. on its other frequency of about 14.4 Mc.

Radio Nacional, which is relayed earlier in the evening till 9.30 p.m. by FET1 of Valladolid, EAJ8, FET5 of Burgos, and EAJ28 in Spain, with Radio Tenerife and others, now announces itself as in "Burgos." This is because when the Tecnica Junta was dissolved for good in February, many of the departments of state in Nationalist Spain were transferred to Burgos from Salamanca, which was gravely overcrowded, as those whose business took them there will testify. The transmission consists of straight news, and the reading out of lists of prisoners, wounded and in concentration camps. The times quoted are British Summer Time and for the present coincide with Spanish Nationalist Time. They, too, use Summer Time but later an adjustment of listening schedule will be necessary by British listeners as their time or return to GMT is different from ours.

● QSLs

Radio Nacional has one feature in its transmission that is unique throughout the world, and which will lapse immediately hostilities are concluded. Early on Sunday mornings, shortly after midnight, Mass is celebrated in the studio and broadcast in its entirety. This is done by special dispensation from the Vatican as the broadcasting of a studio Mass is normally forbidden although, of course, often relayed from churches.

Occasionally, I have heard grumbling at the fact that no QSL card is forthcoming following a report submitted to a Nationalist station. The better known stations QSL without difficulty, but when thinking of reporting the small ones, it would be as well for enthusiastic amateurs to ascertain from the type of material received the nature of the sta-

tion to which they have been listening. If the station is obviously relaying a programme or speech, playing records in any kind of ordered programme, or is reading a prepared news "diario," as do many small stations, then by all means report. But there is also the possibility that one has been listening to a small military or air arm transmitter, perhaps even one of the naval stations ashore or afloat. In such case, it is pure waste of time to ask for a QSL card. Perhaps it may seem a little ungrateful on the part of the recipient of the report, but when one realises that the request is exactly similar to a Spaniard inviting our R.N., Army or R.A.F. stations to QSL him, the matter falls into its proper perspective. In addition, it is highly doubtful whether troops on active service would be permitted by any military censor to discuss such matters or confirm reports from foreign correspondents:

● A new station

As regards the Madrid Front radios, "Radio Espana en el Frente de Madrid" operating on 7.06 Mc, recently increased its power, and is now quite a respectable signal. Its companion Radio Nacional "A-Z," which it relays, still operates on 6.75 Mc. Generally, but not always, both stations are on the air together. In the event of one not being heard on time—and both are excellent timekeepers—then turn to the other's frequency. Both stations QSL with pleasure. The question of their location is sometimes raised by foreign listeners who have an idea that the "Madrid Front" is an official hoax, and that the stations are many miles removed from the sound of the guns. The actual locations are not given for very obvious reasons, but I can assure readers that both are well and truly in the thick of things. The 7.06 Mc station has been run for months past by the same team of operators, and whatever our individual opinions on the conflict, as short-wave enthusiasts we would not wish to "give the show away" and invite a visit from artillery.

In all probability a very powerful new "voice" will shortly be heard on the air from National Spain. A 30 kw medium-wave station is now operating at Zaragoza (Saragossa), having been opened on Tuesday, April 19, by General Franco in person. Its short-wave activities have not yet become manifest but as most Spanish radios broadcast on medium and short-waves simultaneously, excellent reception of EA101 should be possible if the short-wave transmitter uses the full power.

● Following the war

I wonder whether any British amateur thought of listening on Spanish frequencies about the time when it was widely reported in the press that various Nationalist columns were approaching the Mediterranean coast at Vinaroz, or the "Levante" Front, as both parties in Spain term this sphere of operations. The writer did so, and the result was worth the waiting. It was obvious that with the severance of land telephone and telegraph lines of communication between Barcelona, Valencia and Madrid,

radio would be called into play as affording the only means of speedy exchange. Well, station "Q" tested out for quite a while with station "O". The letters are those given by the operators; there was no other distinguishing feature. The first indication that the coast had been reached came from a small field radio which gave the briefest of messages, confining itself to a bare statement that Vinaroz had been occupied. Later, the Madrid Front radios got going as reported in *The Times*, but this is the first occasion I have ever heard a whole hour's programme devoted to the repeated reading and re-reading of one news item in various languages, during which the obviously excited station staff clustered round the microphone and cheered and shouted themselves hoarse.

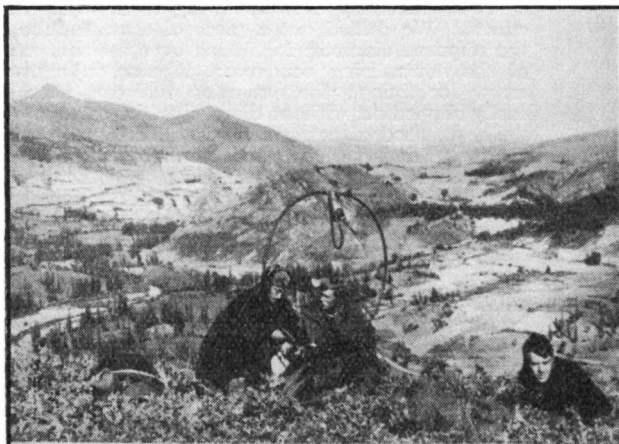
● No amateur radio

It has been suggested that many Spanish radios are those taken over from "pre-war" amateurs, but actually this is not the case, although it is quite true that amateur transmission is not permitted for the present. Many of the transmitters are those previously in use for local official work, now altered to a more convenient frequency. Many stations

Other short-wave transmitters have been constructed since the outbreak of the war, some of which are fairly powerful, being over the 1 kw mark. If poor quality signals are heard, it is almost certain that one is listening to a field station whose operators are whiling away a few spare moments in trying to add to their knowledge of radio! Usually, they have only a few records which they carry about with the greatest care as replacements in the field are impossible. That is why one station was known to its intimates as "La Gioconda." It could always be depended upon to oblige with "The Dance of the Hours" at least four times in an hour.

● Unexpected

I conclude with a true story. An English amateur picked up a certain Spanish Nationalist station, and posted it a report asking for a QSL. Unfortunately for him, he had confused the Barcelona authorities with those of Nationalist Spain. An astonished Spaniard on the staff of a station not 200 miles from Salamanca was gratified at the arrival of an excellent report of reception in England, but nearly fell off his chair when he read that the English



Above—A Nationalist field station in action. They seem to be using an ultra-short-wave loop transmitter, i.e., radiating off the tank coil.

The second picture shows another field station. These photographs, which are exclusive and may not be reproduced, give a very good idea of the type of country over which the war is now waging.



were necessary during the war and the choice of frequency lay between interfering with amateur transmissions or with those of "professional" stations, so the 7 and 14 Mc amateurs have experienced Spanish company.

Had it not been that the electricity supply was cut off from the Alcazar at Toledo, the outside world would have been able to listen to the defenders, as the Civil Guard, who comprised a substantial portion of the garrison, brought their transmitter with them into the fortress-academy. It was a fairly high-powered one, but with no current was, of course, so much waste metal and glass. One regrets no current was available, for it would surely have made history—radio and otherwise—to have been able to "listen in" to a siege.

writer was in hearty agreement with his station's condemnation of the entire Nationalist regime!

Eventually it transpired the English reporter of reception thought that each side "stood for" what was really the other's programme. However, the Spanish Nationalist was a sportsman. He had at one time lived in England, so perhaps knew something of our national peculiarities. He sent off a QSL card plus a letter explaining things. Its recipient's feelings are better imagined than described. The moral of this is when reporting reception to a foreign country, especially one in which a conflict is raging, it is better to omit expressions of opinion unless you are conversant with the land in quieter times, or are in no doubt as to your personal leanings towards the parties concerned.

The TY1-50 in Action

And Some Notes on Power Supply

By A. J. DEVON

FOLLOWING ON the introduction to the Mullard TY1-50, which appeared in the June issue, we have now arrived at the final design arrangement for the 56 Mc PA incorporating this valve for QRO work. The circuit of the amplifier was given on page 22 of the June issue.

At the time of writing, it is not actually possible to give results in terms of QSOs obtained, since there has not been an opportunity to arrange schedules, and the rig has been working on artificial load only. In view of what has been done with the RK-34 PA with low inputs—as previously described—there is no reason to suppose that contacts established with that unit will not be improved, and we are hopeful that long-period schedule-keeping will disclose something even more interesting than the QSOs already made. This RK-34 PA is, as mentioned in June, used as a buffer amplifier to drive the TY1-50.

● Construction

The QRO PA is built on a "Venesta" ply-wood baseboard 12-ins. square, with the valve standing in an ordinary "muckite" base (since grid and plate leads are brought out at the top) towards the rear edge. Two wooden blocks 2½-ins. square by 3-ins. long are fixed alongside the valve, these carrying on Eddystone insulated brackets the grid and plate tuning condensers, to which the coils are soldered directly. Single-turn links are made to both the latter for drive and RF take-off, these links being of stiff wire, terminated in our usual fashion to a pair of Eddystone pillar insulators.

A wooden strip across the condenser-mounting blocks carries the Eddystone neutralising condenser, the positioning of the whole being such that all leads that matter are not more than one inch long. It will be noted that the TY1-50 "horns" are actually hard wire, and as it is very unwise to try soldering to them, the grid and plate connections are made by means of Bulgin clamps, type S.C.30(a), listed on page 86 of their new catalogue.

Eddystone ultra-short-wave chokes are used on both grid and plate sides, with a "J.B. special" tank condenser and an Eddystone high-voltage Microdenser of the new pattern for the grid. These are fitted with slow-motion, which we found useful on the RK-34 PA unit and turn out to be almost essential on this one. The filament supply transformer is placed on the baseboard, near the valve-holder, though this is not important and in our case was largely a matter of convenience.

The by-pass condensers are T.C.C. type M, that on the plate side being tested to 2,200 volts DC. This service should be specified when ordering.

● Operation

A power potentiometer is joined across our 1,000-volt supply, tapped to give 500 volts for preliminary adjustments and testing. This is quite important, as unpleasant things will happen quickly if the whole

thousand is suddenly clamped on to the TY1-50, even if the valve is correctly neutralised and the tank side somewhere near resonance tune. The point here is that it is almost impossible to find correct resonance without some voltage on the plate and the grid side driving.

The first step is to neutralise, after having biased the valve to -200 volts on the grid, which should of course be at resonance with a milliammeter in the bias lead. Adjust the drive to get something like 40 mA grid current, this being done by variation of the links; it is easily obtainable from the RK-34.

Before all this is done, it is a good tip to fit some sort of a temporary extension control to the knob of the neutralising condenser, as without it adjustment is extremely difficult owing to hand-capacity effects. We drilled out a piece of ebonite tube to the required diameter for fitting over the thin knob of the neutralising condenser, tapping in a grub-screw for fixing; the extension rod can then be easily slipped off without disturbing the setting.

The method of neutralising is the same as usual; the tank side is varied about resonance—indicated in the first place by the "pull" on the grid meter—till a neutralising setting is found which does not move the meter at all.

Low-voltage HT can now be applied, and the tank tuned correctly for minimum plate current. There should be plenty of RF floating about, indicated either by a neon, tuning loop or blistering of the knuckles! Before applying load or increasing to full voltage, make sure there is no tendency for self-oscillation by keying in the drive side. The model is perfectly stable, so that our contemplated original idea for screening between grid and plate sides was not required.

The next thing to do is to put on some kind of load; this can best be a link-coupled tuned circuit of the usual AA type, with a heavy tank coil and 1,000-ohm 100-watt resistor in series for dissipation of the power one hopes to generate.

● Warning !

At this frequency, or any other for that matter, it is most unwise to run an RF amplifier for long periods at high plate voltage and full drive while unloaded. Very much greater peak RF voltages are always produced, and can do considerable damage, the risk of which is obviated if a load of some sort is kept on.

This is of course not to be taken to mean that the components used will not stand up to the work, nor that the amplifier can never be run in an unloaded condition—which is in any case necessary in order to ascertain minimum plate current—but rather that for safety's sake it is better to make these no-load periods as short and as infrequent as possible.

Having got thus far, the full plate voltage can be safely applied. All sorts of satisfying phenomena

resulted in our case. A nasty burn from the business end of a neon tube, a hot smell from the insulation of the single-turn tank coupling loop (which was disconnected from the load circuit and of course untuned) while a lead pencil drew fat arcs from the tank coil.

To any amateur, all this indicates RF, and plenty of it, and we were accordingly well pleased. For test purposes, the TY1-50 was run for half-an-hour under these conditions, and beyond the expected warming up all round, neither it nor the parts in the amplifier itself showed any ill effects.

Under load, an efficient 100 watts could be obtained without any difficulty, and the nett result is that this Magazine design—Exciter, Buffer and PA—enables anyone to get QRO on 56 Mc from a 7 Mc crystal, through four valves and seven tuned circuits, and using standard parts throughout.

The rig will be thoroughly tested under QSO and schedule conditions on 56 Mc during the next few months, and as we anticipate having a lot of fun with it, further reports will appear in these columns from time to time.

* * * *

● The Power Supply

To go with the TY1-50 amplifier, and also for general use, we provided ourselves with an HV power pack, giving 1,000 volts at 200 mA, smoothed DC. Rectification is by means of a pair of Osram GU.1 mercury-vapour rectifiers in the usual full-wave circuit, with a swinging choke and input condensers to the filter.

With the exception of the valves and condensers, which are Dubilier Type 951, 4 mF, 2,000 volts DC working, the whole of the power supply equipment is of All-Power Transformers, Ltd. manufacture, and

consists of the 1,000-0-1,000 volt, 200 mA transformer, the 2-0-2 volt 7 amp. transformer for the heaters of the GU.1's, a 2.5 henry 200 mA swinging choke and a 15 henry smoothing choke, together with a further separate LT transformer giving a variety of outputs.

A point to notice about any such a power unit, using mercury-vapour rectifiers, is that the HT must not be applied till after they have warmed up, and a delay of anything up to 15 minutes should be allowed when starting up for the first time.

Incorporated in this power unit is a bias supply rectifier, which consists essentially of an ordinary 350-volt HT supply used the other way round. Another All-Power transformer, with a suitable LT winding, feeds a Hivac UU.120/350, a smoothing circuit being provided with a 15 henry choke and 4 mF electrolytic condenser.

Across the output of the bias unit is a power bleeder taking about 50 mA, serving to keep the voltage steady under varying bias conditions. The point here is that the bias pack is obviously not called upon to give any power to an external circuit, and since steadiness in the bias is a pre-requisite for satisfactory operation, a load must be provided in the form of a "waster" used as a power bleeder.

The actual bias for the TY1-50 or any other valve is obtained by tapping along this bleeder till the required voltage is obtained. There is a complicating factor here in that changes of grid current alter the bias voltage by a greater amount than if a combination of leak and battery bias were used, so that it is necessary to tap for less bias than is actually needed. When grid current commences to flow, the voltage will come up, and it can be measured by a meter across the grid blocking condenser—but not with HT on the valve, and remembering that at 56 Mc such temporary external circuits will affect the tune of the grid side.

Trade Notes

ANOTHER T.20.

Messrs. Mullards will shortly have available an exact equivalent, electrically, of the well-known T.20 type of low-power transmitting triode. The price has been fixed at 17s. 6d.

The only point of difference will be in the base, and here we should say that it is our own opinion that there is very little to be gained, even on 56 Mc, by having a ceramic-base valve of this design. The material used by British manufacturers gives extremely good figures on test, and under practical conditions there are very few amateur equipments in which unavoidable circuit inefficiencies will not completely swamp any slight loss there may be by using a valve having a composition base.

In other words, you need laboratory apparatus to find any difference. It won't show on the loop lamp or neon glow-tube!

CHANGE OF ADDRESS.

Mr. I. T. Watkins, Midland Representative of Messrs. Westinghouse, has now moved to 32, Benson 19, and the new telephone number is Ringway 3491. Road, Maypole Road, King's Heath, Birmingham,

COMMUNICATIONS

This is the title of an American monthly which will be of value to those interested in the wider field of radio engineering. The contents embrace practically everything which one does not expect to find in the periodicals which have a strictly amateur appeal; the radio amateur who wishes to get the most out of the game naturally has an interest, academic though it may be, in the design of broadcast transmitters and the insulation of mast-aerials, to mention two features we noticed in recent issues of "Communications." The British agents are Messrs. Holiday & Hemmerfinger, Ltd., Radio Engineers, Holmer Works, 74-78, Hardman Street, Deansgate, Manchester, 3 and the post-free subscription is 12s. 6d. yearly.

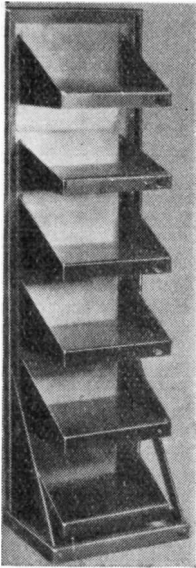
RAYMART.

The new catalogue lists many pages of items of the kind in which amateurs are always interested, and G5NI, an Amateur of long standing himself, well understands that the price must be right. The cost of the catalogue is 1fd., and the address Raymart Manfg. Co., 44, Holloway Head, Birmingham, 1.

