ALL THE HEAT Where you want it

The Solon Electric Soldering Iron has the element clamped within the copper bit. Simply plug in to your supply and you have constant maximum heat where you want it—at the point. No troublesome heating up. Plus these big advantages.

SPEEDY
Plug in, ready in 4 mins.

CLEAN
No flames, no dirt.

ECONOMICAL
15 hours' use for 1 unit.

CONVENIENT
All wearing parts easily replaceable.
With solder, flex and lamp adaptor, 8/6

It's Easier with a

SOLON Electric SOLDERING IRON

W.T. HENLEY'S TELEGRAPH WORKS CO. LTD. (Dept. 109D/B.B.), Holborn Viaduct, London, E.C.1

MULLARD DOUBLE TRIODE TV03-10

This valve is designed for use as an oscillator or amplifier on ultra short wavelengths. Under normal Class C operating conditions an output of 10-14 Watts is obtainable.

TECHNICAL DATA
Cathodes, indirectly heated - - 6.3 volts, 0.85 amps.
Anode voltage (at 2 metres) - - 300 volts max.
Base - - - - Standard British 5-pin

CHARACTERISTICS, EACH SECTION
Amplification Factor - - - - - - 12.5
Mutual Conductance - - - - - - 3.2 mA/V
Anode Impedance - - - - - - 5,900 ohms
Anode Dissipation - - - - - - 5 watts max.

Write for a free copy of the new list of Low Power Transmitting Valves

TRANSMITTING DIVISION
MULLARD WIRELESS SERVICE LTD.
Century House, Shaftesbury Avenue, London, W.C.2
FOR BEST SHORT-WAVE RESULTS
ALWAYS USE EDDYSTONE COMPONENTS
NOTE THE SPECIMENS BELOW & SEE YOUR DEALER-OR WRITE FOR ILLUSTRATED CATALOGUE

EDDYSTONE supply equipment to the War Office, Post Office, Air Ministry, etc., etc., proof positive of the high standard of Eddystone components. Write NOW for Catalogue and name and address of your nearest stockist.

Flexible Driving Shaft
For front panel control of awkwardly placed components. Drives through 90 degrees perfectly. Cable length 59", No. 1096. 3/-

Condenser Cradle
Enables three microdensers to be mounted as three gang condenser unit. Rotor and stators completely isolated. Brass division plates available for screening condenser units. No. 1114, 3/-6. Mf screw. No. 1125. 8d. 2½/-

Air Dialectric Trimmer. DL-9 Insulation. 3 to 65 mmfd. For all preset and trimming purposes and particularly for use with IF transformers. Cat. No. 978. 3/-

Full vision dual speed dial. Cat. No. 1070. A full vision dual speed dial with 20:1 and 100:1 speeds. Well graduated scale, reading increasing as frequency increases. For 3” panel and 3” spindles. Ideal for H.F. tuning. 10/-


Slow Motion Driving Head. Cat. No. 1012
Very useful for transceivers and ultra short wave receivers. With 8-1 reduction ratio; pointer moving through 180 degrees. 3/-

Featherweight Crossfeeder Blocks. Made of transparent thermo plastic material, impervious to moisture, practically unbreakable and possessing remarkable HF insulating properties. No. 1041. 4/6 doz.

Midget Insulator
Made from Frequentite for high frequency work with N.P. metal parts. 1” overall height. No. 1019. 4/6 doz.

Flexible Coupler
Free from back-lash but very flexible, this coupler banishes alignment troubles. DL-9 HF insulation. For 3” spindles. No. 1095. 1/6.

Flexible Coupler. Cat. No. 1009. Free from back-lash but very flexible, this coupler banishes alignment troubles. DL-9 HF insulation. For 3” spindles. No. 1095. 1/6.

Manufacturers: STRATTON & CO., LTD.
EDDYSTONE WORKS, BROMSGROVE STREET, BIRMINGHAM
And AGAIN
HOWARD does it!

The New Model 460.

FEATURES FOUND IN NO OTHER RECEIVER REGARDLESS OF PRICE.

A self-contained frequency meter is built into this receiver which allows the exact frequency measurement of your own transmitter, allows of checking of the exact frequency of an incoming signal, makes possible the location of the amateur bands with absolute accuracy, makes it possible to re-set the dial to an exact pre-determined frequency so that you may be positive to return to any station which you have already worked. Allows you to set the dial on the exact frequency of a station which you wish to work. Accuracy is controlled by beating against an expensive broadcast station frequency equipment.

Other features:—Ten tubes, noise limiter, moving coil ‘R’ meter, 360 degrees of electrical band-spread, ceramic coil forms on high frequency bands, high frequency insulation on both tuning condensers, pre-selection on all bands from 45 m/c to 540 k/c, iron-cored IP’s, crystal filter, with iron-cored, coupling transformer.

MODEL 460, with Frequency Monitor and Speaker in cabinet to match Receiver .... £23-10-0
MODEL 460, with Frequency Monitor, but with Crystal Filter and Speaker in cabinet to match Receiver .... £25-10-0

Send for details of other Howard Models from gns.
SEND 1d. STAMP for LIST OF SECONDHAND RME68, DB20, Hallicrafters, X16 and National, Collins Receivers and Transmitters, all guaranteed perfect.

THE SHORT-WAVE SPECIALISTS! The oldest importers of communication equipment. Direct Factory Authorized Distributors also for Eimac, Heintz & Kaufman Tubes, Hoyt Meters, Ohmite Resistors, Basset Concentric Cable, etc., and we carry them in stock.

44, HOLLOWAY HEAD, BIRMINGHAM.
This new receiver is incomparably better than most receivers priced at even £10 more. We have tested the 140 in every way possible, and it is an absolute fact that it was still receiving Stations on 10 and 160 Metres after two other higher-priced receivers had decided that the bands were dead.

Austin Forsyth, Esq., G6FO, Editor of "The Short-Wave Magazine" says,

"I think this design has all the desirable features required in an Amateur Radio Communication Receiver, and, at its price, should be a very popular model. Messrs. Hamrad Wholesale Ltd. are to be congratulated on their enterprise in going out to produce a type which, in all points, takes an effective place in the very complete range now on the World's Market."

Deliveries have commenced to our Dealers—call in and see the 140. If he does not have one on hand please write direct and arrangements will be made for a demonstration by our nearest Stocking Agent.

Send 1d. stamp for list of Ham lines.


**£27 10 0**

12 valves, excluding rectifier. 1851, 6L6, 6F6, 2-6K7, 2-6CS, 6F5, 2-6H6, 6L6, 6L7 and S24 rectifier. Wavering 10 to 600M in 5 bands. Full coverage without gaps. Electrical bandspread. HF stage on all bands. HF gain control. Separate frequency changer and oscillator. 2-465 Kc/IF's. BFO with variable pitch. Continuously variable selectivity from 1 to 6 Kcs. Variable delayed AVC. Undelayed Amplified "R" meter, calibrated in "R" points. Differential gate. Two phone jacks. Two stages of Audio. 8L output. Provision for DI-Pole and Standard aerials. High and Low Impedance output transformer within the set.
MULLARD CATHODE RAY TUBE UNIT

A unit incorporating a high vacuum Cathode Ray Tube type E40-G3 and power supply equipment

BRIEF SPECIFICATION

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>100-250 Volt A.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power consumption</td>
<td>15 Watts</td>
</tr>
<tr>
<td>Input resistance</td>
<td>2 Megohms</td>
</tr>
<tr>
<td>Input capacity</td>
<td>10 \mu F (approx.)</td>
</tr>
<tr>
<td>Deflection Sensitivity X plates</td>
<td>0.18 mm/V</td>
</tr>
<tr>
<td>Deflection Sensitivity Y plates</td>
<td>0.28 mm/V</td>
</tr>
<tr>
<td>Price complete with Cathode Ray Tube and Valve</td>
<td>£8.8.0</td>
</tr>
</tbody>
</table>

ROUND this cathode ray tube unit can be built a complete modern oscillograph. An amplifier and linear time-base can be added at any time.
Meanwhile the unit as it stands takes its place as an item of test equipment invaluable to the serious radio experimenter.
Among its more important uses are the following:

as a valve voltmeter with an extremely high frequency range, enabling the operator to check the voltage of oscillator circuits, modulator circuits, etc.; as a monitor for the observation and measurement of modulation; for frequency comparison, detection of distortion in valves, amplifiers; and for many other purposes.

For full description together with technical details write for leaflet to:

MULLARD WIRELESS SERVICE CO. LTD.

MEASURING APPARATUS SECTION

CENTURY HOUSE, SHAFTESBURY AVENUE, LONDON, W.C.2
The Short-Wave Magazine
No. 6, Vol. III.
JUNE, 1939

Features

Editorial - - - - - - - - - - - - 7
56 Mc News. A. J. Devon - - - - - - - - - - - - 8
The Modern Two Transmitter. The Editor - - - - - - - - - - 10
Letters to the Editor - - - - - - - - - - - - 12
On the Amateur Bands. Old Timer - - - - - - - - - - - - 13
Book Reviews - - - - - - - - - - - - 14
Current Trade Items - - - - - - - - - - - - 14
An Improved Straight Four Receiver. 2AMW, Asst. Editor - - - - - - - - - - - - 15
The Other Man's Station—G2CF - - - - - - - - - - - - 18
Conditions—The Month's Survey - - - - - - - - - - - - 18
Two Receivers Reviewed - - - - - - - - - - - - 19
DX Commentary. The DX Scribe - - - - - - - - - - - - 20
Calls Heard - - - - - - - - - - - - 25
"Here and There" - - - - - - - - - - - - 26
Abridged Technical Index to Volume II. - - - - - - - - - - - - 27
A Modulator for the Low-Power Station. A. C. Gee, G2UK - - - - - - - - - - - - 28
More Ideas. Tester - - - - - - - - - - - - 30
The Month's Club News. 2AMW - - - - - - - - - - - - 32
Readers' Bargain Page - - - - - - - - - - - - 40
List of International Prefixes, by Countries - iii. of Cover

Editor - AUSTIN FORSYTH, G6FO
Assistant Editor - S. W. CLARK, 2AMW
Business Manager - C. T. MILDENHALL
Advertisement Manager - A. W. MARRIOTT

Published on the first Wednesday in each month at 86-88 Tabernacle Street, London, E.C.S. Telephone: Clerkenwell HBO. Annual subscription: Inland 8s.; Abroad 10s., post paid.

AUTHORS' MSS.
Articles submitted for Editorial consideration must be typed double-spaced with wide margins, on one side only of quarto sheets, with diagrams shown separately. Photographs should be clearly identified on the back. Payment is made for all material used, and a figure quoted in the letter of acceptance. A large stamped addressed envelope should be enclosed for the return of MSS. not found suitable for publication.
All-Feature Receiver for
COMMUNICATIONS
in the junior class with 100% attraction!

At a Glance

TROPHY 6 is 1st CHOICE

British! – Performance Proved
- 6 Valves—Octal types
- Separate Dial Electrical Bandspeeding
- 4 Bands, 6.5 to 545 m.
- Directly Calibrated Frequency Scale
- AVC and BFO On/Off Switches
- Pitch Control
- Send/Receive Switch
- Built-in Speaker
- 'Phone Jack.

Presented with every confidence for the approval of the most discriminating of short-wave enthusiasts. We believe that in the TROPHY 6, a high standard of performance has been attained, unapproachable by anything but the super (and of course, costly) American types, offered in this country and the popular 8-valver in the Trophy range. 12 month’s Guarantee includes valves.

The price is reasonable
and Terms are as low as 12/6 down
and 18 monthly payments of 12/3.

ADVANTAGES OF A GOOD PRESELECTOR

“Worth its weight in gold” is an expression quite often spontaneously used when referring to anything that gives maximum satisfaction, like for instance, the TROPHY PRESELECTOR. All of us want increased range, selectivity, signal strength and (where troubled) image suppression; to improve at a saving, invest in this new TROPHY unit. Listed at only £8 15s—just about half the cost of the only American “opposite number”, the TROPHY PRESELECTOR employs two E.F.8 stages, has a wave range of 7-550 metres continuous, a frequency calibrated tuning scale and is self-powered for all A.C.200/250 voltages. Whatever type of receiver you possess, or intend buying, you will appreciate the use of the TROPHY PRESELECTOR. See about one... NOW. There’s an illustration in last month's Short-Wave Magazine.

TROPHY 8

Users Confirm its Merits:

“A credit to British workmanship... outclasses higher-priced foreign receivers and I am well satisfied. A pleasure to operate.” —2DQL.

“A very good set—very efficient on 10 metres.” —G5ZJ.

“An excellent example of a good all-round receiver.” —G6FO.

8 valves. 5 Bands with continuous wave-range of 7 to 550 metres. Continuous Bandspread Dial. RF on all Bands. AVC and BFO switches. Send-Receive switch. Pitch Control. Sockets for using separate high impedance PM speaker. 'Phone jack. Pleasing cabinet.

TROPHY Special Guarantee. TERMS:
Deposit 15/6 and 18 monthly payments of 12/6.
CABINET SPEAKER to match 2 gns. extra.

12 Gns

SEND NOW FOR COMPLETE LISTS

TROPHY gear is available from all good Dealers. Scottish Hams—you can obtain your TROPHY requirements from any of Messrs Clydesdale Supplies branches. If any difficulty is experienced please post your instructions direct, which will receive our immediate attention.

PETO SCOTT CO. LTD.
77 (SM15) CITY ROAD, LONDON, E.C.1.
Tel. Clissold 9875
Tel. Holborn 3248
FROM TIME TO TIME someone queries whether the holder of a transmitting licence who equips himself throughout with commercial apparatus—more often than not even installed by the supplier—can rightfully call himself an amateur.

The answer probably lies in how his friends and admiring family will describe him—"Oh, he's an amateur broadcaster!"

To us, it has always seemed that experimenting amateur transmitters are those who construct all their own equipment and rely as little as possible on anything in the nature of bought apparatus. The immediate reply of the commercial station owner is that nowadays there is really little to be learnt by building from components and that so far as he is concerned, he is either (a) busy investigating propagation—meaning DX—which necessarily requires something stable, like a ready-built transmitter and receiver, or (b) that he wants to get into Amateur Radio but has no time for study and constructional work.

All these arguments have almost equal validity, and there is also the complicating factor that to-day it is possible to buy a very good communication receiver for less than the average amateur would spend in building an 'inferior' one. Thus the tendency, though the reason is not necessarily the same, for buying ready-made transmitters—and if transmitters, why not a complete station?

But it is also true to say that there is a great deal of knowledge, experience and intellectual pleasure to be gained from building one's own equipment. Furthermore, there is the striking fact that the amateur who buys complete shortly after getting his licence usually gives up entirely sooner or later—to him, Amateur Radio is merely a passing fancy, a phase in a plethora of side interests, like motoring, tennis, photography or stamp-collecting.

The only moral we can draw from this is that in truth it takes all sorts and conditions to make the world of Amateur Radio, just as it does the greater world outside, merely adding the suggestion that the means to acquire unlimited quantities of apparatus gives real pleasure only to the amateur who is and always will be an experimenter at heart.
56 Mc Notes

By

A. J. Devon

More G DX — Long Wire Results —

Theories — Tests and Schedules

AGAIN THIS MONTH we have more that we should like to report and discuss than there is space in which to do it, so without further preliminaries, here are the main results of the May Test Period. Well supported, conditions were not too good but better than in April. G8LY worked G5BY (49 miles) for the first time, and though there was QSB on that contact, a curious fact is that 2ADZ (Ewell, 42 miles) in the same line found G8LY’s signals quite steady. G6YL up in the North kept long watches and identified only her local, G5QY, but R. J. Lee, listening at Heathfield, logged G6FO (145 miles). G5WU (Penarth) received G5BY (134 miles) and G2BI (50 miles), but G6CW and G6JV say there was nothing unusual noticed in Nottingham during the Test Period. G8XM of Barnsley heard several unidentified signals, mainly carriers which badly needed keying, and listened for half-an-hour to an unknown ‘phone operator who, coming in at R7-8, finally signed off with “Over to you”!