PREMIER

SUPPLY STORES

Makers of High Grade HAM GEAR AT REASONABLE PRICES



THE PREMIER STANDARD RELAY RACK

This piece of amateur equipment is typical of the thoroughness with which we are tackling the needs of the British amateur.

The two racks are constructed of 1½ ins. x 1½ ins. x 3/16ths in. steel angle with panels and chassis cut from 16 gauge steel.

The panels are finished in black crackle and the chassis and frame in eggshell black finish.

Price :-		
67-in. Rack only	...	30/-
39-in. " "	...	22/6
10½-in. panels	...	4/6
7-in. Panels	...	3/-
3½-in. Panels	...	1/6
Chassis and Brackets	...	5/6

A 10-in. Panel and Chassis and two brackets cost 10/-, and a complete 67-in. rack, with five 10½-in. panels, one 7-in. panel, and one 3-in. meter panel, 6 chassis and 6 pairs of brackets, with all bolts, etc.

Price **£4. 10. 0** Carriage Forward

A complete 39-in. rack, with three 10½-in. panels and a 3-in. meter panel, with three chassis, bolts and brackets

Price **£2. 14. 0** Carriage Forward

THE NEW PREMIER MATCHMAKER UNIVERSAL MODULATION TRANSFORMERS

Will match any modulator to any R.F. Secondary Load. Triodes, Tetrodes, and Pentodes Class A. Single or Push-Pull Class "A" "B" and "C" in Push-Pull or 500 ohm line Input, can easily be matched to any of the following Radio Frequency final stages requiring modulation.

Triodes, Tetrodes or Pentodes operating under Class "A," "B," "BC" and "C" conditions either Single or Push-Pull.

Totally enclosed in cast cases with engraved Panel, and full instructions. Ratings are based on R.F. inputs.

50 watt, 17/6. 150 watt, 29/6. 300 watt, 49/6.

The winning name "MATCHMAKER" was submitted by Mr. C. BRINDLEY, of 80, Gwendoline Street, Liverpool, 8, to whom a cheque for £5 has been sent.

VALVES

AMERICAN VALVES.

We hold the largest stocks of U.S.A. tubes in this country and are sole British Distributors for TRIAD High-Grade American Valves. All Conceivable types in stock. Standard types, 5/6 each. All the new Metal-Class Octal Base tubes at 6/6 each, 210 and 250, 8/6 each.

EUROPA MAINS VALVES 4v. A.C. Types, A.C./Hi., A.C./L., A.C./S.G., A.C./V.M.S.G., A.C./H.P., A.C./V.H.P., A.C./P., and 1 watt D.H. Pentodes, all 4/6 each. A.C./Pens., I.H., 5/6; A.C./P.X.4, 6/6; Oct. Freq. changers, 8/6; Double Diode Triodes, 7/6; Triode H. ex. Freq. Ch., 8/6; Tri. Grid. Pen., 10/6; 3½ watt I.H. Triode, 7/6.

UNIVERSAL TYPES, 20 v. .18 amps., S.G., Var-Mu., S.G., Power, H.F. Pen., Var.-Mu. H.F. Pen., 4/6 each.

13 v. .2 amps. gen. Purpose Triodes, 5/6; H. F. Pens. and Var.-Mu. H.F. Pens, Double Diode Triodes, Oct. Freq. Changers, 7/6 each. Full-Wave and Half-Wave Rectifiers, 5/9 each.

BATTERY VALVES, 2 volts, H.F., L.F., 2/3. Power, Super-Power, 2/9. Var.-Mu-S.G., 4-or-5-Pin Pentodes, H.F. Pens., V-Mu-H.F. Pens., 5/-; Class B, 5/-; Freq. Changers, 7/6.

NEW TAYLOR TUBES

T.40. TZ.40. NOW IN STOCK. Price 24/- each. Prices now reduced on 866 Rectifier, now 10/-; 866 Junior, 7/6; T55, 45/-; 203Z, 52/6; 745, 65/-; T.20 and TZ.20, 17/6 each.

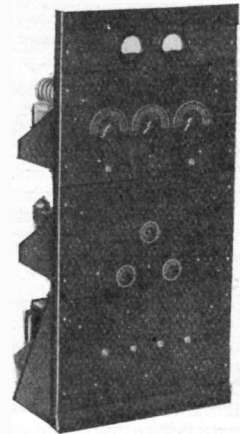
10-WATT CRYSTAL CONTROLLED C.W. TRANSMITTER



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.

£4. 4. 0

Circuit supplied for licensing purposes.



10 and 25-WATT TRANSMITTERS

The illustration does not sufficiently convey the merits of this extremely efficient transmitter.

The line up is a 6L6 Tritet, driving a 210 to a very conservative 10 watts on all bands. A complete set of coils and crystal for any one band is supplied.

Anode modulation by a 6J7, driving a 6L6 to 7-8 watts, is more than sufficient for 100 per cent. modulation at first-class quality. Power supply for 200-250 volts A.C. is, of course, included.

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).

£15 0 0

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.

£21 0 0

ALL THORDARSON TRANSFORMERS IN STOCK AT LOWEST PRICES

Callers can now get their requirements from **JUBILEE WORKS** as well as 50 HIGH STREET, CLAPHAM, S.W.4 (Macaulay 2381) & 165 & 165a, FLEET STREET, E.C.4 (Central 2833).

All Post Orders to **JUBILEE WORKS, 167 Lower Clapton Road, London, E.5** (Amhurst 4723)

**G2HK
G5MG
G8BV**

WILL BE PLEASED TO SEE YOU AT JUBILEE WORKS

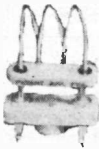
SHORT WAVE FORMERS

Best quality moulded formers in the new "Premex" Low Loss insulating material. 2 1/2" long, 1 1/2" dia. Ribbed. Supplied Plain or 14 threads to the inch. Helically slotted pins in all fittings, 1/- each.



ULTRA SHORT WAVE COILS

Trolitul insulation. 14 S.W.G. silver plated wire. 3, 4, 5, 6, and 7 turns. 1/- each, with plug-in base.



SHORT WAVE CHOKES

Pie wound on ceramic formers. Receiving type. 1.35 m. henries. 80 ohms. 5-200 metres, 1/6. Transmitting type. 1 m. henry. 10 ohms. carry 1/2 amp., 2/6.



PREMIER TRANSVERSE CURRENT MIKE

Large output, 45-7,500 cycles +/- 2DB. Silver anodes. Low hiss level, new re-designed model.

Now £1.0.0.



ALL WAVE SUPERHET COILS

16-2,000 metres with switching. 5 or 6 valve (R.F. stage). circuit supplied. 17/6 pair.

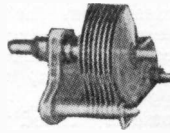


SHORT WAVE CONDENSERS

TROLITUL insulation. Certified superior to ceramic. All-brass construction. Easily ganged.

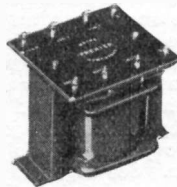
15 m.mfd. 1/6 100 m.mfd. 2/-
25 m.mfd. 1/9 160 m.mfd. 2/3
40 m.mfd. 1/9 250 m.mfd. 2/6

All-brass slow-motion Condensers, 150 m.mfd., Tuning, 4/3; Reaction, 3/9.



Double-Spaced Transmitting Types. 15 m.mfd. 2/9 40 m.mfd. 3/6 160 m.mfd. 4/6

MAINS TRANSFORMERS



Premier Mains Transformers. — Screened primaries 200-250 volts. Guaranteed 1 year. Wire end types. 250-250 v. 60 m/A., or 300-300 v. 60 m/A., with 4 v. 1-2 a., 4 v. 2-3 a. 4 v. 3-4 a., all C.T., 10/- 350-350 v. 150 m/A., 4 v. 1 a., 4 v. 2 a., 4 v. 4 a., all C.T., 13/- 350-350 v. 150 m/A., 5 v. 2 a., 6.3 v. 2 a., 6.3 v. 2 a., all C.T., 13/6. Fitted with Panel and Terminals, 1/6 extra. 500-500 v. 150 m/A., 4 v. 2-3 a., 4 v. 2-3 a., 4 v. 2-3 a., 4 v. 5 a., all C.T., 21/- 500-500 v. 200 m/A., 5 v. 3a., 6.3 v. 3a., 2.5 v. 5 a., or 7.5 v. 3 a., all C.T., 25/- 500-500 v. 150 m/A., 15/- 1,000-1,000 v. 250 m/A., 21/- 1,500-1,500 v. 200 m/A., 50/- 2,000-2,000 v. 150 m/A., 57/6. Fitted with Panels and Terminals, 2/- extra. Premier Filament Transformers. Primary 200-250 volts, 1,000 insulation test. 2.5 v. 8 a., C.T., 8/6; 4 v. 5 a., C.T., 9/6; 5 v. 3 a., C.T., 8/6; 6 v. 3a., C.T., 8/6; 6.3 v. 3 a., C.T., 8/6; 7.5 v. 3 a., C.T., 8/6; 10 v. 3-4 v., C.T., 11/6.

PREMIER SMOOTHING CHOKES

60 m/A. 40 hy. ... 4/6 80 m/A. 30 hy. ... 7/6
150 m/A. 40 hy. ... 11/6 250 m/A. 40 hy. ... 15/-

SHORT-WAVE KITS



Premier Short-Wave Kits are all sold complete to the last detail. All valves and coils are included as well as theoretical and wiring diagrams, and lucid instructions for building and working. Thousands are giving excellent results all over the world.

Each Kit uses plug-in Coils and the Coils supplied tune from 13 to 170 metres. All Kits are supplied with a steel chassis and Panel.

1 Valve Short-Wave Receiver or Adaptor Kit ... 17/6
1 Valve Short-Wave Superhet Converter Kit ... 20/-
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NOW READY. Premier 1938 New enlarged Illustrated Catalogue, Handbook and Valve Manual! Send 6d. in stamps for 90 pages of Valve Data, Technical Articles, Circuits and Premier 1938 Radio.

PROFESSIONAL SLOW MOTION DRIVE



Direct and 100-1 Slow Motion. Engraved Scale with Hair Line Cursor 3/9 each

CERAMIC VALVE HOLDERS



Supplied in 4 and 5-pin English fitting 6d. each 7-pin English Fitting 9d. each. All American Fittings 1/- each.

TRANSMISSION LINE

72 ohm Cable, will stand continuous outdoor exposure in the erection of receiving or transmitting aerials. 3d. per yard.

SWINGING CHOKES



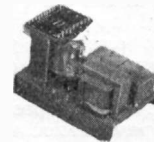
Designed for use immediately after mercury vapour rectifiers, in Class "B" and similar circuits. 150 m/A. 10/6. 250 m/A. 15/- 500m/A 18/-

VOLTAGE REGULATING TRANSFORMER



Will step your 100 or 110 v. mains up to 200-250 v. or vice-versa. Cool running and reliable. 60 watts ... 9/- 100 " ... 11/6 150 " ... 15/6 200 " ... 20/-

POWER PACKS



Assembled and tested on steel chassis. Valve rectifiers, Generous smoothing and Hum-free output.

350v. 120 m/A. with 2 extra 4v. L.T.'s 40/-
500v. 150 m/A. " 3 " " 60/-
500v. 200 m/A. " 6.3v. & 2.5v. or 7.5 v. 65/-
1,000v. 250 m/A. ... 45. 15. 0
1,500v. 200 m/A. ... 47. 15. 0
2,000v. 150 m/A. ... 48. 10. 0

A Relay for Morse Records

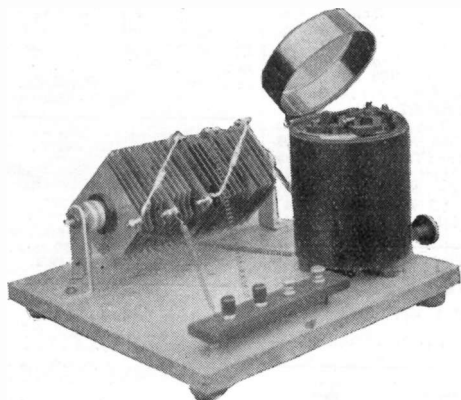
An easily-built unit for coupling to the receiver. A home-constructed recorder will be described next month.

By ARTHUR C. GEE (G2UK)

THOSE readers who are interested in the possibility of working Morse code recorders from the radio receiver will find the unit described herewith of interest, as it enables any recorder, whether home constructed or of ex-government origin, to be operated from the set.

The usual way in which Morse is "taped" is to amplify the received signal somewhat, then rectify the resulting audio currents and use the DC from the rectifier to work a relay, which controls the recorder itself. The unit described here and pictured below consists of the rectifier and relay part of the system.

The degree of amplification required depends, of course, on the sensitivity of the receiver and the relay. The more sensitive the relay, the less need for the signals to be strengthened. In the writer's case, an 0-V-1 receiver was used quite successfully in conjunction with the transmitter speech ampli-



fier, which has an output of about ten watts, and with the relay specified it was possible to record any commercial or R9 amateur signal. With a better receiver, some of the weaker transmissions can easily be brought up to recording strength.

● The Relay

This is one of the old GPO polarised type, which can be picked up quite cheaply from dealers in ex-government electrical gear. They are usually sold complete with brass case and a glass covered top, and are quite fast enough in operation to "follow" fairly high speed Morse. When buying such a relay pay particular attention to the condition of the contacts and the pivots of the polarised magnet, though it is usually possible to obtain one in a perfect working condition. Before using it, it is a good plan to take the whole thing to pieces and

re-assemble after cleaning the pivots, contacts, etc. The connections can be traced out at the same time.

As can be seen from Fig. 1, a full-wave rectifier of the "bridge circuit" type is used. This can be made up by reconstructing a type HT8 metal rectifier. The conversion is done as follows:—Undo the retaining nut at one end of the assembly and withdraw half the elements. Rearrange the cooling fins—which could really be removed as they are not necessary if some other method of making contact with the elements is provided—on the remaining half, so that a connection can be made to each end and to the centre. Now slip on an insulating washer, which can be cut from an odd piece of $\frac{1}{2}$ -inch ebonite sheet with an expanding bit or a reamer. Replace the remaining elements and make connections, as in the first section, to both ends and to the centre. We now have two independent units, one being represented by ABC in Fig. 1 and the other by ADC. By joining the two negative and the two positive ends together, we get our bridge rectifier. See Fig. 2.

The complete rectifier and relay should be mounted together on a plywood baseboard about 9-in. by 8-in., and a terminal strip provided as shown.

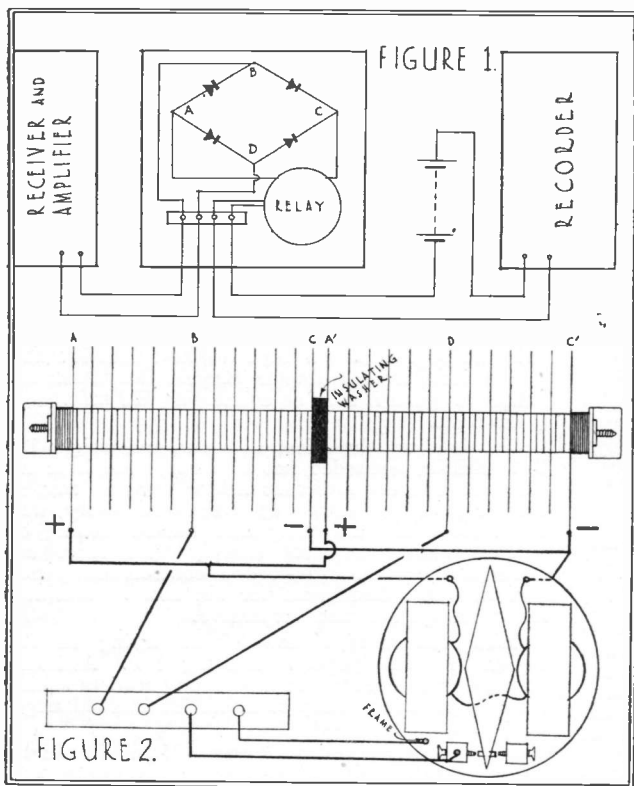
● Connection

The amplifier output is fed to the two centre points on the rectifier, i.e., points B and D, whilst the ends A and C are joined up to the GPO relay coils. Some of these relays have two sets of coils, in which case each should be tried in turn and that giving the best results used.

The amplifier itself should preferably have transformer output. If such is not provided, a 1:1 or 1:3 step-down transformer should be wired between the output of the amplifier and the rectifier, or better still, an output transformer with a tapped secondary used, when it becomes a simple matter to determine which ratio provides the best matching between the relay coils and the load resistance of the output valve. If the actual resistance of the relay coils can be measured so much the better, as the right ratio between primary and secondary can be determined exactly.

Four terminals are provided on the unit. Two are for the input from the amplifier and are taken to the centre connections on the rectifier and the other two are from the relay contacts. With regard to the latter, it will immediately become apparent on examining the relay that the moving contact is attached to the "armature," i.e., the polarised magnet, and connection to it is made through the frame of the relay. On either side of

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



the armature are two fixed contacts, insulated from the frame; these enable the current to be either made or broken each time the armature moves. By means of the small wheel at the base of the relay, it can be adjusted so that it touches only one or other of the contacts. A preliminary test should be made to see which way the relay works best, after which the appropriate contact can be wired up permanently.