The Croydon-Newport path was open again on the Friday of the Test Period, a good contact G5BY-G6FO holding long enough for G5BY to put over some very interesting aerial tests. The W8JK beam was swung slowly from horizontal to vertical, the signal persisting at G6FO till the aerial was almost truly vertical, when it disappeared. Bringing the beam back brought the signal in again at gradually increasing strength, till at one point—estimated by G6FO as being about 15 degrees off the flat—it reached a maximum. It was during this Test that G5WU first heard G5BY. G6QZ was cheered by the logging of a new station on May 10, G5UK (Southend, 80 miles) who was heard consistently for nearly two hours at a best strength of RST-449 at 2157 BST. On the 12th, G6QZ worked G6DH (Clacton, 58 miles) but schedules with both these stations failed on the following days.

Several local interest reports were also received, and some further details of reception will be found under the appropriate heading in the “Calls Heard” section of this issue.

An interesting point is that many people mention the logging of a strong carrier at the HF end of this band—whatever its origin, it is evidently being heard all over the country. Our present suggestion is that it must be either a Service test transmission, using QRO from some advantageous location, or a police ‘phone opening up somewhere in the Midlands.

● June/July Test Periods

These scheduled tests, instituted in February this year and intended to continue till the end of the summer at least, are undoubtedly very popular, as all our 56 Mc correspondents comment on them and promise regular support. For the next two months, they are accordingly fixed as follows:

June 14-18, July 5-9, inclusive.
2000-2230 nightly, Saturdays 1400-1600.
Sundays 1100-1300, 1430-1600 and 1830-1930, all times BST.

Stations are also asked to come on earlier than 2000 BST whenever possible, and as usual, all participants are particularly requested to let us have a report as soon as they can after the closing date each month, as thus we are able to deal with them in the following issue.

So look over the band on Wednesday evening next, and come on as much as you can from then until Sunday evening. Somebody is certain to be on somewhere, so call and listen at regular intervals — then let us have those reports.

● Long-Wire Aerials

Now for some data on further work with the bent long-wire aerial which has been mentioned and described in these Notes from time to time. G5WU, located not far from G6FO, put up a 10½-wave bent end-on aerial during the May Test Period and was immediately rewarded. Hearing not only G2BI and G5BY as already mentioned, he found that stations at intermediate distances were well up in strength and was himself reported for the first time by G2BI (Calne, 50 miles). The interesting thing here is that the latter was not received at G5WU till he had gone over to a similar aerial, and thus it would seem only a matter of further testing to bring about a two-way contact: this has been tried for over a long period using other types of aerial, without any success at either end.

But that is not all; on May 17 G5WU was heard by G2MV (Coulson, 132 miles). Admittedly, this was a good night, as G2MV also logged other DX (see “Calls Heard”) but the fact remains that on many previous occasions G6FO had been reported from the same locality as being “in QSO with G5WU,” without the latter being heard at all. The curious thing is that G2MV is only a matter of five or six miles south of Croydon, where G5BY was on watch for G5WU at the time, on a very careful schedule, but failed to hear the Penarth station. This “selective reception” of a distant station at near-by points accords with the recent Nottingham experience, mentioned in last month’s Notes.

Other new contacts took place on May 5 and 8, when G6CW and G6JV, both of Nottingham, worked G2WD (Water Orton, 38 miles), there being inexplicable variations in signal strength from station to station on the different days. Then on May 16, G6CW went portable with a receiver at G2XS (Kings Lynn), hearing G5V’s ‘phone at Q5, R5 solid, dis-
tance 68 miles. This is fine going and should ere long establish a useful experimental link Notting-
ham-Kings Lynn. G8JV has recently blown him-
self a converter using 1852-6K8, but presumably, G6CW had his 1-v-1 for taking in G8JV at Kings' Lynn.

● Snowdon Again

From David Mitchell, GW6AA, who has done much interesting and useful experimental work from the summit of Snowdon, to say nothing of having given many people a DX signal to copy, comes full details of his proposed tests from there again this year, over the period July 5-10. Note that we have arranged our July Test Period to correspond, though his schedule does not commence until the 7th, and presumably the 10th will be occupied in packing up.

All GW6AA’s transmissions will be CC, mainly CW, and receivers will be available for taking all types of signal though, as he says “It is hoped that CC will predominate.” There will be several aerial systems, directional and rotatable, polarised both ways. Ten-minute “Test” calls on automatic CW will be made at regular intervals, and his schedule is:

- July 7—1900, 2000, 2100.
- July 8—1400, 1600, 1800, 2000, 2200.
- July 9—1000, 1200, 1400, 1600, 1800, 2100, 2200.

These are calling times, all BST, and the aerial system in use will be given out, also code groups to identify the transmissions. These code groups must be repeated back in the case of listeners’ reports, which will all be welcome and acknowledged. Additionally, on July 7, 8 and 9, general information transmissions on telephony will be made at 2200, 1700 and 2000 BST respectively, giving details of any stations heard, with an additional schedule for the same purpose at 0945 BST on Sunday, July 9.

Schedules with CW stations over 150 miles from Snowdon are also desired, and those wishing for them are asked to write immediately to David Mitchell, GW6AA, The Flagstaff, Colwyn Bay, North Wales.

There is no doubt that a properly organised Test of this description is of considerable value and, whatever the results that may be achieved, GW6AA is to be congratulated on his painstaking enthusiasm. His enterprise involves man-handling a large quantity of gear under very difficult conditions, for Snowdon’s summit is notorious for the weather it is capable of offering even in the summer, when gales of terrific violence occur without the slightest warning.

G3TX (Newport, I. of Wight) has worked some 20 stations on the band to date and is anxious to fix up good schedules. He is very well equipped, as described last month. Like us all, he is bothered by these unidentifiable ‘phone carriers, stray harmonics and other strange noises heard so frequently on 56 Mc.

On May 9 G6CW was listening round and heard G2YG (30 miles), G3IQ (48 miles), G2NV (QRB?) and G6IH (75 miles) all calling or working one another, and though he tried for over two hours with CW and ‘phone, he was unable to attract their attention. G6CW also comments that it is evident many stations do not use the same aerial for both transmission and reception, though experience indicates that it is almost essential to do so when working outside local distances. This is a point worth bearing in mind, otherwise one is heard by stations which cannot be received and reception occurs in directions not covered by the transmitting aerial. This is really one more argument for the omnidirectional type of aerial, radiating in both planes, and used for transmission and reception.

G3RH (Malvern) is undoubtedly getting out very well on 56 Mc; he is constantly received in many directions and over the May Test Period, was heard regularly at Newport, on ‘phone, working G2NV, G8ML, G3QO and G5WH.

● Theory

G2BI has been plotting crossing-sections of the country between G5BY-G6FO, G6IH-G6FO, G2BI-G5WU and G2BI-G6FO, in every case finding high ground which should blank off reception. But, Col. Palmer puts forward two very interesting theories, which here we have space only to mention. The first is that the ground-wave radiation, on striking an obstruction—such as a range of hills—is diffracted or bent down over the crest in such a way as to again pass beyond the ground, thus giving a “shadow” immediately beyond the obstruction. The extent of this dead area and the degree of attenuation of the wave would of course bear relation to the energy radiated, i.e., QRO will get there where low power will not.

This certainly seems to fit the facts where medium-distance and DX contacts of the nature 50-200 miles are concerned, and QSB can be partly explained by changes in the “conductivity” of the ground over which the path lies. It is well known that ground-wave reception varies considerably at the edges of the effective area due to weather effects, which takes us a step further. To explain reception of G6IH at G6FO, where there is a peak in the path and near G6IH, G2BI suggests reflection of the wave round this peak, allowing it to travel straight down the valleys of the Wye and the Usk to Newport. This also is credible, since tests with self-excited portable apparatus in the very early days of 56 Mc showed time and again that it was possible to receive a signal on the “blind” side of a hill by reflection from the opposite slope.

● Stations Testing

Here are some times and schedules; G6QZP is to be out portable at Wymondham Waterworks, Wickleswood, Norfolk on July 9, using CC on 55340 kc, CW. The aerial will be a three-element rotatable beam and the receivers a 1-v-1 and a superhet. Schedules are wanted.

G8NM (Barnsley) and G6YL (Felton) are on schedule on Mondays to Fridays inclusive, from 1800 to 1940 BST, calling and listening for one another at 5-minute intervals. Any reports would be welcome.

G8LY (N. Waltham) calls “Test” at 2200 and 2230 on Wednesdays, 2145 and 2205 on Fridays, and is also on in the afternoons when possible at 1340, 1445 and 1500, all times BST.

G2ZV (Rustington) is there every night 2130-2300 BST and on Sundays at intervals between 1500 and 2300. G3YY (Brighton), a comparative newcomer on the band who previously did very well on the receiving side, is on most evenings around 2200 and also goes portable on the Downs at week-ends; he has worked distances up to 50 miles from the home QRA.

G5MP (Hythe) is on daily 0630-0700, 1415-1445, 1800 and 2000 BST. He suggests that known active operators wire one another when the band looks like opening.
Up-to-date chassis built Two Stage Transmitter with Incorporated Power Supply

PART I.

The design pictured here will be of interest to many readers because it is an essentially simple circuit yet certain in operation, easily built but flexible as regards extension and the application of modulation. There is plenty of RF on three bands, and if required the frequency-range can be extended to 3.5 and 1.7 Mc. It is therefore particularly suitable as a first transmitter for a beginner, and represents sound design and constructional principles which can be made the basis of many similar types of apparatus.

As it stands, the "Modern Two" (we give our designs names which not only appear to describe them, but are easy to remember and record) is also a self-contained exciter for a high-power rig for, as shown by the illustration and circuit, the power supply is included; this is always convenient, and need not be extravagant, because the 150 mA at 450 volts available can be used to run other gear merely by opening switches S1 and S2 (see circuit) and tapping off from C14.

It is proposed to cover general points in connection with design and layout in this article, leaving until next month the final details as to values, construction and operation. Hence the somewhat naked appearance of the transmitter as it is shown here; it was purposely photographed early on so that the placing of the parts would be easier to explain.

- The Circuit

This is a 6L6 driving a Mullard PV06-20 (their equivalent to the American 507, in turn similar to the Osram K75) in CO-PA, link coupled between the driver tank C5/L2 and the grid side C6/L3 of the PV06-20. The 6L6 is in triet, or straight CO on the fundamental frequency, and a combination of leak and cathode bias is used throughout. This is not actually the best arrangement, but it does away with batteries and also the necessity for a bias power pack—which in any case need never be used on QRP equipment—while getting negative voltage from the main unit not only involves a loss of plate voltage but also introduces unnecessary complication for apparatus of this type.

The CO bias resistors are at R1 and R2, and those for the PA R6 and R7. Note that the plate and screen voltage to both stages is tapped off separately, the values of the resistors being calculated to give the correct relationship between them; splitting the HT feeds in this manner keeps the PA stage screen voltage much steadier under keying, while the two resistor networks R3-4-5 and R8-9 become in effect two bleeders in parallel. This is in itself no particular advantage, and must be taken care of in the calculations, otherwise bleed current would run too high.

Keying is carried out at J1, and metering for the CO plate, PA grid and PA plate at J2, J3 and J4 respectively. The jack at J5 is for checking total current and the meter can be left plugged there when not otherwise engaged.

The peculiar shape of the neutralising condenser NC is to indicate that it is of unusually small dimensions and non-standard, owing to the very small capacity involved—something less than 2 mmF. Actually, neutralisation is not necessary on the model, but it is allowed for here, just in case somebody's wiring produces some unexpected back-coupling. The condenser itself can consist of two aluminium strips, widely spaced, or a pair of insulated wires, paralleled and protected by sleeving, themselves held in a piece of sleeving of larger bore.

The PA tank condenser is tuned by a Polar split-stator condenser C10, 35 mmF each section, with the HT fed to the centre point of the tank coil L4 via an RF choke; this tap is not critical, and can be obtained by counting turns on the coil.

- The Power Supply

A type 80 rectifier with its associated 450-0-450 volt 150 mA transformer T2 and condenser-input smoothing circuit supplies ample power for operating the transmitter, there being a separate transformer T1 carrying LT windings only for running the rectifier and transmitter valves, with a spare 6.3 volt output for other apparatus that may at some time
be used with the transmitter. For convenience, this extra winding is brought out to a three-point connector on the back sub-panel of the chassis.

The HT and LT transformers, also the 20 henry 200 mA smoothing choke Ch, all by Short-Wave Radio, Leeds. They are neatly housed in grey casings, with mounting feet, the leads coming out underneath and through the chassis.

The switch S3 is the main on-off and a mains filter is incorporated in the supply lead—not to keep noise from coming in, but RF from going out!

**Layout**

The photograph gives practically all the information required, though there are several particular points to mention. The chassis is black-crackle finished steel, 20-ins. by 12-ins. by 4-ins. deep, which just comfortably accommodates everything, and the placing of the parts can be accurately determined by a study of the view.

Looking at the heading photograph, the HT transformer is upper left, with the LT one alongside, in front of which are the two smoothing condensers. The rectifier valve comes between the HT transformer and the smoothing choke (left foreground). Along the front sub-panel are the on-off switch S3, the tell-tale, switches S1 and S2, followed by jacks J1, J3 and J4. J2 and J5 were not fitted at the time the photograph was taken, but have been found helpful since.

Above S2 and first in the line of condensers is C5, with C6 alongside; both these are on the new Eddystone type 1116 brackets, which give a fixed mounting height of 14-ins. C10 is the last condenser on the right, and its fixing requires a word of explanation; actually it is the same as was used for the push-pull RF amplifier described in a recent issue (see "100 Watts CW", p. 31, April, 1939).

The Polar 35 mmF twin-section condenser will be found to have a steatite base provided with four mounting holes and the requisite nuts and bolts. Two polystrene (Trolitul) strips are cut and drilled to fit across each pair of holes, the strips having a central hole to take the terminal shank of a small stand-off insulator. Thus, the strips are bolted to the condenser base, and the stand-offs to the chassis. Shortened extension controls are fitted to each condenser, with suitable knobs.

The tank coil L4 is fitted across a pair of beehive insulators, placed at 51-ins. centres and accommodating coils 31-in. diameter wound with No. 14 enamelled wire on thin polystrene strips, secured with Durofix. The white stand-off insulator between the beehives brings up the centre tap connection.

Behind the first condenser is L2, the tank coil for the 6L6 CO, the valve being next in line towards the back. L3 comes behind C6, the valve on the right being the PV06-20.

The Q.C.C. crystal holder (in its new-type mount) is in the background, with the knob of C1 alongside; the cathode side of the CO is kept in the sub-space since no actual coil changes are involved in this particular part of the circuit, and the tuning on C1 stays the same whatever is happening elsewhere.

It will be seen that the valve and coil holders are of the chassis mounting variety but fixed baseboard fashion on short pillars. There is a very good reason for this—it enables all RF wiring to be kept above the chassis level, besides saving the labour of gouging 1-in. holes out of the 18-gauge steel. Suitable mounting pillars can be obtained from the extensive Hamrad range of these items, the valve and coil holders also being from the same suppliers.

The leads which have to travel sub-chassis are taken down through suitably placed holes protected with rubber grommets, and the two pillar insulators behind the tank coil are for taking off the output link.

And so . . . till next month.
Amateur Radio in Emergency

I was very interested to read in the May issue your Editorial comments on the subject of Emergency Communication.

There is ample evidence to show that the organisation of Emergency Communication by radio has not received the attention it deserves from the competent authorities, but there is no doubt in war time it will become of vital importance, and then it will be unfortunate if hurried measures have to be taken. Since early 1937 I have taken considerable interest in this work in the field of experimentation, also trying to show that it can be organised efficiently.

We all well understand how modern war would affect this country, our homes and the unfortunate civilian population who happened to live in the combatant areas. If this is so then surely our Civilian Defence should not lack in any degree the facilities and equipment necessary to offset the damage and dislocation caused by direct enemy action.

In your Editorial you remark that the organisation of Emergency Radio Communication is not a matter to be taken lightly, and with these remarks I am in entire agreement. The undertaking of Emergency Communications must necessarily mean the employment of a technically competent body of men, who, under discipline, agree to definite commitments. The pleasure and interest of using Amateur Radio from point to point, on field days, etc., is entirely different from public service communication work. The public service demands reliable communication with efficient apparatus, and the ability to maintain heavy traffic schedules.