Connect up the receiver, amplifier, relay unit and recorder and tune in the signal to be recorded. The initial experiments should be made on a good strong signal such as that from a commercial sending V's. Switch on the amplifier and adjust the receiver and amplifier volume controls so that the amplifier is not being overloaded and the relay is working nicely. Adjust the relay contacts until the recorder is working satisfactorily and then sit back and watch the signals unroll themselves!

Irish Amateur Radio Society

A group of Dublin amateurs have banded under the above title and are anxious to welcome members at 18, St. David's Terrace, North Circular Road. The Secretary is Mr. J. Butler, 92, South Circular Road, Portobello, from whom full details are obtainable.

NEW PREMISES FOR A.C.S.

From July 1 Messrs. A. C. S. Radio, late of 52-54, Widmore Road, Bromley, Kent, have been using new and larger premises at 16, Gray's Inn Road, Holborn, W.C.1 (telephone, Holborn 9894/5). This is opposite Staple Inn, just around the corner from High Holborn, and one minute from Gannages, which situation is accessible for serving radio amateurs in and around London.

As in the past, Messrs. A. C. S. will continue to handle all the well-known makes of American communication receivers such as National, Hallicrafters, Hammarlund, R.M.E., etc., together with a still larger assortment of valves and components for short-wave receiving and transmitting gear. The policy of individual attention to each order is of course to be continued.

OUR QUERY SERVICE

A stamped self-addressed envelope and the coupon cut from page 40 must be sent with all queries under this free service.

We are prepared to deal with any query connected with short-wave radio reception or transmission, but naturally cannot undertake to get out complicated designs, provide circuit diagrams of multi-valve receivers, nor comment upon the products of manufacturers, which requests for advice and assistance would be better addressed to the manufacturers concerned.

WE HEAR THAT . . .

On March 13th last, VK5ZU of Prospect, South Australia, was copied at R8 on 56 Mc CW by ZL4DQ of Dunedin, New Zealand. The distance is about 1,800 miles. VK2NO also tells us that American amateurs have been heard on five metres by ZL3JA, and that the U.S. Bureau of Standards says that ionosphere conditions were favourable for 56 Mc DX at the time of VK2NO's reported reception in North Wales. Keep at it, lads!

ANY READER LIVING NEAR?

Mr. W. Livens, 2, Union Place, White Head St., Cleveland St., Mile End, E.1 would very much like to get in touch with any short-wave enthusiast in the AA category.

A NEW MAGAZINE DESIGN.

In an early issue we shall be describing a complete 10-25 watt 7 and 14 Mc two-stage transmitter, with a suitable power unit, and using throughout components entirely of British manufacture.

Our reason for mentioning this now is that we find the rig is exceptionally suitable for both AA work and operation under radiating conditions, so that AA's about to take the Test, and G3's and 8's newly licensed, will have something easy to build, cheap and good.

THE STAFF AT WORK

Or, what it feels like

By ONE OF THEM

(Names are imaginary, and no reference is intended)

WET Monday morning, Editor arrives very early with Big Idea. New combined receiver-exciter-speech amplifier, with built-in power pack, speaker, monitor, frequency meter and rotating beam aerial controlled by handwheel on front panel.

Office all excitement. Editor says job has got to be compact with big C, which means cunning chassis design. Rings up Pressed Metal Products, who say full up with work, but if specification through by afternoon, can perhaps deliver completed chassis in approximately fifteen days. After argument, specification promised by next morning and chassis by week-end. Business Manager says what'll it cost.

Assistant Editor points out that a few parts also wanted, and Draughtsman says he needs lot of notice on this job. Editor gets down to it, works all night, and produces specification by next afternoon. Finds that owing to exceptional compactness of design, he has forgotten speaker, while nearly all parts are Sunspot Radio Co. manufacture.

Ad. Representative wanders in and remarks casually he just heard Sunspot are going out of radio business and adapting plant for manufacture of nickel-plated trouser buttons.

All typists immediately sent to tea while Editor gives vent to feelings.

Assistant Editor incautiously remarks it seems to him design needs modification. Editor replies at length his idea so good it can't miss. Business Manager says what'll it cost.

Pressed Metal Products ring through to suggest alterations to chassis lay-out, as specification sent them involves special machines being put in. Business Manager murmurs that'll cost them a bit. Editor tells P.M.P. to leave room for speaker and rings off.

Sales Manager Wet-Cell Batteries, Ltd., comes on 'phone to offer sample their new everlasting HT unit. Mentions it's compact. Editor immediately decides it must be incorporated, and revises chassis design. Draughtsman, now well on with third set of drawings, says he must have long walk before

scrapping sixteen hours' work. Editor tells him be a good chap, just work up this final design, then he can walk as far as he likes.

Lorry arrives at Office, two men stagger in with large packing case. Business Manager asks anything to pay. Ad. man says No, he thinks it's new set for test from Roadster Bicycle Co. Assistant Editor suggests it may be everlasting HT unit. His guess right.

Unit is about three feet all round and weighs 120 lbs. Editor persuaded not to incorporate it in his compact design. Assistant Editor remarks that as further modification now apparently necessary, why not include signal-shifting and band-switching on exciter. Editor explains sharply that there are already seventeen inter-locked controls on panel, and he can't find room for six more. Business Manager says it sounds expensive.

Draughtsman says how about trying simpler design, as his paper's running low. Assistant Editor takes courage and says many readers asking for good receiver, cheap to build. Business Manager enthusiastic.

Chassis arrives from Pressed Metal Products, checks exactly with drawings; Draughtsman surprised. Ad. man collects parts, Assistant Editor asked to fit them together while Editor gets some sleep.

About twenty minutes later, Editor woken and told nothing seems to fit. Draughtsman explains nobody informed him Sunspot parts no longer available. Editor says Make Them Fit. Business Manager issues reminder he's taking holiday next week, but would like to see thing work first.

Chassis emerges mass of holes, but no room for power pack or speaker, and several dials overlap. Assistant Editor points out that modification now definitely needed. Draughtsman says that in meantime he has prepared design for straight three, so how about that. All agree.

Business Manager goes holiday. Editor goes crackers.

" POISONALITIES " . . .

The fellow who sees a gangster picture and then goes home to talk like that into his microphone.

* * * *

The chap who reports your signals "S8 and very fine business," and then asks you to repeat because of QRM.

* * * *

The lad who will insist on putting his female belongings in front of the microphone. Most of them have dreadful voices anyway.

* * * *

The stranger who on the first QSO addresses you by your Christian name, which is not the one your

friends use anyhow, and then wonders why you don't respond.

* * * *

The people who call on you unexpectedly, and wonder why you can't make time to talk radio for a few hours.

* * * *

The youngster who brings his girl-friend too.

* * * *

The blighter who boasts over the air about the DX he works; you then find he's using commercial equipment and about ten times his licensed power.

The Other Man's Station

G 6 W Y



WHEN HIS PARENTS initialled G6WY "H. A. M." Whyte, they must have had some inkling that he would eventually go on to a brilliant future in Amateur Radio. For so it has turned out. G6WY is now one of the world's best known amateur stations. He holds the WAC and WBE certificates for both CW and 'phone, the 28 Mc WBE, the new British Empire Radio Transmitters' Award ("BERTA"), and is a member of those exclusive international AI Operator, Rag Chewers and DX Century Clubs, in the last of which he stands high with a total of 133 countries worked. And you've got to be good to do all that.

"Ham" Whyte's other distinctions in Amateur Radio include a seat on the Council of the R.S.G.B., for which he manages the QRA Section, and in 1936 he won the Society's Rotab Cup for outstanding Empire Link work.

The station was first licensed in 1927, and since then activity has been consistently maintained on all bands open to amateurs. The gear at present used for chasing new countries and rare calls is a Goyder Lock arrangement with two PA's for rapid QSY. A Mullard T61D (how many readers have heard of this, one of the finest triodes ever made for amateur work) holds down the job on 3.5 and 7 Mc, while on 14 and 28 Mc a 7-year-old DET.1 still gives good service. The driver unit is 6A6-6L6, locking either PA, and

tuned as required. The modulator consists of a pair of PX25A's in low-loading push-pull, delivering 60 watts of audio, and the carrier input on 'phone is 100 watts. On CW, the transmitter runs at 200 watts, the key being more used than telephony.

The 1.7 Mc set is a baby CO-PA, taking 10 watts, and using LS5b-LS5, both of 1927 vintage!

On the receiving side, G6WY is particularly proud of his 8-valve SS super, built from the original "QST" data, which Jim Lamb of "QST" pronounced to be better than the model when he was last in England. The photograph shows Ham at the handles.

Finally, there is the omni-directional aerial system. A 133-ft. end-fed wire, which will radiate well off its ends on the higher frequencies, has suspended from it two separate doublets, one for 14 and the other for 28 Mc, radiating at 90 degrees in the opposite direction. The field patterns are drawn on a great circle map, and the orientation of the whole system is such that no land areas are left uncovered.

At the risk of making him blush, we cannot close this little description of G6WY without saying that Ham himself represents the finest type of amateur. Not for DX worked, or gear used (though that in itself is a tribute both to him and British apparatus) but for his example of quiet efficiency, patience and, not least, his readiness to rag-chew with all who will.

THE MCCARTHY AMATEUR RECEIVER

This is a design which will be of interest to both SWL and transmitting readers, as it is basically a band-spread three.

Actually, however, five valves are employed, as the set is intended for operation on either AC or DC mains, and incorporates a separate beat-oscillator feeding into the detector.

The circuit arrangement consists of untuned HF stage, band-spread detector with BFO, output pentode and rectifier. It is intended chiefly for head-phone reception, but can be used with a PM type speaker, and a useful point is the inclusion of an

HT switch whereby the heaters can be left running on "stand-by" when transmitting. The wave-range is from 8 metres upwards, selected by means of a single plug-in coil.

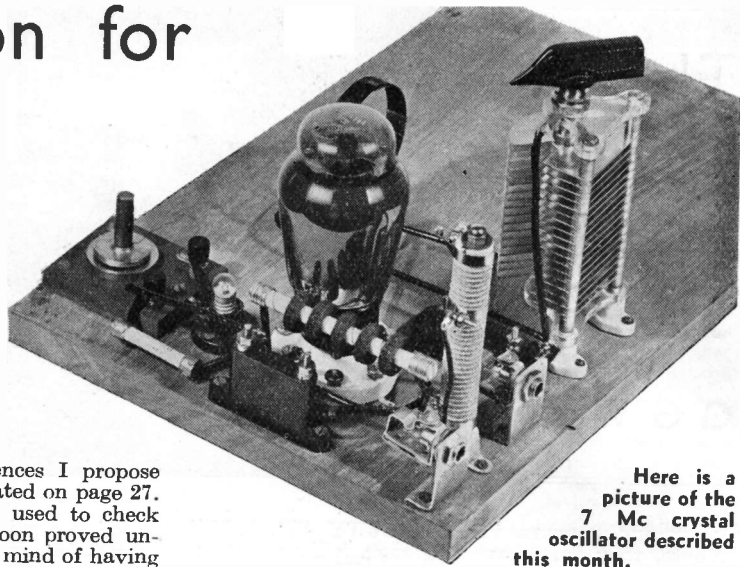
We hope shortly to give a more extended report on this receiver, which is listed as the McCarthy Universal Communications Type SW5. Complete in a steel cabinet, with all valves and one coil, it is priced at 9 guineas. The manufacturers are Messrs. McCarthy Radio, Ltd., 44a, Westbourne Grove, Bayswater, London, W.2.

The Dutch "Shack Relay Club" operates on 56 Mc every Wednesday and Saturday from 23.00 BST. They want British reports.

Transmission for Beginners

By A. A. MAWSE

A handy 'phone monitor, Coil making, and a 7 Mc Crystal Oscillator are described in detail.



Here is a picture of the 7 Mc crystal oscillator described this month.

IN WINDING up our 1.7 Mc experiences I propose describing the 'phone monitor illustrated on page 27. As you remember, the receiver was used to check quality and output, which method soon proved unsatisfactory because, with the idea in mind of having all apparatus close to hand, utilising the receiver for this purpose spoils the scheme of things in that it must be placed at some distance from the transmitter if a fairly accurate test of speech is desired.

● A Handy Monitor

A biscuit tin is used for the case and the one shown measures 7 by $4\frac{1}{2}$ by $2\frac{1}{4}$ inches deep, but any size to hold the junk components on hand will of course do. Coils used are those made for our absorption meter but if special ones are to be constructed it is a good plan to centre-tap "L" for the aerial pick-up; turns values are to be found in the second of this series, which appeared in the April number.

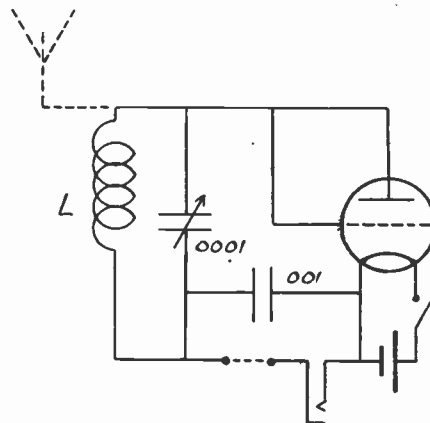
It will be seen from the diagram in the next column that grid and anode are tied together, thus converting an ordinary low-filament-consumption triode into a diode detector; a Westector rectifier or a diode valve could be used, but as the parts shown were available it was thought others would find the present scheme acceptable. The filament cell was bought to fit the box and is an Exxide PRA3 of the non-spill type, requiring a $\frac{1}{4}$ -amp hour charge once a fortnight. Flex leads are soldered direct to the accumulator terminals with the result that these can be quickly detached from the valve and switch for charging purposes.

The two terminals, shown by wires from the side of the box, are for attaching either a 0-1 mA milliammeter or a lamp, and these leads must be shorted when not in use. The jack is a Bulgin close-circuit and the switch is one of the old-type "push-pull." An Eddystone midget stand-off insulator is used for an aerial terminal which is seen next to the 1.7 Mc coil in the photograph.

Length of pick-up wire is an important factor, and for output tests using 'phones one foot of stiff wire for the aerial, placed near the transmitter, will give a good signal. When a milliammeter is inserted it is necessary to juggle with position and pick-up length until the meter reads about 0.5 mA with the monitor tuned to the signal. If the meter is watched during speech transmission a very good indication of modulation conditions is obtained; the needle

should remain steady, the depth of control being increased till the needle is just kicking. If peaks are shown, then over-modulation is taking place.

Field strength measurements may be carried out with this particular monitor arrangement, but this is more for aerial radiation later on; however, many useful tests can be made by transporting the monitor around the house and garden, but for the latter a really long aerial was required, and with the AA (which is near the receiving aerial) coupled fairly tightly, good signals were received 60 feet away. Further tests will be made after dark!



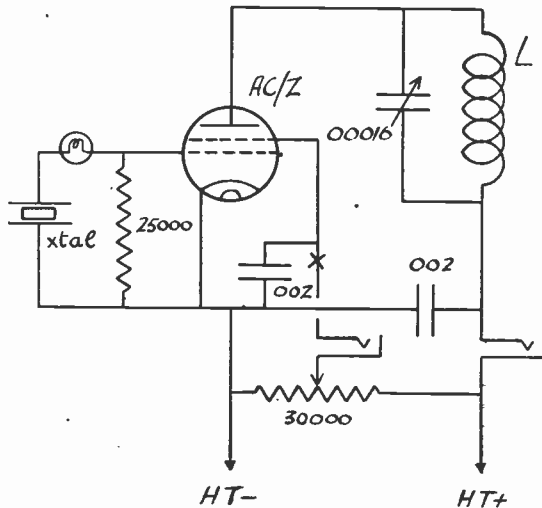
Circuit of the monitor, a photograph of which appears on the next page.

● The Crystal Oscillator

Now we must leave modulation problems, and having overcome any snags in 'phone work on 1.7 Mc, it is hoped they are all duly noted for later use when we come to apply modulation to a driven stage following the oscillator about to be described. The photograph on this page gives a good idea of a simple CO using an LF pentode (Hivac AC/Z in

this instance) and with the circuit diagram let us try and link the two together. At the top left is the crystal and holder (Q.C.C. Co.) and following down is the 60 mA fuse, while to the left of this is the grid bias resistance. The two .002 mF by-pass condensers (always use this value for 7 Mc) are on each side of the valve. The three Bulgin components in the left-hand lower corner, looking from left to right, are: key jack, 30,000-ohm 40-watt potentiometer and meter jack (both jacks are close-circuit types). The tuning coil L which will be dealt with later in this article, and the Premier RF choke (which should be tried at "X" in the circuit below) and 160 mmF transmitting condenser complete the component list.