It has long been my opinion that the reason Amateur Radio men have not been asked to co-operate in an Emergency Radio Communication Scheme is because the authorities are afraid to give any licence on a decided basis, and to open their doors to a body of men, no matter how enthusiastic, unless they can show their competence to carry out the work without abuse.

To try and convince the authorities that amateurs can be organised to produce a responsible corps I have formed, in Sheffield, a Radio Section of the Special Constabulary. This is only open to men who can show themselves likely to become reasonably competent operators, and/or technicians. When entered they undertake to carry out a number of drills and exercises each week. The work is very interesting, radio traffic and technical lectures are given, and mobile operation takes place so far as the present Post Office restrictions allow. The Sheffield Radio Specials will, I feel sure, become an example to the whole country of how Emergency Radio Communications can be organised in a manner which will enlist the help of the authorities, and, perhaps, help to break down the fear that such work cannot be carried out by amateurs.—G. W. BAGSHAW, G8KD/G8KF, “Newfield,” Newfield Lane, Dore Moor, Sheffield.

Point of View

Last November I returned to the air after an absence of over three-and-a-half years, and unfortunately choosing 7 Mc, I regret to say that I find things very much worse on that band than they ever were in the past.

I contained myself for a long time and endeavoured to work CW through the phone interference, until the March issue of your journal appeared and I read your Editorial therein. I have read and re-read it several times and at last can contain myself no longer!

No amateur could listen on 7 Mc and then complacently congratulate himself on having “assisted hundreds of readers to a transmitting licence.” The utter tripe that is put out by the average phone station is enough to make one wish to seize the very celebrated Wouff Hong of American Amateur Radio and dash round and slap a few of those concerned.

“Calling forty-metre ‘phone” is to me a meaningless phrase, while such things as “Come in somebody please” cause me to wonder if the perpetrators of these effusions expect some sort of miracle to take place in the way of seeing someone sliding down their lead-in. Also why the use of “K” by ‘phone stations? This is a telegraphic invitation to transmit and surely it is just as easy to say “over.”

Is it necessary to use ten or even twenty-five watts of ‘phone, which I know several stations in South London do, when they only wish to make local contacts? Recently I heard a ‘phone operator proudly announcing that his licence had only arrived that morning and that it was his first transmission, while a station that I know has been licensed for some months recently called me on OW, and during the course of the contact apologised for his rotten list “as it was his first CW transmission!”

Before I lose this irate epistle—which will no doubt cause you no little amusement and me many bad friends—I want to have a go at the CW stations.

Why call “Test” for eight or ten minutes when it is possible on the average receiver entirely to cover the band in about three minutes? Why send double when your signals have already been reported as R5, i.e., 100 per cent. readable. Why-o-why send your report of the other fellows’ signals four to eight times and the rest of the message in singles?

Why use “VE” as a break-sign when the one officially used and printed in all copies of the International Morse Code is “BT”? One more question to both types of operators: why brag of the commercially-built receiver? The only explanation that I can see is that they are merely people who have been “assisted to a transmitting licence.” A real amateur can design and build his own. And so I could go on ad infinitum but I think that I have wasted enough of your time and certainly enough of my own because I want to go back on the air and try and make a few more contacts, despite the conditions there!—E. RAYNER, G6IO, 90, Engleheart Road, Catford, S.E.6.

[While we are in agreement with most of G6IO’s letter, we feel that it only applies to a comparatively small percentage of the licensed amateurs of this country, and that there has been marked improvement during the last two years. It is undoubtedly room for more, and all our efforts are directed towards encouraging the proper use of the bands.—Ed.]
On the Amateur Bands

There must be few amateurs who do not realize that a fully modulated telephony carrier takes up more room in our crowded bands than a good clean CW signal. Actually, ten crystal-controlled telegraphy stations can work without mutual interference in the same “space” as one correctly adjusted ‘phone; that is defined as one on which the modulation peaks do not exceed 100 per cent.

• Over-Control Prevalent

Consider then for a moment the type of amateur who is of the opinion that 100 per cent. modulation can only be achieved by taking the average output of the modulator as the maximum, neglecting the all-important peaks. The result of this very common idea is over-modulation, and what is even more important to us, a greater carrier spread and the familiar “frying noises” associated with it.

Every amateur in Great Britain is permitted by the terms of his licence to work ‘phone on every band available to him. This generous facility is forbidden to the fraternity in many countries, notably the United States of America, New Zealand and, we believe, Australia. In these three countries, a stiff examination has to be passed before telephony operation is permitted on certain specified bands; other countries, such as Germany, do not allow it at all on any band, except in special cases.

In view of our advantageous position in the matter there is every reason why each amateur in Great Britain should become telephony conscious, by which we mean that he ought to realise how lucky he is and not abuse the privilege; his transmissions should be clean, well modulated and something of which he can be justly proud. However, there is even more in the problem than this.

• Choosing Bands

We have written at length on the inadvisability of local 14 Mc QSOs, chiefly because this channel is essentially our most reliable DX medium. We do not condemn the amateur who gets a quick check count on 7 or 14 Mc, then local chats should be discontinued, to ascertain the exact conditions existing. There are six bands at our disposal; 1.7 Mc and 3.5 Mc are ideally suited for local and semi-local work and should be the ones used for this purpose. It will be noted that no mention has yet been made of 7 Mc; special treatment is advised here.

It is now fairly certain that we are well past the maximum of solar activity, and 7 Mc has been showing returning signs of DX life. We believe that by 1941/42 this band will be our mainstay for DX, just as 14 Mc has been during the past five years.

Are You Using Telephony on the DX Bands? — OLD TIMER

40-metre channel will only be 200 kc wide against the 400 kc of 14 Mc! It is true that local signals will behave in a similar way as they do on 14 Mc to-day, i.e., fade out completely after dark, but we shall still have a very serious problem with which to contend in the afternoon hours when Far Eastern and Oceanic DX may be expected; further, in congested areas of amateur activity, 7 Mc local telephony operation will have the same effect as it does to-day on 14 Mc.

We therefore suggest to all right-minded amateurs (there will always be a few black sheep) that they think seriously every time they intend to transmit telephony whether the use to which they put it is likely to be in the best interests of DX working. Always remember that an over-modulated transmission may rob several locals (or others further afield) of a complete contact, and that even a correctly modulated signal will take up ten times more room than a CW one.

• Senseless Chatter

With an ever-growing body of newly-licensed amateurs permitted to use ‘phone, the increase in QRM to come is obvious. Therefore it cannot be too strongly emphasized that the necessity for cutting out all senseless remarks is long overdue. We would go even further and suggest that once your test is completed and you have obtained your signal reports, the contact should be terminated if you cannot think of anything more of experimental value to say. About two years ago this nonsense of stupid conversations had reached a peak; we are glad to give it that, in our opinion, it is very much on the decline now, thanks to the publicity against it in the responsible radio publications.

• Always Listen First

To sum up, we suggest that a period of listening be put in on the band before telephony transmissions are commenced, to ascertain the exact conditions existing. If “piles of DX” is coming through on 7 or 14 Mc, then local chats should be dis-countenanced, and a serious attempt made to contact some of the better things offered; and if you are not interested in DX, co-operate by leaving the band for those who have an all-too-rare chance of working some. If no contacts appear possible, a QSY should be made to another band, preferably a lower-frequency one where it is unlikely that DX will be disturbed. Remember too, that 28 Mc will probably be completely dead during the period when 7 Mc is “hot” and this will offer a good opportunity for local testing—14 Mc will also be dead for considerable periods as well. Every efficient experimental amateur should equip himself for work on more than one band, and be able to QSY quickly.
Current Trade Items

**Varley.** Two very useful components recently introduced are their BFO coil units, to match up with IF frequencies of either 465 or 1600 kc. The unit consists essentially of a tapped coil in a shielding can, intended for use in the now-usual ECO circuit. Two adjustments are provided, one for lining up, and the other to give a pitch variation effect 10 kc either side of resonance. The 1600 kc unit (B.P. 132) is 5s. 6d., and B.P. 135 for 465 kc is 6s. 6d. Can dimensions are 2½-ins. by N-ins. diameter, a suitable circuit diagram with values is included in the packing, and the type B.P. 134 adaptor kit at 6d., enables the pitch control to be brought out to the front panel. Write Varley, Cambridge Row, Woolwich, London, S.E.18.