Layout should be so arranged that another tuning circuit may be placed on the same board for converting the CO for two-band operation. This is effected by using the Tritet arrangement, where a new coil in the cathode line is tuned near to the crystal frequency and L in the present circuit produces the second harmonic (usually 14 Mc with a 7 Mc crystal—so be sure to get a crystal within harmonic range when ordering).* HT leads are taken to the potentiometer terminals and the heater supply is applied direct to the valve holder.



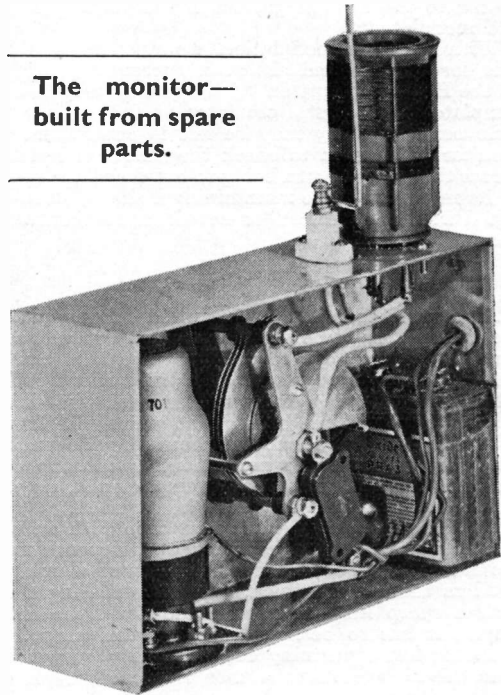
A theoretical drawing of the heading photograph.

● Testing Out

Having wired up the CO let us now see what should happen if things are normal when switching on. Leave the key out and note the out-of-tune plate current on a meter having a range of about 60 mA. This reading will be about 40 mA with the condenser plates all-in but depends on HT voltage. Now, as L is tuned near the crystal frequency, the meter should show a dip to a much lower figure, and if a tuning lamp or absorption meter is used as a load, the mils can be coaxed right down to 16 or so by careful tuning. At this point, however, the slightest variation of the condenser sends the reading up again, indicating that the crystal has gone out of oscillation. The rise is

* See the diagram on p. 28 of our issue for July, 1937, which shows the harmonic relation of the Amateur bands.—Ed.

The monitor—
built from spare
parts.



higher if the plates are meshed as against a slow increase when going towards minimum capacity.

Some crystals take time to get going and before suspecting other troubles a wait with HT on for a few moments will settle the question. It may be necessary to clean the quartz with a silk handkerchief to remove grease after handling, and the holder must be absolutely clean and of even surface before oscillation will commence. After having once started the crystal moving (and it actually does this physically, though the movement is not visible in a small-power HF job) the key is inserted to see if its operation gives the low meter reading each time, i.e., to find out if the crystal takes up on keying; it may be necessary to work slightly higher than the lowest figure in order to ensure this, and a fractional movement of the condenser will usually bring it about.

If a loop is used as a load it will be seen that there is a slight lag in the glow, which is normal and due to the electrical inertia of the lamp filament. Another indication is the fuse bulb in the crystal circuit, which should not be allowed to attain maximum brilliance. In next month's Tritet this will have a particular significance, as it is used to safeguard the crystal; however, more about that later.

Now we come to the question of the oscillator's use. First and foremost it must be regarded as a drive circuit only, as keying an oscillator is nearly always productive of poor signals and requires much playing around with resistances across the key; if the note can be made clean and sharp, the secondary result is a "spacer"; that is, a note which is sometimes nearly as loud as the main signal itself, and which is "left behind" when the key is up. As mentioned previously, we shall convert this CO to harmonic working so that 7 or 14 Mc output can

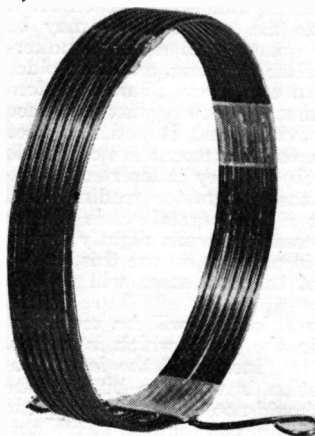
be fed to the next stage, which will then be keyed and modulated.

With regard to modulation, we must forget about this for a while and although successfully applied to the Hartley circuit on 1.7 Mc it must not be contemplated in a crystal oscillator on 7 Mc. For the time being, the key may be left in circuit and the monitor (CW) used to check the effects of resistors across the key, the aim being to cut down the spacer to its minimum while maintaining a sharp, clean-cut signal in the "marker" or actual crystal-controlled note.

● Coil Making

As several coils will be required for completing the transmitter commenced this month it will save time if we wind one long inductance that can be cut to lengths as required. This may sound rather difficult, but having experimented with this object in view I pass on the information which, if followed in detail, will in about one hour provide enough coils for all purposes; next month's cathode coil, links to the PA and aerial tuning circuit, as well as any intermediates that may be required.

The foundation is a cardboard tube with an outside diameter of 2½ inches; the length depends upon the number of coils desired. This tube should be not less than ¼-inch thick, and after making a cut with a sharp knife or razor-blade down the entire length, it has to be kept in its original shape. If doubt is felt concerning the possibility of winding over this collapsible tube then it should be packed out with some form of core, such as a wooden cylinder 1½-inch shorter than the cardboard length. But with thick walls and the edges of the cut kept opposite one another, this should not be necessary.



Four ¾-inch strips of celluloid are pierced near their ends and loosely fastened by passing small screws through these holes and into the tube; there is no need to use nuts if the cardboard holes are just a little under clearance size. Do not cover the cut. After placing the strips opposite each other, so that they are at 90° when viewed from the ends of the tube, winding is commenced by anchoring the start round one of the screws. Then put on the 18 SWG enamelled wire over the celluloid strips until as many turns as required are complete; twenty-two turns of this gauge occupy one inch, so that with a tube six inches long one will have a coil of about 120 turns.

Terminate by the same method as used at the beginning and see that everything is nice and tight before smearing the wire over the strips with "Durofix," a liquid celluloid cement made up in 6d. tubes and obtainable from ironmongers. This should be worked into the spaces between and across the wire with a finger and is to hold the coil together, as "Durofix" sets hard. If placed in the open air for

about half-an-hour it will be found possible to remove the cardboard former by collapsing it along the cut and the result will be a surprisingly solid length of coil ready for any required number of turns to be taken off—(8 for the tank L in the circuit for the CO this month). A razor blade easily cuts through the adhesive and, allowing two turns to make connections, the remainder is stored away safely till the other coils are wanted for the rest of the transmitter.

Place the ten turns on the former again, slide four short strips of celluloid coated with "sticky" between the wire and mould, and bring the tube back to its original rotundity. A few hours' drying are necessary, as even if the fixative seems hard it is likely that only the outer shell has set whilst the inner portion remains soft; if left over-night to dry a more satisfactory result will be obtained.

The photograph shows clearly the final appearance and is that actually used in the oscillator. Loops have been made for the terminals which in this case are Eddystone midget stand-off's; these, by the way, find many uses besides the three apparent this month.

Plug-in coils may of course be made in the same manner as that described for the one illustrated here, the wire ends being terminated in insert-plugs.

PLEASE . . .

Do not fail to send "56 Mc" at the beginning and end of every transmission on that band, and make your call-sign slowly and distinctly.

* * * *

Come on 1.7 Mc occasionally if you are licensed for that band. Some of the logs in this month's "Calls Heard" show that the whole country can easily be covered after dark.

* * * *

Tell us about your results with Magazine gear or designs; though we already get many letters from readers giving such information, we know many more could write.

* * * *

Don't expect us to answer enquiries over the 'phone! It rings all the time, anyway, and we prefer to have records of our reader contacts. This is only possible by correspondence, so please write and don't ring.

* * * *

Do not expect to see your letters in print, unless you hear from us that they are to be used. Though we get something like 200 a week, the majority of which contain some appreciative remark about the Magazine, we only publish those of general interest, and the writers are told so in our reply. Yes, we answer them all!

* * * *

Do not let the above deter you from writing, because we don't mind if we get 200 a day; and we want to know what you think of the Magazine.

* * * *

Let us have your criticisms and suggestions, but remember that we usually get contradictory ones by the same post!

The Receiving Aerial

● A good receiver will do better with an improved aerial

THOSE READERS WHO REMEMBER their struggles in the early days of broadcasting will agree that the performance of almost any receiver depended entirely upon the efficiency of the aerial. The most complete details were constantly published on the erection of bigger and better aerials and it was the ambition of every keen listener to have a 50-foot mast with at least 60 feet of wire in the clear. One of the reasons why good DX, in the shape of low-power American broadcast stations on the medium wave-band, occurred fairly frequently on quite simple one-, two- and three-valve receivers was because the importance of the aerial was understood.

With the advent of the cheap superhet, and the manufacturers' claims for "perfect reception with an indoor aerial," individual enthusiasm for both efficiency and DX listening on the broadcast bands began to wane, with the result that it is now unusual for the family receiver to have anything more than an apology for an aerial. This is on all-fours with the carefully fostered cult of simplicity, which has brought us one-knob and now press-button tuning, and is reflected in the average dealer's strong objection to removing even the chassis from the cabinet if the set goes wrong.

It is for some of these reasons that receivers are being operated on the short waves with tiny aerials, or none at all. The result is that the possibilities of the wavelengths between 15 and 80 metres get less than justice; even if the set will bring in W2XAD on a piece of wire round the picture-rail, this only means that it may be quite a good receiver.

● General Considerations

The first is that, on the whole, it pays to erect an aerial which is as high and as long as possible, as it is only then that one can be reasonably sure the receiver is getting the greatest signal input which the site allows. Noise-level is a complicating factor here, but even then it is better to operate the set with the audio gain, or volume control, turned down and a large aerial, than with a small aerial and high LF gain—volume control turned up.

An immediate objection to this contention is that many receivers will give a very full input to the second detector with quite a small aerial, considering the average signal. Hence, increasing this same signal by making the aerial larger will not produce any better results from the speaker, while background-noise will probably come up.

All this sounds very contradictory, but so far we have been thinking, by implication, of the average signal and a commercial "all-wave" receiver, very few of which are fitted with an RF gain control, or means of adjusting signal strength at the aerial end of the set. But it follows that even on this type of receiver there are advantages in using a big aerial, because even if strong signals are no better, weak DX will come up in strength, which is what we want. If the set happens to have some means of varying the input at the "front end," then we are better off still.

With straight receivers and those of the "communication" type the highest possible signal input to the first stage is a very definite advantage, since the performance of the former will be improved, and with the latter, it will not be necessary to work at full RF sensitivity all the time, thus reducing background-noise to some extent.

● Suitable S/W Aerials

There is no doubt which is the best aerial for the first efforts to improve results—the inverted-L, high, long and well insulated, which can be erected either almost entirely in the vertical, in a combination of height and length, or sloping down from the top of the mast or other support to the lead-in. In commercial receivers, sockets are provided and marked for the attaching of the aerial and earth, but in any set where the aerial windings on the different coils are accessible—as in home-built receiver—it is worth while trying the effect of varying the number of turns. The best possible earth should also be provided to work in conjunction with any aerial.

If we dare suggest it, where space is available, it is well worth while erecting two L-type aerials at right angles, or as near right angles as possible. These should be used either separately or together, and the result will be increased signal strength in certain hitherto "blind" directions. Much useful and interesting experimental work can be done along these lines, on any type of receiver. If it is found that a given DX signal is better with one aerial than with the two together, the effect of either earthing the other or leaving it open should be tried. Two SPDT switches fixed on a panel near the set will enable all this to be done quite easily and quickly.

● Doublets

For some reason, this type of aerial has found great favour for S/W reception, largely because no other kinds have been tried by the user, and a doublet can be easily arranged for noise-reduction. It is quite illuminating sometimes to put up a plain aerial and see whether there is in fact much noise-reduction worth mentioning.

Doublets suffer from the very serious disadvantage that they only peak signals on and near the frequency (wave-length) for which they are cut, and the odd harmonics. For instance, a 66-foot doublet having 33 feet in each arm is good for approximately 42, 14, 8.4 and 6 metres. On wave-lengths in between, it works as a rather poor T-type, and it is usually found that the ends have to be joined together and taken to the aerial terminal for results to be bettered; it is then no longer a doublet, and the cheaper and more efficient L or plain aerial might just as well have been used in the first place.

The theory of doublets, which actually works out in practice, can be studied on pp. 22-23 of the August issue of THE SHORT-WAVE MAGAZINE, which, though it is a discussion from the point of view of transmission, should be helpful to the discerning reader.

Listeners'

DX Corner

By
THE DX SCRIBE

This month we show you
Mr. L. D. Hubbard, 17
Patten Road, Wandsworth
Common, S.W. 18, busy
with his receiver.



THIS MONTH we are going to allow H. Sugden, 15, Arncliffe Terrace, Legrams Lane, Bradford, Yorks, to give you his well-thought-out views on a few things that affect every genuine SWL. Mr. Sugden writes as follows:

"I think the discussions in the Magazine during the past few months have been very helpful and informative. I am sure that if the SWLs will only adopt the suggestions that the discussions have produced, there will in future be fewer complaints of amateurs being unresponsive to their reports. A report along the lines indicated in last month's issue would make the more advanced amateur transmitter prefer the SWL report to the one he receives over the air!

"Your remarks about mis-read calls prompt me to say that few calls can be deciphered correctly with a signal less than R6 [Not always.—DX SCRIBE.] Especially is this so with the following couples: 'B and D', 'P and T', 'N and M', 'F and S'. Even though the listener exercises the greatest care and concentration, he may then be deceived by faulty articulation in the case of a non-English speaking amateur, and careless or dialectic pronunciation by the American. The other night I was listening to HK3JB and heard his call distinctly several times. I was convinced that the last letter was 'D', until he said 'Boston'. I listened with the greatest of care then to try to identify the 'B', but it defied me—unless the word 'Boston' had been used, I would have been sure the call was HK3JD.

"FB8AH is a further case in point. I have heard a few G's flounder in receiving his call correctly; instead of saying 'H' with a long 'A'—'aitch', he says 'etch' which cannot, except with difficulty, be distinguished from 'X'. W5FSS has the same trouble, although speaking English well. His call sounds like W5FFF and I have heard many amusing exchanges over the air before the correct one was obtained. In such cases, and there are many more, the utmost care is required on the part of the listener if he is to succeed in receiving the call correctly.

"Then there is the trouble of QRM and QSB which will often mutilate a signal beyond identification; rapid fading can make B, C, D, G, P, T and V into 'E' or J and K into 'A', and the SWL may not be aware of the error; again, QRN is not blameless for misread calls. There are a lot of 'snags' in this listening business and unless one is prepared to

sacrifice a few tempting calls, one is going to produce a large percentage of errors in the list. I have quite a number of two and three letter calls with a question mark to one letter; these are set aside for further verification. If such an opportunity does not arise, they are discarded. A large degree of certainly should be attained before logging a call. [Larger than that!—Ed.]. Again, there is the case of certain conditions producing 'muffled' speech [High speed fading or phase distortion.—Ed.]; this often happens on 14 and 28 Mc and then accurate reception is out of the question. Listening is not quite so easy as the beginner would imagine!"

Mr. Sugden has indeed hit the nail on the head and we suggest that his remarks be very well digested before sending in any more lists of calls heard. He goes on to tell us of his best reception, which includes K7AOE on two occasions before midnight, with VS7GJ, W7CEO (Wyo), W9CPM (Nebr), W9VLF (S. Dak), W6BLE (Utah) for unusual stations.

● These Calls Heard

We have received *many* letters complaining about the futility of publishing long lists of calls, thereby wasting precious space. All the lists contain the same calls, with minor exceptions, and it is felt that many just like to see their lists in print with the result that commonly heard stations (although in "rare" countries) appear in nearly every list.

You will note the way in which we have mentioned Mr. Sugden's best reception—don't you all think it would be much better just to send in a *few details* of the unusual signals you hear and leave us to pick out the best from your very much abbreviated list? Then, possibly, we can mention interesting QSOs overheard; send us your queries if you are uncertain of a suspicious call—we know which are the genuine ones.* Anyone listening on a good morning for Californians will hear several W6's on 'phone and dozens on CW, but reception of a W6 in Nevada, Utah or Arizona makes news. Similarly, we know that reception of stations like VK3KX, VK3WA or VK2XU is absolutely easy and commonplace, but if VK2VV was received (as he has been) using two watts of 'phone, then that again is worth space. The beginner will naturally be thrilled when he gets his first VK on 'phone, but if it is one of

*[The Scribe himself spends most of his life on the amateur bands!—Ed.].

the usual VK 'phone crowd, probably hundreds of other SWLs have received the same signal. G5ML to the overseas listener is as W2IXY is to us.

● QSLs

This brings us to the point about intelligence in sending reports. If you hear W2IXY say that she is using 600 watts fed into a rhombic beam pointing at Europe, she will obtain literally dozens of replies to her first CQ call. Therefore ask yourself the question. "Will my report, however detailed, be of any value?" Why do stations such as ZE1JA, VQ4CRE, XZ2EZ and other "household words" cease to send cards to listeners? The answer is obvious—we heard the other day that VS7GJ received 72 reports in one mail from England. Surely we must all see that the amateur who uses 'phone in a remote country is indeed at the mercy of the collecting world, as is the high-powered station receivable on "any old junk box" receiver with insensitive telephones. If you hear a station "crying in the wilderness" and not having replies, then there is your chance to earn a grateful card.