**Hytron.** The International Majestic Radio Corporation, Ltd., 173-5, Farringdon Road, London, E.C.1, are handling Hytron transmitting and receiving valves for this country and Europe, either direct or through the Trade. Some very useful new types are available at competitive prices, which have been further reduced by discounting them 10 per cent. to licensed transmitters and experimenters.

**United Insulator.** For manufacturers and Trade supply generally, a very fine range of ceramic insulated components—fixed and variable transmitting and receiving condensers, inductance coils, and similar parts—are available from the United Insulator Co., Ltd., 12-16, Laystall Street, London, E.C.1, who also list piezo-electric apparatus such as crystals, microphones and resonators.

**Holiday & Hemmerdinger.** The “Rider Chanalyst” is a multi-valve instrument for quick, comprehensive servicing, enabling the five channels of any receiver under test—RF, IF, Oscillator, AF and Power Supply—to be directly connected and their performance watched. The “Chanalyst” incorporates a wattage indicator to check consumption and a valve voltmeter for accurate determination of voltages. The instrument as a unit is independent of valve types, needs no adaptors or plugs, and has its own power supply. An American product, it is available in this country from Holiday and Hemmerdinger, Ltd., 74-78, Hardman Street, Manchester, 3, at a price of 30 guineas, or on deferred terms.

**Webbs.** An interesting valve is the RK-62, a gas triode detector. One of its applications is for triggering remote-controlled apparatus via radio, when—connected in a simple Ultra-audion circuit on, say, 56 Mo—starting and stopping pulses can be transmitted for keying or other purposes. Very small voltages and currents are involved, and the valve is directly heated, the filament rating being 50 mA at 1.4 volts. The maximum plate current is only 1.5 mA, and the range of voltage variation under operating conditions 45-15 volts. Available from Webbs Radio, 14 Soho Street, Oxford Street, London, W.1, and from the Birmingham establishment at 41 Carrs Lane.

Book Reviews

One of the latest American publications is “Principles and Practice of Radio Servicing,” a text-book written in the style called easy, which will appeal not only where it is intended, but also to the general reader. Starting with simple definitions and explanations of such fundamental concepts as Ohm’s Law, the propagation of radio waves and the operation of valves, fourteen chapters cover every conceivable aspect of modern receiver design, sub-headed into sections dealing with, for instance, RF and AF amplifiers, Detection, Power Supply and Aerial problems. This is mentioning only a few—complex problems in Volume, Tone and Frequency Control are elucidated in one chapter, and in another Public Address work is well treated. To the service man, Chap. XV, will also be useful in suggesting ideas he has probably not thought of before in connection with customer approach, advertising, costing and filing.

The author of this book is H. J. Hicks, a teacher of the subject, and his publishers in this country McGraw-Hill, of Aldwych House, London, W.C.2.

Price 18s.

“Building Television Receivers at Home” is a rather cumbersome title for a small but very good practical handbook giving precise instructions that will enable the average amateur to build television receivers guaranteed to produce pictures right up to present-day standards. Three designs are discussed in detail, giving a running picture-size indirectly graduated to suit one’s pocket, and the constructional information is very complete. An interesting chapter discusses the use of the I-in. C.R. tube for television reception, but though there is also one headed “Long Distance Reception,” no mention whatever is made of aerial theory, design or installation anywhere in the book; nor, intentionally, is sound reception covered.

Consisting largely of revised contributions to TELEVISION by S. West and D. E. Osman, the Editor is H. Cobshly of that journal, and the publishers Bernard Jones Publications, Ltd., 37-38, Chancery Lane, London, W.C. “Building Television Receivers at Home” has 112 pages, 200 illustrations, and costs 2s. 6d. from booksellers, or 2s. 9d. post free.

From Australia we have received No. 1 of Vol. 1 of a new monthly paper out there, RADIO AND HOBBIES, costing 6d. The Editor is A. Galbraith Hull, brother of the famous Ross, the late Editor of QST, who met such a tragic end. The new journal covers a very wide field—not only radio but, as its title suggests, films, photography, music, magic and model aeroplanes. In this first issue, there are even articles entitled “Repairing Faulty Gas Taps,” “Sharpening Shears” and “Notes on Shooting”!

We wish RADIO AND HOBBIES all possible success in a venture which should appeal widely in Australia.
June 1939

An Improved Straight Four

By
S. W. Clark, 2AMW
(Assistant Editor)

Those readers who have constructed either the “Amateur Three” or “Class-B” receiver will be familiar with the first or second stage of the layout shown on the next page, which is an endeavour to give a lead to experimentally-minded constructors and is a simple adaptation of two Magazine designs.

Briefly, the chief features are maximum selectivity, ample bandspread, complete coverage from 9 to 170 metres, ‘phone or loudspeaker operation with low running cost, provision for any type of aerial, while stage-by-stage construction is possible and advocated.

For the foundation we have built round the twin-triode detector/low-frequency amplifier known as the “Class-B Receiver” almost as it first appeared (March 1937, October 1937) so that owners of this flexible little set may add to its usefulness by the addition of an “Amateur Three” high-frequency stage and/or a simple pentode output circuit.

● One, Two or Three Valves

In any case it is advisable to build the centre stages first, and if this plan is followed the aerial should be connected to the plate end of L3 and a temporary link made from the other end of this coil to earth; the ‘phones should be placed in the HT + lead in place of the second transformer primary until the final stage is complete.

Referring to the rear view photograph, the section just mentioned is to be seen on the little aluminium shelf with the bandset condenser above it, near the upright screen; to the left, and barely visible, is the first transformer; at chassis level and close up to the coil and CB220 the reaction condenser may just be seen; the bandspread condenser is to the left of and slightly lower than the bandset.

Most of the coil/valve wiring is done before the strip is mounted in position and final connections to reaction condenser, SG anode, HT feed and first LF grid made after the bracket is fixed in position. All RF wiring is above the chassis and the components are carefully adjusted until the shortest wiring plan becomes evident.

To those who have not handled the Class-B set we would point out that before passing this stage as satisfactory reaction must be smooth, and all bands from 28 Mc to 1.7 Mc should handle with the same silkiness; otherwise it may be assumed that the RF choke is unsatisfactory, HT resistor of incorrect value or the Bulgin “Senator” LF transformer is necessary instead of “The one I had on hand.” These are very important points.

Combining features of the “Amateur Three” and “Class-B” receivers, that have proved so popular

Though generally this type of valve is somewhat microphonic which, however, tends to be less apparent as the receiver becomes “run in,” the CB220 is a good example of improvement made during the past two years.

The coils are Eddystone standard 4- and 6-pin throughout; variable condensers a mixture of Bulgin, Eddystone and Webbs’ “Apex,” and we are not going to assert that those shown in the photographs are vital except in the matter of value. But while on the subject, there is a noticeable improvement when the best quality components are used, and if a really de luxe 4-stage TRF receiver is required, then do not expect to get perfect results by adapting old BCL parts, though of course we are mindful of certain exigencies which might exist, and to those so situated we suggest a gradual change over afterwards.

To save space we refer intending constructors to those issues that dealt very fully with the Class-B receiver and turn now to the third stage, which we will select as being the tuned HF pentode, though, if preferred, the second LF section could follow the Class-B, the HF stage being built on later.

● Adding the Tuned HF Stage

This first stage will prove a revelation to those not acquainted with a tuned pre-detector amplifier. The boosting up of a signal ahead of the detector has to be heard to be believed, and as once again it would take a full page to explain the general application, we must leave that part by quoting our issue of June 1938, page 18, where two columns dealing with the “Amateur Three” HF stage will apply exactly in this case, though here we are using the Tungsram SP2D straight pentode instead of a screen-grid valve.
In wiring be sure to see that the first 0.006 mF (C1) condenser is placed correctly so that the HF coil and its condenser are isolated from the chassis—this tuning condenser is the only one that does not have its spindle earthed.

The three terminals for aerial and earth (the set works without an external earth if desired) are important. If an ordinary end-on aerial is to be used, then join this to the top of the first coil and connect a piece of wire between the remaining two terminals, so earthing one end; a doublet or special feeder system is taken to the coil (L1) only for 10 to 40 metres listening, but for 80 and 160 metres the lower end of L1 must be connected to chassis via the third terminal. All types of general aerial—“V,” “L” doublet, tuned feeders, etc.—have been tried and the same flexible handling is common, therefore this arrangement is well worth the wiring and makes for universal aerial connection.