● Set Listening Periods

These have been welcomed, as most of you recognise sound technical reasons for them. We intend to continue for a while to give publicity to the best of these logs. If yours is very much smaller than others published, you will be able to compare it with the larger ones; we think you will agree that no useful purpose is served by printing a list of a dozen stations when someone else in the same county has heard 50 or more.

SET LISTENING PERIODS FOR JULY.

July 9	22.30-24.00 BST	1.7 Mc.
July 10	14.00-18.00 BST	28 Mc.
July 11	06.00-07.30 BST	7 Mc.
July 13	06.00-07.30 BST	14 Mc.

Logs for 56 Mc may be sent in to cover the whole month, and will always be given publicity—we get far too few. The best two or three reports in the S.L.P. for each band will be chosen for comparative purposes, except in the case of 1.7 Mc, which will be given more space than the others.

And whilst on the subject of logs, we realize that many of you who have gone to very great trouble to prepare lists will be disappointed at not seeing your effort in print—our answer is that we hope you will understand that we cannot please everybody.

● Where CW Scores

Please note the logs submitted by I. C. Fletcher of Bexleyheath, Kent, and Martin Bourke of Jersey. They are much larger and consequently have greater comparative value than others because of the CW reception. We have already said that it is impossible, under favourable conditions, to receive many real DX CW signals on 7 Mc right under the mess of European 'phones, and such reception is of more interest than local telephony. And don't forget that GM and GI are still DX on 1.7 Mc! Mr. Fletcher mentions hearing ZD2H on 14,300 kc CW. The QRA of this station is A. Tomlinson, Posts and Telegraphs, Lagos, Nigeria. The operator is ex-G2QN. ZC6AA in Tel-Aviv, Palestine, is another new arrival on approximately the same frequency as ZD2H, and ZC6AQ was heard to say that he is the only other active station in ZC6. OQ5AQ represents another rare country, heard on 14,350 kc, and

AC4YN should be much sought after on 14,130 kc. He is active every Tuesday and Thursday, and your card will find him c/o The British Political Mission, Lhasa (via Gyantse), Tibet. Other CW stations of interest include XU8LS, 8XA and 8KW, all in Shanghai. These are some of the cream of the CW signals heard by Mr. Fletcher (BRS2908), and just show that there is more in CW than meets the ear!

One who calls himself "Bug-Key" writes as follows:—"Does Mr. Everard expect everyone to use telephony for his benefit? I do not possess a television receiver, but it does not make me miserable because by neighbour has one. Has the gentleman in question ever tried to learn the code? What is the idea of all this 'DX logged' business anyway? Surely no useful purpose is served by publishing lists of 'ham' calls each month? It appears that the persons who have the cheek to style themselves 'Experimental Receiving Stations' and send lists of what they hear (or think they hear) to the radio press, and collect lots of pretty wallpaper, are as distinct from ham radio as the North and South Poles. A ham is an experimenter, but these gentlemen only experiment with various ideas for acquiring rubbish to hang in their stations. In conclusion, here's wishing the Magazine long life, and let's hope that Mr. Everard will invest in an oscillator and learn the code . . . maybe he will even consider applying for his ticket, and when you think of it, that is the only worthwhile thing to do if he is an experimenter. Surely he doesn't wish to remain among this horde of wall decorators who write and tell you they've received W2IXY and SUI8G?" Whoa! No wonder he writes with a pseudonym and leaves no address!!!

● News from "Down Under"

After the last tirade, we had better introduce R. Simpson, 80, Wilga Street, Concord West, N.S.W., Australia. Mr. Simpson has recently won a trophy presented by a local radio weekly for the best individual reception (verified) for 1937, this being for YSD in El Salvador, while just prior to this he gained a 10-inch globe of the world for obtaining a card from HRN in Honduras. He is also in a local contest for the first to receive verifications from 100 different countries—he has 98 so far, his nearest competitor having 71. Mr. Simpson does not report every station heard, but concentrates on trying to receive cards from new countries only, an idea many of us might follow.

And now, nearer home, we have news of another piece of noteworthy reception. Conrad Tilly of Bristol has received confirmation from K4SA of his reception on 3.9 Mc 'phone at 23.45 GMT. The input was only 30 watts! He wonders if any other English reader has received a card from K4 for 3.9 Mc reception? We do know that G16TK and G6LI have both worked K4 on this band, and presume they have the cards. Conrad's next best was VP6TR on 7 Mc, while K7AOC at 19.00 and PK2WL at 21.33 BST on 14 Mc completed a satisfactory month's listening. C. A. A. Hardwick, of Misterton, Som., gives us the correct QRA of VP3AA. Willie Fonseca, Georgetown, Br. Guiana. He asks for the full address of TG9AA. Can anyone help?

● The "Class B" One Valver

B. A. Willis of Tonbridge sends in a very complete list of calls. All these stations were received on the Class "B" One Valver, the results from

which have fully come up to expectations. And now, Peggy Woolf (aged 17) offers to inform anyone who cares to write, with I.R.C. enclosed, whether or not certain S. African stations QSL. Her address is "Leodene," Second Avenue, Fish-Hoek, Cape Town, S. Africa. Sidney B. Osborn, 51, Eversleigh Road, Finchley, London, N.3, makes a few potent remarks: He thinks the space taken up with general calls heard is wasted, but is in complete agreement with the set-listening periods. He agrees with H. Sugden that the object of sending reports should be for the advancement of radio knowledge and not the collecting of cards; he maintains that the valuable time of true experimental radio amateurs should not be wasted by foolish requests for QSLs, where such are not earned. He has a novel idea that the prefix "G4" of G4FR has been changed to "G2" because the authorities intend to issue G4 calls at the end of the present G3s. For one thing, we have no proof that G2FR is really licensed, and the other is that it is doubtful whether the GPO themselves know what series they will start next!

● Unusual

We have received a very interesting letter from BRS1947 (he wishes to be known only by this number). He has been listening since 1924 but has only sought and received 23 cards. Instead of abusing the QSL side of the hobby, he has made many friends among the transmitting fraternity and learnt their side of the story. BRS1947 received a card during the month from an English station which he reported on 1.7 Mc. The following extract from the reply will no doubt be of interest to readers as this amateur was really appreciative of the report: "Very many thanks for your most useful report. I find it only too easy to get them on my 7 Mc transmissions (they are no earthly use of course) but to find a receiving station to take a 1.7 Mc test is like getting blood from a stone. At times, there are not enough stations working on 1.7 Mc to give reports and often wish I could get them from a few of the more sensible listeners." So you see what intelligent reporting brings forth.

Leslie Morgan, 45, Parkwood Road, Bournemouth is sure that every SWL will agree with him that the early bird catches the worm—to be more explicit, when a new station comes on the air, the first batches of reports are dealt with promptly, but after a short time the replies dwindle to nothing. This will explain why some SWLs are more successful than others; they are always listening and lose no opportunity in QSLing a new station. He (Leslie) has received cards from VP6LN, W7BVO, OA4R and has just heard a rare country in VP4TK of Trinidad. D. C. Chamberlain of Thornton Heath remarks on the large number of SWLs concentrated near him, including the other Chamberlain who lives only a few seconds' walk away! Cards have been received from VE4LQ, VK3WA, W5GGC and W6LAJ. He thinks our calls heard pages should be known as the "Glory" section; we, on the other hand hope to expunge in time this horrible thought, with your co-operation.

● DX Time Table

In response to numerous requests the Editor has asked your DX Scribe to draw up a "DX Time Table" each month (see p. 33). It is hoped this will be appreciated, and it will probably take the place of some of the redundant calls heard. The "Shack Photo" department will continue as it is

at present, and we are now ready for some more good clear pictures, preferably without the operator; the Magazine printing blocks will be sent to those whose photographs are used.

Bertram C. Cage, Royal Hospital School, Holbrook, near Ipswich, would like to know what happens between midnight and 06.00 BST on the 14 Mc band. The answer is that at this time of the year, and up to September, it is usually open all night for N. and S. America, with western stations increasing in strength from 04.00 onwards. This type of data will be covered by the DX Time Table.

C. Wright (2DTX), "Oak View," Eckington Road, Coal Aston, near Sheffield, suggests that general calls heard should be abolished, and the best of our logs interwoven into the text with interesting remarks, approximate frequency and time. Is it the wish of readers that we extend the DX Corner, or substitute some other feature for Calls Heard? Would you like only *one* page for the set-listening periods and general logs? We still think, however, that logs of G calls from overseas are wanted. Your opinions will make the future shape of this department as you wish it to be. Please write.

● The H.B.E. Certificate

Matthew Paterson, 118, Scott Hall Road, Leeds 7, requires details of the "Heard British Empire" award issued by the R.S.G.B. to their BRS members. It is necessary to receive written proof of reception of amateur stations from 25 different Dominion or Colonial countries with not less than 3 countries per continent; N. and S. America counting as one continent. These QSLs should be sent to the secretary of the Society. Matthew gives us a useful idea worth trying. A normal 14 Mc doublet with twisted feeder is used for reception, and if he disconnects the earthed side of the feeder he has the effect of an inverted L aerial connected to one side of the aerial coupling coil. He claims that this removes the directivity and good reception becomes possible in the opposite direction, i.e., in a line with the L portion.

Ronald H. Forward, 8, Willow Road, Farsley, Leeds, is in favour of cutting down the Calls Heard pages to one only; he informs us that this is the unanimous opinion of 20 of his friends who are loyal readers. Have patience, Ronald, we think you will have your wish granted! Hugh Huxley, 53, Temple Road, Preston, Birkenhead wants to know when Cuba can be heard—any time from 22.00-08.00 GMT at this time of the year; 'phones use prefix CO and CW stations CM. He also reports VE4SS in Winnipeg R9 plus at 17.40 on May 11. ZL 'phones can only be received in this country between 17.00-18.00 GMT as their hours are from midnight to 6 a.m. N.Z. time, and they are easily receivable on CW most mornings, frequently up to 21.00 GMT on 14 Mc. Another point, ZL 'phones are only permitted to work in the band 14,200-14,250 kc.

Alan Owen, "Cartref," 3, Cawdor Road, Inverness, suggests we publish frequencies of rare stations to help in locating them. We agree, but this can only be done if Calls Heard are cut down. The DX Scribe will pick out the best of the month with frequencies attached. Do not give frequencies if they are not too exact!

● Tests

F. A. Wadsworth (NRS506), 48, Roma Road, Walthamstow, E.17, is willing to stand by at any time for test transmissions on the 1.7 Mc band;

furthermore, he strongly recommends all who have not had experience of listening on this frequency to make up the adaptor in last month's issue or build a receiver—a simple 0-V-1 is all that is required. J. G. Wardhaugh (2DIT), 20, Hallgates, Hexham, Northumb., asks if other listeners have heard any weak U.S.A. 'phones recently on 1.7 Mc? On June 5 he heard three or four which just seemed to come up above the mush level at 23.30 GMT and then disappeared again. He refers to the National Field Day Stations heard on June 11, using the suffix "P" after the calls. All these stations were operating outdoors in various parts of the country.

K. Bunston, Gable Cottage, Broad Hinton, near Swindon, is up in the Wiltshire downs and is therefore in a fine radio location. He would like to meet other SWLs in or near Swindon, and tells us that the few stations he received during our last 7 Mc listening period are not good enough to mention—we leave you to judge—HC1JW, FB, PM, CO8JS, 7AS and TI2RS on 7 Mc phone! He offers the idea of building a S-W receiver chassis with aluminium panels and "Meccano" framework.

John Burt of Reading has heard 131 countries according to the R.S.G.B. list, which is good listening. He mentions CN1AA in the neutral Tangier Zone, ZD2H, VR4AD in Br. Solomon Is. on 14,305 kc, and OY4C, who gave his QRA as Thorshavn, Faroes. This latter one needs proving, we think! John Roscoe, at the same school as John Burt, has now reached 42 countries with YV and VP1 heard during our 14 Mc Listening Period. He would like information about SX3A received on 14 Mc CW. This is an official experimental station in Athens, and works amateurs in their bands; he does not QSL now, although we have his card. We can only think that "UM5QV" should read SM5QV, John! Gordon Birrell of Dundee writes a long letter and has now reached the 84 mark, his latest countries being: CT3AN, YN3DG, VP5GM, PK4BG, VS7GJ, VP4TK (not CK) and ZC2AC, whom he believes to be in the Cocos Is., but he is not sure of the letter "C." May we suggest the possibility of this call being ZP2AC who does operate on 'phone? The time, 11.5 p.m., would make it more likely to originate from S. America than Asia. Of interest is the fact, not realised by many of you, that PK calls are in Oceania by agreement between the member societies of the I.A.R.U. Therefore, when con-

sidering HAC, PK must not come in Asia; the boundaries are most clearly marked on Webb's great circle map. Gordon mentions hearing OK1SZ radiating about half a dozen signals near his fundamental; these would unquestionably be due to spurious oscillation of his PA. Other interesting "catches" include HK5OBG, 3JB, CE3CE, 3EW, CX1FA and HC2HP. He apologises to John Burt for claiming to have heard all S. American countries—he forgot PZ and FY! J. Harris, 6, Gambole Road, London, S.W.17, has received a card from TG2X.

Interesting letters have also come in from Bob Roberts of Liverpool; J. H. Symons of Market Drayton; D. F. Chatt of Co. Durham; K. Holyland of Harrogate; N. J. Rutter of Swindon; and to these readers we apologise for this brief mention.

DX FORECAST FOR 14 Mc—JULY 1938 (All Times G.M.T.).

<i>North America</i>	
Eastern States of U.S.A., VE 1,2,3, VO, K4 and West Indies	22.00-08.00
Western States of U.S.A., VE 4,5, XE and Central America, K6, 7 ...	05.00-08.00
<i>South America</i>	
All	22.00-08.00
(Note.—S. America is frequently heard when U.S.A. signals are absent.)	
<i>Africa</i>	
ZS, CR7	18.00-20.00
VQ2,3,4, OQ, ZE, ZD2,4, FQ8, FB, etc.	17.00-21.00
FA, FT, CN, SU, ST	09.00-11.00
	15.00-22.00 (or later)
<i>Asia</i>	
J, XU, VS1,2,3,6,7, UO, FI, HS, etc. ...	17.00-21.00
J, XU	08.00-09.00 (rare)
YI, ZC6, VU (North), U9, AC4, etc.	15.00-22.00
<i>Oceania</i>	
VK, VK9, VR2,4,6	05.00-09.00
ZL	06.00-10.00
PK, KA, Guam	17.00-21.00 (or later)

CALLS HEARD

The figures in parentheses refer to Set Listening Periods given last month as follow:

- (1) June 5 22.30—24.00 BST 1.7 Mc.
 (2) June 6 06.00—07.00 BST 14 Mc.
 (3) June 8 06.00—07.00 BST 7 Mc.

I. C. FLETCHER, 4 Cyril Road, Bexley-heat, Kent. 1938 Super Skyrider.

(1) CW—F8RJ. CM2OX. C2SC, UJ, YM, D, 5KT, UM, 6VD, ZR, 8JD, NF, TF, TR. 'Phone—CW2BG, C2TN, XP, 3GW, 5MM, 6BO, DZ, SG, VD, 8TL.

(2) CW—E55C. G6GH, 8DV, UG. HA3D, 7P, 8A. LA7W. LY1J. OH50A. OK3NW. VE1FU, 5VO. VK3HG, PE. W11BF, JR, NA, 2EGI, KGN, ZA, 3ENX, 5GCV, 6AJN, GK, GRL, MCQ, MGZ, ONQ, OVG, 7BTH, BVI, DVI, GGE, 8AYF, BOX, CMV, KFU, 9UM, VIE. YR5ML, VX. ZL4AC, DQ. 'Phone—8FLW. ON4MZ.

C. D. HAMMETT, 37 Torrington Road, Greenford, Middlesex.

(1) 'Phone—G6WY, BO, 2DQ, 3GW, 50A, 2XP, 6DZ.

(2) YR5CF. VE5KP, PE, EF, 3AHM, 2BO. W2JWS, 3CBV, GDX, 4BPG, 6FKK, GRL, 7FGZ, 8CNA, RRB, QWJ, IHU, HC, LRP, CRA, JNU, AVB, 9OHN, IAW. VK2FN. FA3QV. C2AI. XE1LK.

(3) F3QC, BX, SP, CG, MT, QA, ME, 8QD, KS. OZ5BW.

B. A. WILLIS, Park House, Tonbridge School, Kent. "Class B 1-valver."

(2) CW—K5AU. VK2HF, TY, 3HG, PE, 4JU. W5GRY, 6AX, BAM, DOB, ELC, GRL, HX, JRA, MGZ, NBH, POZ, 7ADU, EC, FUL.

14 Mc CW—CX1NE, 2AY. F18AC. FT4AG. HC3AL. HP1A. K4AOP. EVE, FAB, 5AC, AH, AU, 7EVM. LU2AM, EP, 7AZ, BK. PK1MF. SU1GT, SW. VK2ACN, ADR, ADV, AEO, AEZ, AGR, AHA, AIB, AII, DI, EO, HN, QL, SK, UF, VU, 3CK, FF, FG, HG, KK, NS, NW, QK, RD, TF, VF, WL, ZJ, ZR, 4FL, JB, LL, SA, SD, 5CS, JS, JT, KD, LL, ML, PS, RJ, WK, WR, 7KR, 9LW. VQ2PL. W5ACA, BWJ, DJI, EZE, FMV, GGS, GIA, GMM,

GRE, GTA, GU, KC, LS, SPM, PJ, 6AJN, BPM, GUA, FAL, GRL, GXV, HCW, HXY, JRA, LJB, MCG. XE1AG. ZB1R, U. ZL1HY, MG, MR, R, 2FS, JE, 3D, JK, 4DF, DR, FB, FK, FT, FV, G.

14 Mc 'phone—PK1MX, 4DG. SU1RA. VK2AHO, AQ, BK, OQ. VP1BA. VS2AK. W5BEK, BW, CX, DVE, 6AJB, CSZ, MPS, OSY. XE1Q. YV1AP.

GEOFFREY WOODBURN, BSWL525, 223 Quinton Lane, Quinton, Birmingham, 32. 0-v-2.

(2) 'Phone—CX2AO. VE5EF. VK6MW. VP1BA. W5AXA, 6PCK, GRL, GTL, HKQ, 7FEZ. (A 14 Mc general log is acknowledged.)

D. F. CHATT, NRS541, BSWL959, 23 North View, Sherburn Hill, Co. Durham, SH4, LS. 'Phone.

(2) W2ECF, EVI, HOA, JDS, JSW, 3CBV, FAM, 6GRL, LYM, MZD, SKK, 7FEZ, 8CFA, CNA, LB, 9UJS (Col.). F8S1. FA3QV.

(3) F5CS, GL, FE, MT, QA, QS, SQ, WK, 8QD. OZ5BW

P. E. TAYLOR, BSWL862, 134 High Street, Barnet, Herts. TRF-v-1.
(2) W2EVI, 3FJU, 4BPG, 6FKK, GRL, 7FEZ, 8CNA, VE3AHN, 5EAF, FA3QV, YR5CF, G2AI, M1.

SIDNEY BOCKNER, 2DHI, 10 Linthorpe Road, Stamford Hill, London, N.16. Pilot 6v. AW. Listed in order heard.
(2) W3FJU, 8QWJ, 2HBL, YR5CF, W3CNY, 8CNA, 6FIK, 8AVB, 6GRL, G2AI, W7FEZ, 4BRG, 2FOA, FA3QV, W4DQT.

B. CAGE, Royal Hospital School, Holbrook, Nr. Ipswich, Suffolk. 0-v-0.
(2) 'Phone-W7HDP, 2APT, EVI, BKF, JSW, 4AZK, 8CNA, 7AMQ, YR5CF, W3CBV, GDX, CNY, 6MZD, 9FQN, 8NPP, 6LIM, GRL, 4BPG. (And general 14 Mc log.)

A. H. DYER, BSWL672, 13 Fore Street, Torrington, Devon. TRF-v-1. 18-ft. indoor aerial.

(1) CW-G6ZR. 'Phone-G2JL, JO, RI, 3AM, 5MM, OA, 6BO, 8CB, FU, CW2BG.

1.7 Mc 'phone. 1.538-1.638-G2XQ, JL, 3BO, AM, GH, 5JU, 6GM, LY, 8ML, 5TN, CW2BG, WO, 5BI, KJ, 8HI, TP, CW-G6GM, 3GH, 5GT, CW2OP.

S. B. OSBORN, 51 Eversleigh Road, London, N.3. Home-built "Junk-box," 1-v-1.

(2) W2APU, BKU, JFW, IXY, FAM, 3NZP, 4BPG, DQT, 6GRL, 8CNA, QWJ, JNU, 9YGE, VE5EF, YV5AX, FA3QV. (14 Mc general log sent in.)

B. J. ROBERTS, Warblington, Reed Pond Walk, Gidea Park, Essex. 'Phone.
(1) CW2BG, G2DQ, JL, RI, TN, XP, 3GW, JV, 5MM, OA, 6BD, DZ, WY, SG, 8TL.

D. E. HOWELL JAMES, 3 Northcote Mansions, Heath Street, Hampstead, N.W.3. Crosley 7v. AW. All LS.
(1) G2XP, 3GD, GW, 5IU, MM, OA, 6BO, SG, WY, 8TL, TY, CW2BG.
(2) G2AI, M1, FA3QV, W2FIW, HBI, 3CBV, 4DQT, 6GRL, 8NJP, 9BJK, VE3HAN, YR5CF.

BRS1947. 'Phone and CW.

(1) G2JL, RI, TN, WS, XP, 5MM, OA, 6BO, DL, SQ, ST, TL, VD, ZR, 8BI, CB, FU, MX, NL, CW2BG, 5TC, GM8PM.

(2) FA3QV, HA7P, 8A, LA7W, OH2NE, OK2NV, VE3AHN, 5BF, VK2TY, 3HG, 9DM, VP1BA, W2EVI, HFF, JSW, 3CDX, FAM, 4BPG, DQT, 5DXR, 6GRL, GRX, MPS, NIK, NKS, 7GGE, 8AVB, CNA, ELP, ELK, 9BPE, CWP, JWI, NDJ, PJK, TSD, XE2IY.

BOB ELDRIDGE, BSWL545, NRS 24, 8 Belmont Road, Southampton. 1-v-1.

(1) 'Phone-G2DD, NV, 5TC, 6WY, SQ, 8AD, FU, JM, TR, GW5TC.

L. C. PAIRMAN, 2DKF, Ailsa View, Mary Street, Dunoon, Scotland. Sky-rider SX11.

(1) G2SC, 6AB, 8CB, 6NB, 8JD, NF, 3CJ, 2UJ, 6TL, 5MM, 6BO, 8PM, 2BG, 6SQ, 8CT, 2SG. (General 1.7 Mc log attached.)

MARTIN C. BOURKE, 2AOU, "Credition," Samares, Jersey, Channel Islands. 14 Mc. 'Phone and CW. 7.538-7.638.

CEIAR, AO, 3AD, DG, CM2AM, AZ, BH, BJ, KR, OP, RL, 7AC, AE, CO2RJ, 6OM, 7VP, CX1BG, 2AM, EL2A, FB8AB, AD, F18AC, FP8PX, H12N, 5C, HR7WC, HK3AL, GL, H51BJ, J2HQ, JJ, KB, KG, 4FT, K1ESH, EVC, FAY, FDC, 5AA, AC, AE, AF, AH, AU, FB, 6EO, FAZ, HZL, KEF, KPF, NZO, OCL, OQE, PPR, PVA, 7FBE, GIE, GLL, KALME, LUIHI, QA, 2CW, 3DH,

EV, FB, 4BC, BH, NB, 6DJ, JB, 7BG, BK, 8DJ, EN, 9CU, NY1AD, OA4R, U, OQ5AQ, T12HC, PK1MF, PK, ZZ, 2WL, PY1CK, GJ, U9MI, ML, BK, VE5VO, VK2ABE, ACN, AEP, AEA, AFN, AGD, AGJ, AHX, AIB, ABK, AO, AV, BE, BJ, BK, BR, CR, DI, DO, DR, DU, EO, FX, HZ, KJ, LB, MT, NF, NP, NO, NS, OT, PH, PX, QV, RA, RD, TY, UI, UT, UV, VU, VV, XU, 3AL, AN, AT, AX, BAR, BC, BZ, CE, CX, DS, DT, ES, FF, HC, HG, IR, IW, JA, KS, MR, NG, NS, NV, PE, VB, VF, VJ, VQ, VV, WL, WO, XG, ZH, ZJ, 4BN, DR, EL, HD, LQ, RY, TY, UX, VS, WT, 5AI, BH, GG, JS, JT, LL, ML, RN, RT, RX, SW, WK, WR, 6AF, MW, HS, 7CL, CM, NC, 9DM.

VP1BA, 2AB, 3AA, 4TK, TI, 5AD, BR, RS, 6FO, MR, YB, 7NR, 9G, L, O, R, VQ2HC, JC, PL, 3HUP, 4CRI, KTB, KTF, VR2FF, 4AD, 6AY, VS1AF, AI, 7GJ, MB, VU2AA, AN, BG, CR, DB, DR, EO, FH, FS, FX, W5ABW, ACA, AI, AK, ARX, ASX, AX, BEO, BNV, BVE, CWW, CXQ, DG, DGV, DLV, DNV, DVE, EWJ, FKN, FNA, FNH, GDU, GGX, GJC, GMM, GSE, KC, IWW, PJ, QJ, 6AJD, AKC, BAM, BUW, CEO, CGO, CH, CIP, CLS, CLZ, CNZ, CVW, CYE, DLT, DOB, EXQ, EHZ, FAL, FKG, FZ, FZY, GEC, GK, GRL, GRX, IKQ, HEW, HI, HLD, ITA, JGO, JRA, JRU, KIP, LUA, LYM, LUR, OI, MCG, MLG, MMF, MTC, MX, MXD, MZH, NCV, NVN, NQL, OEG, OGO, ONQ, OTP, PCX, PFJ, PLC, POB, POZ, PVS, QD, RK, SUO, TI, WN, ZS, 7EC, EGE, EHR, ELX, FMX, FUL, GMF, GWD, MF, BAH, BND, XE1AG, G, 2FG, 3AB, XU7CK, 8AG, LS, MY, OL, RL, 9MK, XZ2DY, YV1AA, 2CU, 5ABA, AG, AK, ZE1JA, JG, JI, ZLIHY, JI, KE, MR, 2BI, CA, FR, CN, GW, JO, LA, LB, MN, OU, PB, OR, VM, 3AP, DJ, FZ, GC, GK, GR, JR, SM, 4AC, AF, AR, BR, DF, DK, DQ, DR, FB, FS, FV, GM, GU, GW, ZS1AH, AU, 2AM, 6DM, EU.

D. T. BOFFIN, G3HS, Coxwell Street, Faringdon, Berks. 1.7 Mc CW heard and worked during past month.

G2AX, BI, IN, GG, CF, JL, NZ, CXP, BL, JL (P), 3BY, JO, HC, GW3AL, G5TN, KT, LO, RI, RD, HS, MC, MM, RY, IU, JH (P), JA (P), CW5BI, 6GVK, VC, VD, GM, GO, KW (P), GM6SR, 68PX, VP, NF, TL, GQ, WF, GI, QC, F8RJ, EI6FP.

JOHN B. BURTT, 2DKQ, Reckitt House, Leighton Park, Reading. 16.238-12.638. 1-v-2. 14 Mc 'phone and CW.

CN1AA, CR7AC, AU, CX1BG, 2AJ, EA9AH, F18AC, HC1FG, HI1M, HK4AG, HR5C, J2GG, JJ, KG, 8GS, K4AOP, DRN, DTH, FAY, RO, 5AA, AC, AF, AN, 6OQE, PPN, KAIHS, SZ, WU, ZL, LUICA, EJ, 2DH, 3DH, 4BA, BH, CH, 7AZ, 8EN, 9AF, NY1AD, OQ5AQ, OY4C, PK1MF, PK, VY, MX, 4JD, PY2AC, ER, KX, WD, 3DG, 5AG, QG, TF2AX, 3B, C, 5F, M, U9AV, BC, BK, MI, ML, MN, VE3ADI, ADV, AHN, DA, KC, ND, 4AR, RO, SH, VV, 5ABU, ES, PN, SR, VK2ADE, ADV, AEA, AV, BR, DD, DK, FM, HG, HN, JO, LB, OT, PX, RA, SK, ST, TI, TY, UF, VU, VQ, XU, 3BC, BJ, BV, ES, JK, KG, MO, NS, OE, PE, QK, TE, VB, VN, VO, VU, WA, XH, XN, ZJ, 4BB, EL, GG, GS, HR, MW, UR, 5HK, JS, JT, KD, LL, LY, ML, OT, RX, WR, 6AF, MN, NW, OL, 7KR, VO1X, 6D, VP1BA, 2AB, AT, 4TI, 7NR, NT, NC, 9M, VO2AG, 3HJP, 4KTF, VR2FF, 4AD, 6AY, VU2AA, AN, FD, FQ, FS, FV, GB, LK.

W6ADP, AHD, AHZ, ANN, ATS, AVH, AZO, BAM, CD, CJK, CXN, DUC, DWA, EEP, ERF, EW, FAL,

FRG, FZL, GMF, GRN, GRZ, GTD, GUW, GYL, HUA, HX, I1Y, JMR, JRA, JSL, JWS, KAM, KEV, KW, KZL, LUP, MCG, MHS, MPK, MQF, MQL, MRZ, NAE, NCW, NGA, NLZ, NPL, OFO, OI, PDB, PKF, PLK, QP, SZ, 7AGE, ALB, APC, AQO, AYO, COJ, CSW, DL, EGE, EHR, EZX, FAL, FHW, FJS, FUL, GWC, 10XAB, XE1KC, Y, 2FG, XU2FV, 8AG, LN, LS, MR, NR, RL, RS, XA, 9MK, YV5AG, AK, ZB2OX, VC, ZC6AQ, ZD2H, ZE1JI, ZL1BR, LM, MR, 2CI, DO, DS, FA, FS, OU, QA, RA, SA, VM, 3AP, CK, GR, JA, KX, UK, 4AC, AF, AU, BR, DQ, FB, FK, FT, GO, ZS1A, AH, B, BG, CH, LE, 2AM, AZ, 3E, G, 5Q, 6CZ, DM, ED.

1.7 Mc CW, 11.638-12.638 (National Field Day week-end)-G2BL, CXP, HWP, JLP, L2P, MIP, NZ, WSP, YG, YYP, 5AKP, IU, JHP, UMP, VDP, PAP, WAP, XLP, AMP, 6KRP, LBP, NAP, RWP, ST, VC, VP, WNF, OF, OOP, GM2OXP, 6RIP, R3P, 8PMP, CW5ODP, G15HVP, EI6FP, F8RJ.

E. A. CROWE, 28 Carlingford Road, Hampstead, N.W.3. Pen. det. (separate reaction valve) 1LF.

56 Mc-G2MV, 2RD (CW), 5KH, 5RD, 6FU, VA, 8GR, JR, KZ.

V. J. BARTLETT, GW5BI, 171 City Rd., Cardiff. 1.7 Mc stations heard or worked. SG-V-1.

'Phone-G2AJ, CF, JL, MI, SC, ZP, 3CX, FM, HL, JO, JV, 5BK, BM, CZ, GN, IU, JU, KJ, KT, LM, MN, OQ, RQ, TN, UH, XJ, 6BO, CD, DZ, FO, GO, GN, KU, LY, NB, SG, TL, VF, WY, ZR, 8AR, BI, BR, FU, JF, ML, NL, VP, CM8PM, CW2BG, HH, NG, 3AJ, 5TC, 8CT, HI, F8RJ.

CW-G2JK, NZ, RI, XP, 3HA, HD, HS, JT, 5GT, HS, QY, RI, 6BQ, HG, JU, TR, YU, 8JQ, PX, CW2NF.

F. PEMBERTON, 69 Langham Road, W. Wimbledon, London, S.W.20. One valve.

56 Mc 'phone-G2MR, MV, NH, 3CU, 5AU, KH, 6VA, 8TX.

CW-G2HG, NH, OD, 5LB, 6VX.

REGRETS . . .

Your log may not have appeared apart from the reasons given in earlier pages; omission of name and/or address from a log sent in, which, in the process of sorting fifty lists and perhaps as many letters does not help! Please, therefore, do your best to observe the condition that letters and logs must be separate, both bearing name and address.

The following have submitted logs, which have been perused with much interest, but as pointed out, space limitation precludes publication: J. D. Baker, Yarmouth; Gordon Birrell, Dundee; P. Brand, Stamford; A. P. L. Casling, Hale; S. F. L. Edwards, Horsea; K. A. Evison, Hitchin; J. C. Forrow, Workop; E. Hartley, Tottington; K. Holyland, Harrogate; Hugh Huxley, Birkenhead; P. V. Jacobs, Goodmayes; C. Kemp, Stamford; M. D. Lipscombe, Seaford; L. W. Morris, Dagenham; Alan Owen, Inverness; C. J. Pearson, Ashford, Mdx.; T. Richards, Hove; Bob Roberts, Liverpool; N. J. Rutter, Swindon; H. Sugden, Bradford; J. H. Symons, Market Drayton; Conrad G. Tilly, Bristol, 6; F. A. Wadsworth, London, E.17; G. Waine, Chorltoncum-Hardy; J. G. Wardhaugh; Hexham; Peggy Woolf, Cape Town. Thank you all!

CLUB ACTIVITIES

BRADFORD Short-Wave Club

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

Great progress has been made since the inauguration of a Construction Committee; the transmitter has reached completion and tests will be carried out as soon as the call sign is known. Members are looking forward to the Annual Field Day, which is always a scene of great enthusiasm. Anyone residing near who is interested in the high-frequency radio waves should write to Mr. Fischer for details of forthcoming events.