Position the components with due regard to short grid leads—hence the arrangement here shown—and see that the resistors allow 120 and 80 volts on anode and screen respectively; a 4-pin holder carries all connections, as the SP2D’s suppressor grid, metalising and internal screen are all connected to one filament-pin which should be noted and duly taken to the chassis, as are all other earth connections.

**Phones/Loudspeaker Switching**

Until the output pentode (Tungsram PP2) has been added there will be little use for the volume control, but with the phone jack placed immediately after the first LF stage volume can still be controlled. The LF gain is very good and the...
volume control will be found necessary even on speaker reception.

This outlet switching is very simple but thoroughly worthwhile, the procedure being: Use 'phones for searching and then, if desirable, push over the switch which in one action connects LT to the pentode filament, cuts out the 'phones and brings the LS into circuit.

**General Points**

There should be dead background silence when using 'phones, which is a great asset seldom met in modern commercial superhets and often overlooked by the users of them. Another point in favour of the straight receiver is that when reaction is brought up a "breathing" is to be heard which gives the impression that nothing will be missed in searching, and in this state tuning of the HF stage to resonance and a touch on both bandspread and reaction brings the signal up in a manner that leaves no doubt that the receiver is really tuned "right on the nose."

A full supply of 150 volts HT is necessary for best results; prove this when first connecting up by lowering to say 120v. and note the drop in over-all efficiency!

Consumption in our case was 11 milliamperes with all valves working. GB tappings are: HF, 14v.; 1st LF, 3v.; 2nd LF, 6v.

If the loudspeaker on hand has no transformer it is recommended that HT be fed to the final valve via a choke and the LS inserted as shown for the 'phones, which by the way are Ericsson 2000 ohms.

For 80 and 160 metres it is best to use the bandspread condenser for tuning, otherwise two steps on the bandspread are necessary.

The panel arrangement, referring to the photograph of the receiver housed in its Eddystone crackle cabinet, is (left to right): Top, HF, bandset and bandspread dials; the on/off switch is on the left in line with the reaction and volume controls; the indicator lamp, LS/phone switch and jacks are along the lower edge.

**APOLOGY**

We have to apologise to many readers for the fact that owing to exceptional pressure of work these last two months, combined with illness in the Office, the handling of Query Department matters has been slowed down. In the circumstances, we have to announce that for the time being we cannot do better than give about 14 days’ clearance to general technical correspondence. We hope that we can rely on our readers’ forbearance in this matter, and ask their indulgence if letters do not seem to be answered as promptly as usual.

**INTERNATIONAL PREFIX LIST**

The usual short-wave BC station data appearing monthly on the inside back cover gives place for this issue to a List of International Prefixes, published in response to many requests from readers interested in DX. Our Prefix List has been very carefully prepared and to the best of our knowledge and belief it is the most-up-to-date, authentic and generally accepted one available in print, and has all the "rare variations" shown.

---

**Universal Test Meter**

A commercially-produced instrument at a reasonable price, calibrated to a high standard of accuracy, the Taylor 80B 70-range Universal Meter will interest many of our readers.

In addition to maximum AC and DC ranges of 250, 500, 1000, and 2000 volts, with current readings from 10 mA full scale to 20 amps. in ten steps, direct readings of capacity (to 10 mF), inductance (to 100 henrys) and output (to 60 dB) are also provided. Scale limitations naturally affect the degree of accuracy obtainable in these latter units—for instance, though it is possible to read direct to .002 mF up to 0.1 mF, from there on the rate of change becomes faster, till at the other end of the scale the markings go from 5 to 10 mF; similarly with inductance. But this accords with practical requirements, and does not depreciate the value of the instrument in the slightest degree.

The internal resistance of the Meter is 5000 ohms per volt, the lowest DC voltage reading given direct is 2 millivolts, and the lowest DC current 4 microamps, since there is a special range reading 0.2 mA full scale. In the resistance range, a maximum scale reading of 50000 ohms can either be divided by 100, or multiplied by 200 or 400; all this without external shunts, which can be used to extend the range still further if desired.

While all readings of AC, DC, resistance and output (for which the reference level is one volt, with a minimum reading of -22 dB) are directly obtainable from the instrument by the use of the selector and multiplier switches, it should be explained that for the capacity and inductance measurements only an external adaptor is required, operating off the 200-250 volt, 50-cycle AC supply.

The zero-adjustable knife-edge pointer travels over a six-section scale contained within a square dial measuring 41-ins. overall, the scale length being approximately 33-ins. The instrument is contained in an oak case 10-ins. by 7-ins. by 5½-ins. over the hinged lid, a fitted carrying strap is provided, and a pair of polarity-marked test prods 44-ins. long are included, with a customer’s registration card giving a six months' guarantee. Our only suggestion is that a ‘cleaner’ scale could have been provided; the markings are a little too coarse.

We have no hesitation in recommending the Model 80B Taylormeter where quick, accurate and comprehensive testing is desired; it is not possible here to enumerate all the 70 ranges which are available. Suffice it to say that we have not been able to think of a single direct-scale measurement within the capacity of the instrument which has not been included.

The makers are Taylor Electrical Instruments, Ltd., 77-77a, Queen Victoria Street, London, E.C.4, and the price of the 80B is twelve guineas. Models 80A and 80C are respectively ten and fourteen guineas, while the Taylor Signal Generator is another extremely useful piece of equipment at ten guineas. All these products are British made, and deferred terms are available.
The station of G2CF—W. A. D. Howes, Curlew Point, Charleton, Nr. Kingsbridge, S. Devon—is of particular interest because he is one of those who, not being connected to a public supply, has to get his “soup” by some other means. In this case, it is from a 230-volt DC dynamo driven by a paraffin engine, with 190 volts of HT accumulators in series with the generator to boost the voltage to 400 or so. A six-volt car-starter battery looks after the LT side and, being connected in the house-lighting return lead (also run from the machine), is on more or less permanent trickle charge and gives a good 6.3 volts for the various heaters. Also available is a DC/AC vibrator-type converter rated for 50 watts output at 200 volts AC.

Our composite photograph shows a very business-like station. The rack in close-up on the left carries the transmitter, behind the top panel of which is the 1.7, 7 and 14 Mc rig, using 47-46-T25D. On the next shelf is an experimental 14 and 28 Mc PA with a pair of 809’s in push-pull, and the meter panel below again. Then comes the modulator, using 6C5-6C5 into two 6L6’s in class-AB, the microphone being of transverse-current type. The key and meters can be plugged to the various control points as desired.

The receiver is a National 81X working from the DC supply and, in G2CF’s own words, “Aerials vary from time to time.” A well-known 1.7 Mc operator, this last season he worked FA8BG and VE1EA and was heard by W1AW, all when using exactly ten watts input.

Obtaining his AA permit in 1925, followed by a period at sea “to learn Morse,” G2CF came on the air with a full call in 1933 and is now licensed for 1.7, 7-56 Mc, with 25 watts on the latter range of frequencies.

Conditions—The Month’s Survey

Sunspot activity has been very high during the past month, but instead of this producing better conditions, it has caused several ionosphere disturbances which have resulted in poor short-wave propagation.

On April 16 a large group crossed the sun’s central meridian, its area on April 14 being 1000-millionths of the visible hemisphere. A severe magnetic disturbance started early on April 17 and continued throughout the day. This was accompanied by an ionosphere disturbance which caused very poor reception of practically all stations on the short waves.

Conditions continued thus for several days, the higher frequencies rapidly fading out just after sunset. Incidentally, on April 19 the 17 Mc and 15 Mc stations appeared to fade out soon after the start of the partial eclipse of the sun.

On April 21, at about 0900 GMT, there occurred a chromosphere eruption on the sun which continued for about half-an-hour. This produced a short period (Dellinger) fade-out of radio signals in this country.

Conditions were beginning to show signs of improvement, when, on April 24, another magnetic storm occurred, accompanied by an ionosphere disturbance. Two large sunspot groups were approaching the central meridian at this time, and both crossed it on April 26. On April 21 one group had an area of 1050-millionths and the other 1350-millionths of the sun’s disc.