BRIGHTON Branch—World Friendship Society of Radio Amateurs

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

Members of the Heathfield Radio and Television Society came to Brighton for a recent meeting when Lissen, Ltd., gave a talk and demonstration on SW components. A goodly assortment of components were provided by members for a Junk Sale, when a quarter of the proceeds went to the club funds. It was decided to carry on with the fortnightly meetings throughout the summer.

DEPTFORD Men's Institute Short-Wave Radio Club

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

Members are active, working on their own gear in addition to modifications of the club's transmitter and receiver every Tuesday evening. 2CAD seems likely to be the first G3 member as he has only the Morse test to pass; 2BAM has built an effective 5v. superhet and a rack-and-panel "47-45" choke plate modulated transmitter; 2DKX, handicapped by DC mains, has found a pair of Marconi pentodes for use in his PA, which promise good results and a 10-watt input; 2DJN has now completed the 47 CO 46 buffer-doubler stages and is engaged on the PP 46 PA; 2 BFL has adapted a Marconi all-wave superhet for CW reception. Mr. Simmonds has an AC 5-metre superhet working on a Reinartz rotary beam aerial and is checking performance; G8GP is active on the "top" band and is getting out well; and G5WG has acquired a DC HT generator driving from his DC mains.

DOLLIS HILL Radio Communication Society

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

The experimental laboratory is now past the talking stage, and a series of talks by Mr. S. C. Ash have now begun. All visitors are welcome, and meetings take place fortnightly as from June 28 at Braintcroft Schools, Warren Road, N.W.2.

DULWICH Radio Club

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

The Club's AA licence is expected from the G.P.O. at any moment, and work will commence on a transmitter to be built by members who are busy re-decorating the premises. A new enthusiast is Mr. R. French (R.N.W.A.R.).

EDGWARE Short-Wave Society

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

On June 8 Mr. Lawton of Messrs. Ferranti gave a lecture on meters. A series of lectures on transmitting apparatus and recent aerial developments will be given by the Club's President, Mr. Leslie Gregory, G2GI, and parts of his transmitter will be examined and discussed at Headquarters, Constitutional Club, Edgware.

The Club is now affiliated to the Radio Society of Great Britain and a party visited the Divisional Field Day Camp, G2ALP at the top of Mote Mount, Barnet-by-pass, on the afternoon of Sunday, June 12. Since its inception in January of this year, the Club has attained a membership of thirty and it has been decided by vote to continue the meetings during the summer. Mr. F. Harris has now obtained his full licence, G3LT.

EXETER and District Wireless Society

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

By permission of Messrs. Odeon Theatres, Ltd., members were conducted over the Exeter Odeon Theatre. The visitors were taken to the operating room and behind the screen (which is made of aluminium and slotted to allow sound to pass through) where stand the loud speakers which reproduce the lower audio frequencies; the high-frequency speakers are in a loft above the screen. Several records were played giving various sound effects, also illustrating the remarkable quality of the amplifying system in general.

There will be no meetings until September, when the Autumn session starts and full details will be published, together with the syllabus for the coming season.

HACKENDEN Radio Club (East Grinstead)

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

"The alterations proposed are not quite finished, but a certain amount of radio work has been done. This includes the erection of an aerial. Once the final details to H.Q. are finished our equipment will take its position where our building committee have so carefully planned. I'm sure that our next report will be accompanied by a log and details of equipment. Until then the radio world will have to wait for our challenge to produce results under difficulties and proof of our so doing."

[We are "holding everything."—ED.]

HALIFAX Experimental Radio Society

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

Conditions on May 29 were not good and consequently the result of the 56 Mc rally was disappointing. However, 'phone signals were picked up in the North of England. All members report active and there is still a good programme ahead, both in field work and lectures. ZLIBG—a visitor at the last meeting—has joined; he is staying in Halifax and is keen on ultra-SW work.

LONDON Transmitting Society

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

Mr. Altman, 2DCN was auctioneer at a successful junk sale held on June 9, £10 11s. 3d. profit for the Society being the result. Mr. Allen, 2CXU; Mr. Green, 2DTW; Mr. Morgan, 2CBG; Mr. Robbins, 2DRC; Mr. Barnes, 2DHK; Mr. Croucher, 2DFU, are thanked for their help.

June 30 was chosen as the day for erecting a 50-ft. mast, after deciding on a 28-Mc directive system. Four in phase aerials, backed up by four reflectors, concentrating the radiation in the direction of transmitters being received.

Morse lessons are given every Thursday at 8 p.m. by 2DWS. Membership is free to holders of an AA or full licence; application should be made on QSL card and not by letter, enclosing 1½d. stamp to 2DWS.

Mr. Austin Forsyth, G6FO, Editor of THE SHORT-WAVE MAGAZINE has accepted an invitation to become the Society's Hon. President.

PAISLEY Short-Wave Club

Secretary: P. K. O. OAKLEY, 40, Colinslee Drive, Paisley.

Founded in the Autumn of last year with a handful of members, the Club has made good progress. Under the presidency of its genial founder, Mr. John McQuade, an enthusiastic S-Wer, club headquarters have been secured and equipped, and the membership is steadily growing. Under expert instruction, many members are learning the code. The transmitter is almost completed, and it is hoped to have the licence through shortly. Realising the necessity of making provision for the future, a Novice Section is under way, and an enthusiastic group is being given instruction in both theory and practice of wireless receiving.

Weekly meetings are held, when lectures are interspersed with lighter fare, such as auction sales and gramophone recording. A visit was recently paid to the B.B.C. transmitting station at Falkirk, and further outings are under consideration.

New members are welcomed, and application should be made to the Secretary. The entry fee is 2s., and the subscription rates are: Senior members, 6d. weekly; unemployed—6d. weekly for first six weeks, thereafter 3d. weekly; junior members (under 18)—3d. weekly.

SURREY Radio Contact Club

Secretary: A. B. WILLISHER (G3IG), 14, Lytton Gardens, Wallington, Surrey.

On June 7 a "Query Bee" was held. Members were selected at random and called upon to talk on a named subject for at least five minutes while a committee of three kept close watch for errors, when a bell was struck. First came a description of a unique form of modulation by absorption; then followed a description of a "signal squirter" highly directive aerial which G8LU is building; the next member described some of his experiences with 28 and 56 Mc receivers; the last speaker (a new three-letter man) became "technically hitched" when asked to describe the functions and means of crystal control and was ingloriously gonged.

All interested are cordially invited to attend the "Alhambra," Wellesley Road, West Croydon, at 8 p.m. when they will be heartily welcomed by the club, which possesses a large number of fully-licensed men, e.g., G5XH, G5XW, G5AN, G2KU,

G8LU, G3IG, G8TB, G2UA, etc., etc., who will always be pleased to meet amateurs of Croydon and surrounding districts.

STAFFORD and District Short-Wave Club

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

Mr. W. G. J. Nixon of the Osram valve technical department of the G.E.C. recently gave a brief history of the valve, including the evolution of the dull-emitter and multi-electrode valve. A particularly interesting film was then shown depicting the intricate manufacture of a modern Osram valve. The elaborate checking and testing of the finished product aroused the admiration of all. Mr. Nixon completed his lecture with some experiments, using a photo-electric cell in conjunction with a gas-filled relay; an electric motor was controlled entirely by the light from a small torch. A method of street lighting controlled by daylight was then demonstrated. The application of the photo-electric cell to timing devices was briefly outlined.

WEYMOUTH and District Short-Wave Club

Secretary: W. BARTLETT, 59a, Franchise Street, Weymouth.

This club has completed one year and membership is now 30; there are four full licence holders and several other members with AAs.

The transmitter is on the air on 1.7, 7 and 14 Mc. every Sunday morning and Wednesday evening. The club room is open to all members every day including Sundays. Club news is given out at 10 a.m. on Sundays by G2XQ. It is hoped to have an annual outing this month, visiting a B.B.C. transmitter. All local readers are invited to join.

WILLESDEN and District Short-Wave Society

Secretary: T. C. MAHON, 28, Denzil Road, N.W.10.

Considering this Society has been formed only a few weeks, and in summer-time, with its counter-attractions, it is surprising to find the membership increasing at such a rate (now in the thirties). There is a spacious room for meetings, conveniently equipped and a library is being formed.

Interested readers will be welcomed at headquarters, 31, Willesden Lane, N.W., any night from 6.30 to 10.30 p.m. with the exception of Thursdays and Sundays.

Next general meeting will be 8.30 p.m. Wednesday, July 13.

WIRRAL Amateur Transmitting and Short-Wave Club

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

A successful junk sale was held at the club on May 25, when a large number of transmitting and receiving components changed hands, the club funds also deriving benefit from "commission" on sales. Mr. R. Cumberlidge (G3CK) was the auctioneer.

There is much activity in the preparation of the first issue of the club magazine. Members paid a visit to Speke Airport to view the radio equipment on June 11.

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.

GUIDE TO THE WORLD'S S.W. BROADCASTERS

Compiled by F. A. Beane (2CUB)

ALL G.M.T.

LATIN AMERICA

YNGU, MANAGUA

(Nicaragua)

Metres: 32.27. Kilocycles: 9,300 Power: Unknown.

Operating schedule: Weekdays 18.00—20.00 and 23.00—24.00; Sundays 17.00—18.00 G.M.T. Seldom heard.

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

Distance from London: Approximately 5,300 miles.

Postal address: "Estacion Radiodifusora YNGU, Apartado No. 295, Managua, Nicaragua."

Identification characteristics: Slogan "Alma Nica," also "La Voz de Lagos," concludes broadcasts with organ recording of the "Blue Danube."

Verification of reception reports: By QSL card.

HP5A, PANAMA CITY

(Panama)

Metres: 25.64. Kilocycles: 11,700. Power: 300 w.
Operating schedule: Weekdays 16.30—18.00 and 22.30—03.00; Sundays until 03.00 (actually continuation of Saturday's transmission), 15.30—18.00 and 23.00—03.00 (Monday) G.M.T.

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

Distance from London: Approximately 5,050 miles.

Postal address: "Estacion Radiodifusora HP5A, Apartado 954, Panama City, Panama."

Identification characteristics: Theme song "Anvil Chorus" from the opera "Il Trovatore" (Verdi), call in English. News, advertisements and tourist programmes in English. Owned by "Radio-Teatro Estrella de Panama" (Star and Herald Radio Theatre).

Verification of reception reports: Sent against International Reply Coupon or equivalent in unused stamps (5c. U.S.A. currency).

YNLF, MANAGUA

(Nicaragua)

Metres: 39.74. Kilocycles: 7,560. Power: 1,000 w.

Operating schedule: Daily 14.00—15.00; 18.00—20.00 and 00.30—04.30 G.M.T. Seldom heard.

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

Distance from London: Approximately 5,300 miles.

Postal address: "Radiodifusora YNLF, c/o Ing. Moises Le Franc, Calle 15 de Set., No. 206, Managua, Nicaragua."

Identification characteristics: Slogan "La Voz de Nicaragua."

Verification of reception reports: By QSL card. Postage 5 c. in U.S.A. stamps.

N.B.—This station, in company with many others of Nicaragua, does not adhere to a set frequency, sometimes operating in the 31 m band.

HP5B, PANAMA CITY

(Panama)

Metres: 49.75. Kilocycles: 6,030.

Power: Believed to be 100 watts.

Operating schedule: Daily 17.00—18.00 and 01.00—03.30 G.M.T.

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

Distance from London: Approximately 5,050 miles.

Postal address: "Estacion Radiodifusora HP5B, Apartado 910, Panama City, Panama."

Identification characteristics: Slogan "Estacion Miramar," frequent English announcements and advertisements, time announced "by the Westinghouse clock," descriptive slogans such as "Where the land was divided so that the World could be united" and "Where palm trees blow and two oceans flow" used occasionally. Sometimes mentions "R.C.A. Victor." Signs off with English announcement.

Verification of reception reports: Confirms with attractive QSL.

YN1GG, MANAGUA

(Nicaragua)

Metres: 45.91. Kilocycles: 6,535. Power: 100 w.

Operating schedule: Daily 23.00—03.00 G.M.T. Seldom heard.

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

Distance from London: Approximately 5,300 miles.

Postal address: "Estacion Radiodifusora YN1GG, Managua, Nicaragua."

Identification characteristics: Slogan "La Voz de los Lagos" used frequently.

Verification of reception reports: By QSL card.

N.B.—This station does not adhere to frequency or schedule. Send mint U.S.A. stamps for postage.

HP5J, PANAMA CITY

(Panama)

Metres: 31.28. Kilocycles: 9,590. Power: 3,000 w.

Operating schedule: Weekdays 17.00—19.00 and 22.00—03.30; Sundays until 03.30 (continuation of Saturday's schedule), 15.30—19.00 and 01.00—03.00 (Monday) G.M.T.

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

Distance from London: Approximately 5,050 miles.

Postal address: "Estacion Radiodifusora HP5J, Apartado 867, Panama City, Panama."

Identification characteristics: Slogan "La Voz de Panama," frequent advertisements in English, news in English from approximately 23.30 to 00.20, with interspersed advertisements, and begun and concluded by the playing of a march—"The Black Horse Troop."

Verification of reception reports: By QSL card.

N.B.—This station, although listed on 31.28 m, is actually heard near 31.23 m.

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SINCLAIR SPEAKERS, Alma Grove, Copenhagen Street, London, N.1. Ter. 4355.

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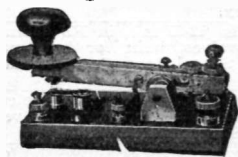
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- 3 Trade and Box Number advertisements cannot be accepted.
- 4 We reserve the right to refuse any advertisement.
- 5 We cannot act as an intermediary for an advertiser in this section.
- 6 Advertisements must reach this office not later than the 15th of the month preceding the month of issue.

FOR SALE—3v. AC TRF COMMUNICATION RX £2 10. 0-V-1 "Ham Band" RX, Eddystone, aluminium case, etc., £1 10. Components: Eddystone & Mullard, or write for photos.; 38, Sandford Road, Chelmsford.

For Sale—PRE-SELECTOR (AC), 16-80 metres, 12s. 6d.; S.T. 800, complete with valves £3 10s., or nearest offer.—J. H. Symons, Cheswardine, Salop.

2v. SUPER-REGEN 56 Mc receiver in cabinet, complete with valves, ultra SM Dial and LS Unit, £2 10s.—G3JD, 16a, Linden Terrace, Newton Abbot, Devon.

For Sale—"Puratone" PIANO ACCORDION, used about a dozen times, cost £3 10s. My price £2 10s. or nearest offer! —E. A. Barrs, BSWL236, 4, Kings Road, Enham, Andover, Hants.

Massive Black and Chromium RADIOGRAM, unmarked, fitted Pilot U650; Beethoven 6v. super; converter, 5/80 m.; Garrard motor, pickup; cost £50, £20 or offer.—Write first C. Nash, 70 Meadow Way, Wealdstone.

Autumn 1936 CALL BOOK, 3s. 6d.; all 22 BSWL Reviews, 4s. 6d.; trickle charger, 2v. half-amp. 4s.; 2 unused 2525's, 2s. 6d. ea.—G. S. R. Gordon, 28, Vineyard Hill, S.W.19.

WANTED.—A 10-watt TX for 7mc 'phone, must be complete and in working order. Would exchange Trophy 3 battery model for same.—Wright, 1, Hollar Road, Stoke Newington, N.16.

Wanted.—Hallicrafters SUPER SKYRIDER or National NC80x, NC81x receiver with crystal and R meter, speaker not essential.—Write Milsum, 30, Southern Road, Camberley.

For Sale—BTS Five-valve SHORT-WAVE SUPERHET, 12-80 metres, complete with valves, £4, nearly new.—Post-card, 2CVY, Ebberly Dairy, Newport Rd., Barnstaple, Devon.

SALE—Pye LF Transformer (cost £1); Slektun LF transformer; Osram DG2 valve (cost £1—few hours use only). Best offers.—BRS 1330, Providence Cottage, Misterton, Somerset.

EDDYSTONE 1034 CABINET, unused 11s. 6d.; 1090-1-2. Coil assembly, unused 6s. 6d.; 1081 Split-stator condenser, perfect, 10s.; National XR10A Coil Form, unused, 3s. 6d. Offers.—2AAS, Horncastle, Lincs.

Sale 4v. All-Wave Lissen SKYSCRAPER complete, new, HT/LT, £3; offers; if interested stamp please. Several surplus components.—J. Morris Casey, 1 School Road, Coalbrookdale, Shropshire.

EDDYSTONE 4-V Battery Set, in cabinet, complete with 4 valves and coils, 10-170 m., £4.—G3JD, 16a, Linden Terrace, Newton Abbot, Devon.

USW, SW and BC COMPONENTS; valves for sale; stamp for list; power valves, 1s. 6d.; apparatus designed and constructed.—2BZQ, 80 Wyberton West Road, Boston, Lincs.

Mahog. Console, mains energised, 13 watt Ex-Speaker, £2; two other SPEAKERS in cabinets, 10s. each.—Write first C. Nash, 70 Meadow Way, Wealdstone.

WANTED—Coils for TRF Receiver (Jones H'book), 3 valve, or Eddystone coils No. 1065, as used in their 1938 Mains HF Amplifier.—Clay, Polkyth Road, St. Austell, Cornwall.

COSSOR Silvertone II. (200-2000 m.) with cabinet, speaker, valves, 7s. 6d.; 1-valve, 5-metre receiver with valve, 7s. 6d.—2BZQ, 80 Wyberton West Road, Boston, Lincs.

"TELEVISION" designed 3-valve receiver, both HF and Det. stages bandsread, 9-170 metres, new, cost £10 10s.; accept £7 or offer.—Steinberg, 91 Fairholt Rd., London, N.16.

EXCHANGE.—Two LF Chokes, 100 Henry 3 mA, and 40 mA for 1-1 Output transformers, or with tapped secondary.—Calder, 10 Little Lane, Louth, Lincs.

Wanted, new SKY CHAMPION, AC and battery operation, or set and converter 30 DC to 230 AC, 200-w.; also 3.5 Mc Xtal & Holder.—Hill, Robin Hood, Catsfield, Battle, Sussex.

BTS TROPHY 3, AC model Short-wave Receiver and set of four coils, very little used; as new, £4 10s.—B.H.E., 131 By-Pass Road, Ewell, Surrey.

For Sale—Eddystone bandsread tuning outfit, including 3 Eddystone short-wave coils (6-pin) and components for "ALL-WORLD TWO," valves for same, in splendid condition, £1 the lot!—H.J.B., 12 Morningside Place, Liverpool, 2.

Short-Wave Mag. CLASS B in Aluminium Cabinet, less valve, with Eddystone coils, B.T.H. Lightweight Phones, unused, 35s.—Write C. Nash, 70 Meadow Way, Wealdstone.

SELL or Exchange—"Popular Wireless" and "Practical Wireless" back numbers, also other mags. and components. Offers.—Stamp or details, BRS3203, Cawdor Road, Inverness.

Wanted—7 Mc BAND CRYSTAL.—W. Warburton, 21 Fern Terrace, Haslingden, Rossendale, Lancs.

Cosor MELODY MAKER III, with cabinet, speaker, valves. Good condition, £1; carriage extra; pick-up 3s. 6d.; mike and transformer, 3s.—2BZQ, 80 Wyberton West Road, Boston, Lincs.

Owing to removal of QRA, G8BW has surplus gear for disposal. Valves, meters, power packs, etc. Send for bargain list to—78, Acland Road, Bournemouth.

S.T. 900, 9-2,000 metres, specified kit, chassis, valves and all coils, partly assembled, blueprint and instructions; cost £5 10s., accept £3 10s. or nearest. C.O.D.—Ewings, "King-ton" Station Parade, Exmouth.

Wanted—POWER PACK, 350 volts, 150 mils.; Modulator, 7 to 10 watts, with own pack.—2DFX, 5 North Parade Terrace, Monmouth, Mon.

For Sale.—A TROPHY 3 battery set complete with 'phones and coils, including television sound. Or would exchange for a 10-watt TX for 'phone.—Wright, 1, Hollar Road, Stoke Newington, N.16.

3-watt AMPLIFIER AC-DC, £2; 1938 Stentorian type 38S with baffle, 30s. Both practically new, perfect condition.—Steinberg, 91 Fairholt Road, London, N.16.

Sale or EXCHANGE for TX Gear, Meters or Crystals; two Magnavox mains energised moving coil Speakers, 154, 2,500 w.; 144 2,500 w.; one-sixth h.p. AC or DC Motor, 200 to 200v.; Atlas Mains Unit, T25; charger, one I.D.H., F.C.4 valve.—78 Shirehall Crescent, Shire Green, Sheffield, 5.

Wanted—SMOOTHING CHOKE, Varley DP10.—Penfold, 4 Kirton Road, Drayton, Cosham, Hants.

SKY CHALLENGER 5X-15 (with crystal, magic eye); transformer; 8-in. PM Speaker, 1938 demonstration model, £18; Ekco UAW 78, 1938 all-wave AC/DC, cost 10½ gns., £5 10s.—Wade, 29 Clarendon Road, Leeds, 2.

Six-Volt Sparta BATTERY, almost new; 3 Valve KB Set; Chokes, Transformers, V. & F. Condensers, etc., etc., £2.—Write first, C. Nash, 70 Meadow Way, Wealdstone, M'sex.

FERRANTI TRANSFORMERS, Cheap: A.F.6 ratio 7-1, 4s. 6d. (listed 32s. 6d.); also OPM3c, P.P. output, 4s. 6d. (listed 28s. 6d.), accept 8s. the pair, or exchange anything.—G8DC, 104 Rectory Road, Burnley.

SALE—3v. TRF RX plug-in Coils (12-95 m.), in FB cabinet, W.B. speaker and three new valves, built for ham now deceased, £5.—J. Morris Casey, 1 School Road, Coalbrookdale, Shropshire.

Webbs New Transverse Current MICROPHONE complete, chromium ring, table stand, list 25s.; guaranteed, very sensitive.—Norman, 26 Mayton Street, N.7.

Nearly new MICROPHONE, Iganic ultra-sensitive button-hole transverse, transformer; uses 2v. battery. Cost £5; accept 25s. cash, or C.O.D.—W. Rogers, 26 Pender Street, London, S.E.8.

Number of Ericsson HANDSETS, send/rec. switch incorporated, ideal duplex job, 5s. post free.—Marshall, 30 Ashlin Grove, Lincoln.

Radio COMPONENTS, cost £10, mains and battery (mostly Short-wave); all as new; exchange for good camera.—J. Kavanagh, 63 Dawlish Avenue, Leeds, 9.

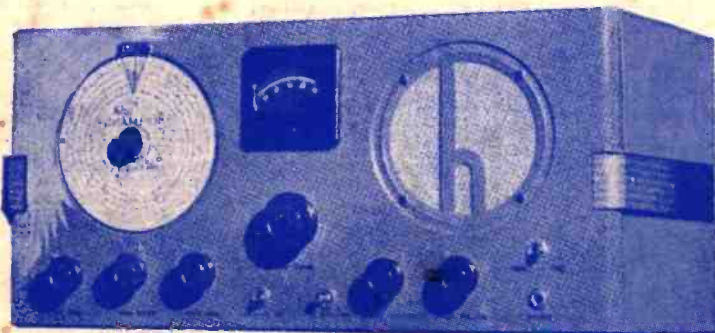
QUERY COUPON
S.-W.M. 7/38.

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	VUD2, DELHI, 11.30-18.30.
13.94	21,520	W2XE, WAYNE, S. 13.00-18.00.	31.28	9,595	VK2ME, SYDNEY, S. 06.00-08.00, 11.00-15.00, 17.30-19.30.
13.95	21,500	W2XAD, SCHENECTADY, 13.00-17.00.	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	19,023	HSSPJ, BANGKOK, M. 14.00-16.00.	31.82	9,580	VLR, LYNDBURST, w'days 03.35-14.30; S. 09.00-13.30.
16.86	17,790	GSG, DAVENTRY, 07.00-24.00.	31.32	9,580	GSC, DAVENTRY, 00.20-4.20 18.20-19.15.
16.87	17,780	W3XAL, BOUNDBROOK, 14.00-01.00.	31.35	9,570	KZRM, 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	W1XK, MILLIS, 11.00-05.00.
16.89	17,760	W2XE, WAYNE, M.-F. 12.30-15.00; Sa. 13.00-18.00.	31.38	9,560	DJA, ZEESEN, 06.05-17.00, 00.00-04.45.
16.89	17,760	DJE, ZEESEN, 06.05-16.00; S. 17.10-18.25.	31.41	9,550	W2XAD, SCHENECTADY, 00.15-04.00.
19.52	15,370	HAS3, BUDAPEST, S. 15.00-16.00.	31.45	9,539	DJN, ZEESEN, 22.50-04.45.
19.56	15,340	W2XAD, SCHENECTADY, 17.15-24.00.	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, JELOV, 11.00-23.00.
19.63	15,280	DJO, ZEESEN, 06.05-11.50 and 22.50-04.45.	31.48	9,535	W2XAF, SCHENECTADY, 21.00-05.00.
19.62	15,280	LRL, BURNOS 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, w'days 18.00-23.00, S. Sa. 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, SKAMIEBAEK, 20.00-00.40.
19.68	15,243	TPA2, PARIS, 11.00-16.00.	31.51	9,520	HJ4ABH, 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	HSSPJ, BANGKOK, Th. 14.00-16.00.
19.70	15,230	OLR2A, PRAGUE, tests around 13.00.	31.55	9,510	GSB, 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	LAHTI, 18.05-23.00.
19.72	15,210	W8XK, PITTSBURGH, 14.00-24.00.	31.58	9,500	VK3ME, MELBOURNE, w'days 10.00-13.00.
19.74	15,200	DJB, ZEESEN, 06.05-17.00 and 22.50-04.45.	31.58	9,500	NEWW, MEXICO CITY, 00.00-07.00 approx.
19.76	15,180	GSO, DAVENTRY, 07.00-03.30 and 22.15-00.00.	31.63	9,481	EAR, MADRID, 22.00-01.00.
19.79	15,165	JZK, TOKIO, 20.30-22.00.	31.80	9,428	COCH, HAVANA, 13.00-06.00.
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.	32.15	9,390	OAX4J, LIMA, 18.00-21.00; 23.00-07.00.
19.80	15,160	SRG, STOCKHOLM, M. to S. 17.00-23.00; S. 15.00-23.00.	32.88	9,125	HAT4, BUDAPEST, M. 01.00.
19.82	15,140	GSE, DAVENTRY, 07.00-18.00 and 22.15-24.00.	33.32	9,030	COB2, HAVANA, 13.42-06.03.
19.84	15,123	HVJ, VATICAN, 16.30-16.45.	33.50	8,950	HCJB, QUITO, between 13.00-04.15, ex. M.
19.85	15,110	DJL, ZEESEN, 06.00-08.00 and 14.00-22.25.	34.62	8,965	COJK, CAMAGUEY, 02.00-03.00.
20.04	14,970	LZA, SOFIA, 12.00-13.30; 19.00-21.15; S. 07.00-23.30.	40.65	7,980	XECR, MEXICO CITY, M. 01.00-02.00.
20.64	14,535	HRJ, GENEVA, S. 19.45-20.30; M. 08.30-08.45.	44.94	6,675	HBO, GENEVA, S. 19.45-20.30.
22.00	13,635	SPW, WARSAW, 00.00-02.00.	45.00	6,666	HC2RI, GUAYAQUIL, S. 23.15-01.45; W. 03-15-05-15.
24.52	12,230	TFJ, REYKJAVIK, S. 19.40-20.30.	45.25	6,630	HIT, TRUJILLO, between 17.15-02.40.
25.00	12,000	VZSPS, MOSCOW, from 12.00.	45.31	6,618	PRADO, RIOBAMBA, F. 03.00-05.30.
25.27	11,870	W8XK, PITTSBURGH, 00.00-04.00.	46.01	6,520	YV4RB, VALENCIA, 17.30-18.30, 23.30-02.30.
25.23	11,880	TPA3, PARIS, 07.00-10.00; 16.15-23.00.	46.80	6,410	TIPC, SAN JOSE, between 13.00-05.30.
25.29	11,860	GSE, DAVENTRY, discontinued.	46.88	6,400	YV5RH, CARACAS, 00.00-01.00.
25.34	11,840	OLR4A, PRAGUE.	47.10	6,396	YV5RF, CARACAS, 23.30-03.30.
25.36	11,830	W2XE, WAYNE, 23.30-04.00.	47.15	6,362	YV1RH, MARACAIBO, between 12.30-05.30.
25.40	11,810	IZRO, ROME, 01.00-21.00 and 00.05-01.30.	47.28	6,345	YV1RG, VALERA, 23.30-03.30.
25.42	11,800	COGF, MATANZAS, 22.00-04.00.	47.85	6,270	YV5RP, CARACAS, 23.00-04.00, approx.
25.42	11,800	JZJ, TOKIO, 20.30-00.30.	48.05	6,245	HIN, TRUJILLO, 00.30-03.30.
25.42	11,800	OER3, VIENNA, 15.00-23.00.	48.31	6,210	YV1RI, CORO, between 16.30-03.30.
25.45	11,790	WIXAL, BOSTON, 21.45-23.30; S. 20.00-23.00.	48.78	6,150	YV5RD, CARACAS, between 16.30-04.00.
25.47	11,780	LAHTI, intervals 07.00-18.05.	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; 16.45-18.45; 22.15-24.00.	48.88	6,136	CR7AA, LOURENCO MARQUES, see CR7BH (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, 16.00-6.00.
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, JELOV, temporarily discontinued.
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, CALCUTTA, between 08.06-18.06.
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	CB17D, 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, BOUNDBROOK, 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	EABAB, TENERIFFE, between 20.35-02.00.	49.26	6,090	CRXC, BOWMANVILLE, 18.00-02.00.
29.04	10,330	ORK, RUYSSSELDE, 19.30-21.00.	49.31	6,083	VQ7LO, afterwards 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	SBO, 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	BAQI, MADRID, evenings.	49.50	6,060	W8XAL, CINCINNATI, between 10.45-07.00.
30.80	9,740	COCO, 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	IZRO, ROME, 21.00-24.00; 01.30-03.00.	49.92	6,010	CJCX, SYDNEY, between 13.00-02.30.
31.15	9,630	HJ7ABD, BUCARAMANGA, 00.00-04.30.	49.92	6,010	PRAS, PERNAMBUCO, from 22.00.
31.21	9,612	HJLABP, 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	CXA2, MONTEVIDEO, 22.00-01.00.
31.25	9,600	RW38, MOSCOW, evenings.	49.96	6,005	CFXC, 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	XEBT, MEXICO CITY, 16.00-06.00.
			50.17	5,980	CS2WD, LISBON, from 22.00.
			50.60	5,930	VV1RL, MARACAIBO, 00.00-04.00.
			50.90	5,893	VV3RA, BARQUISIMETO, between 18.00-04.00.
			51.28	5,850	VV1RE, MARACAIBO, between 16.00-04.30.
			51.72	5,800	VV5RC, CARACAS, between 16.45-03.45.
			58.31	5,145	OKIMPT, PRAGUE, evenings.
			60.06	4,985	VUD, DELHI, 12.30-18.30.

WEBB'S present the New HALLICRAFTER SKY CHAMPION



ITS SENSITIVITY and selectivity are only to be compared with communication receivers selling at double its price. This receiver provides full coverage from 44 Mc to 545 kc, everything from the 10-metre amateur band to the top of the broadcast band.

Band No. 1 (545 kc to 1,800 kc), broadcast and police bands. Band No. 2 (1.7 Mc to 5.65 Mc), 160-metre amateur band, 125 metre police, aviation, 80-metre Amateur Band and some Government services. Band No. 3 (5.55 Mc to 18.5 Mc). Government, Aviation, Relay Broadcast, 49-metre band, 40-metre Amateur Band, 31-metre Broadcast Band, Time Signals, 25-metre Broadcast, 20-metre Amateur Band, 19-metre Broadcast Band and 17-metre Broadcast Band. Band No. 4 (17 Mc to 44 Mc), 17-metre Broadcast Band, Government Services, 14-metre Broadcast Band, 10-metre Amateur Band, Television on 7 metres and the 8- to 9-metre police bands.

The SKY CHAMPION offers all the essential controls for good amateur reception as follows: RF Gain Control, Tone Control, Phone Jack, AVC Switch, Beat Oscillator Switch, Send-Receive Switch, AF Gain Control, Band Switch and Pitch Control.

Sensitivity on all bands is extremely good, which is of special importance on the popular 10-metre band. The separate Band Spread is better on all amateur bands than A.R.R.L. Handbook recommendations for band spread against scale calibration. Speaker is an integral part of the receiver—nothing else to buy.

For operation on AC current only; Mains input adjustable from 110 v. to 230 v. Easily adapted for battery operation.

Dimensions of Cabinet—18½" wide, 9⅜" deep, 8½" high.

● THE SKY CHAMPION is an 8-Tube, AC Communication Receiver with Pre-Selection and Built-in Speaker, complete in every respect, offering the amateur a quality of performance never before available at this low price.

FEATURES

- 8 TUBES
- COMPLETE COVERAGE 6.8 TO 550 METRES
- 4 BANDS
- SEPARATE BAND SPREAD DIAL
- INDIVIDUAL COILS FOR EACH BAND
- INERTIA TUNING MECHANISM
- BEAT FREQUENCY OSCILLATOR
- AVC SWITCH
- EXCELLENT SENSITIVITY AND SELECTIVITY
- AF GAIN CONTROL
- BAND SWITCH
- SENSITIVITY CONTROL

Tube Complement

- 6K7—RF stage
- 6L7—first detector
- 6J5—high frequency oscillator
- 6K7—IF stage
- 6Q7—second detector, AVC and first audio
- 6F6—power output tube
- 80—rectifier
- 6J5—BFO

PRICE, COMPLETE WITH
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£15

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