After the deterioration of April 24 conditions became very good for a few days, but on April 30 another period of poor conditions started, no doubt due to the sunspots just mentioned. On this day, signals disappeared about sunset on all frequencies above 9 Mc.

Some Improvement

Conditions then improved very slowly towards May 4. On that day another chromosphere eruption occurred at about 0930 GMT, and a short period fade-out took place on signals from the east and south. This finished about noon and conditions then became very good.

On May 5 another sunspot crossed the central meridian-area on April 29 650-millionths. On May 6 conditions were good during the day but shortly after sunset a complete fade-out occurred. They were similar on May 7 and 8, the poor reception only setting in during the dark hours.

From May 9 to 15 conditions were good to very good, although on May 8 yet another large sunspot group crossed the central meridian.

Summarised details of long period fade-outs for the period are:

- April 17 severe—lasted several days.
- 24 severe—lasted about 24 hours.
- 30 rather severe—conditions poor till May 3.
- May 6 conditions poor after dark till May 8.

Probable poor periods for June are:

June 12-15, June 22-25.
Two Interesting Receivers

Hallicrafters' Skyrider “5-10” and the new Sky Buddy

We have recently had stock models of these two receivers under test, and the following notes are observations based on practical results and experiences.

**The “5-10”**

First, the Skyrider S-21, a superhet designed for the frequency range 25-67 Mc and employing in all nine valves, preceded by an 1852 RF stage tuned on both ranges, and having an effective noise-limiter circuit. The actual line-up is 1852-6L7-6P7G-6Q7G-6H6-6F6G, with a 6J5 as a separate oscillator (fundamental on both bands) on the 6L7 mixer. A type 80 rectifier supplies HT and the BFO is connected on the triode side of the 6P7G; the speaker is incorporated in the cabinet, and a headphone jack is also provided.

Now as regards performance—there is no doubt whatever that the Skyrider “5-10” is a good 56 Mc receiver; tested at G6FO under a variety of conditions, it brought in at different times all the DX periodically reported in our 56 Mc Notes, but it is only fair to add that even this receiver did not find anything which could not be heard on an O-v-1. The advantage it does confer, however, are ease of operation, accuracy of calibration, speaker reception, and excellent gain on both RF and LF sides, particularly marked when taking ‘phone on well modulated carriers, i.e., the set would be an outstanding performer in any location where there are several good 56 Mc stations receivable at high field-strength and it is possible to get from anywhere on which so many people made their debut in Amateur Radio. It is probably safe to say that more “Buddies” have been sold than any other single receiver; the reason is obvious. One gets a good general-purpose job which has the necessary adjuncts for amateur-band working—BFO, send-receive switch, and pitch control. This new Buddy is also dignified by the addition of band-spread, in the form of small-capacity parallel condensers with an independent drive, and it includes the 28 Mc band in the tuning range; the earlier model did not.

The coverage is approximately 6 to 600 metres in four bands and the calibration is surprisingly good considering this. As to performance, second-channel input is arranged for either doublet or single-ended purposes it is negligible, but slight re-tuning is required when changing over. The dial arrangement is very similar to that of the Sky Champion, the markings on the “5-10” being of course appropriate to its purpose. The same positive split-gear train is used and it is possible to determine frequency on 56 Mc to an accuracy of approximately 15 kc. This degree of slow motion enables close tuning of the weakest signal and yet it is possible to get from one end of the band to the other in two spins of the flywheel tuning control.

The signal-to-noise ratio is quite good, the inherent noise-level being reasonably low, and there is no trace of hum on speaker reception. With ‘phones, it is necessary to keep the gains down to get a quiet background. Various aerials were tried—the input is arranged for either doublet or single-ended type—but the long-wire end-on was found to give very much better results (at G6FO at least) than and other aerial.

If 28 Mc has not been much mentioned in these remarks, it is simply because most of what has been said about 56 Mc goes also for 10 metres. From time to time, unexpected DX was heard at excellent strength on what appeared to be a dead band, and the “5-10” should be as good a proposition for 28 Mc when it is lively as it undoubtedly is for serious work on 56 Mc. Moreover, the coverage from 25 to 67 Mc being continuous, the television and several other interesting frequencies are brought in.

**The Sky Buddy**

This is an improved version of the “old reliable” on which so many people made their debut in Amateur Radio. It is probably safe to say that more “Buddies” have been sold than any other single receiver; the reason is obvious. One gets a good general-purpose job which has the necessary adjuncts for amateur-band working—BFO, send-receive switch, and pitch control. This new Buddy is also dignified by the addition of band-spread, in the form of small-capacity parallel condensers with an independent drive, and it includes the 28 Mc band in the tuning range; the earlier model did not.

The coverage is approximately 6 to 600 metres in four bands and the calibration is surprisingly good considering this. As to performance, second-channel input is arranged for either doublet or single-ended purposes it is negligible, but slight re-tuning is required when changing over. The dial arrangement is very similar to that of the Sky Champion, the markings on the “5-10” being of course appropriate to its purpose. The same positive split-gear train is used and it is possible to determine frequency on 56 Mc to an accuracy of approximately 15 kc. This degree of slow motion enables close tuning of the weakest signal and yet it is possible to get from one end of the band to the other in two spins of the flywheel tuning control.

The signal-to-noise ratio is quite good, the inherent noise-level being reasonably low, and there is no trace of hum on speaker reception. With ‘phones, it is necessary to keep the gains down to get a quiet background. Various aerials were tried—the input is arranged for either doublet or single-ended type—but the long-wire end-on was found to give very much better results (at G6FO at least) than and other aerial.

If 28 Mc has not been much mentioned in these remarks, it is simply because most of what has been said about 56 Mc goes also for 10 metres. From time to time, unexpected DX was heard at excellent strength on what appeared to be a dead band, and the “5-10” should be as good a proposition for 28 Mc when it is lively as it undoubtedly is for serious work on 56 Mc. Moreover, the coverage from 25 to 67 Mc being continuous, the television and several other interesting frequencies are brought in.

The New

Sky Buddy

overcome a great deal of this without much difficulty. AVC is provided, with a built-in speaker and headphone jack, and a variable inductor arrangement is used for pitch control.

It should be remembered that the Sky Buddy is a cheap set, and at its price is a good investment for the beginner in Amateur Radio, the man who wants a stand-by in his station, or for the listener interested chiefly in general reception.

* * * * *

Both these sets are now available from the sole Hallicrafters concessionaires, Webbs Radio, 14 Soho Street, Oxford Street, London, W.1 (and at 41 Carrs Lane, Birmingham), the price of the Skyrider “5-10” being £20 and of the Sky Buddy £10.
LAST MONTH we started off by handing readers a bouquet for their excellent logs and information, but this month we are going to change the tune and throw a brickbat. Martin Bourke (2AOU) of Jersey, C.I., has twice requested co-operation for his 28 Mc propagation tests, which are of extreme experimental value, and the only person who helped is a lady—G6YL. Many of you have sent excellent 28 Mc logs when the going has been easy, but as soon as conditions go off, all interest is lost.

From April 10 to 16 special attention was paid to 28 Mc by 2AOU and G6YL, with the result that the following few logs were received. 1300 to 1800 GMT: VU2AN, 7BR, PK2WL. 1530 to 1830 GMT: ZS4AA, 6W, 6EG. 0800 and 1630 GMT: FB8AA, 1800 to 1900 GMT: VP3LF, TG9BA, TI3WD. 1900 to 2100 GMT: LU1AJ, ICA, IDA. 1700 to 1800 GMT: VQ3HJP, ZE1JG. From these logs, the best times to listen for the various continents appeared to be: Asia, 1300 to 1800 GMT; Africa, 1500 to 1900 GMT (also 0800); Oceania (PK only), 1300 to 1800 GMT; S. America, 1900 to 2100 GMT; C. America, 1800 to 1900 GMT; N. America—nil.

Logs

From time to time we get complaints from regular readers that their logs are not published. If you could only see the pile we receive each month you would feel sorry for us when we try to pick out a representative one. This is not difficult in one sense (especially where 14 Mc General Logs are concerned) as there is a large number of really first-class lists from which to choose, and we therefore try to swing the changes month by month; but if you send a log for each band, please do not expect us to publish all of them. The whole purpose of our “Calls Heard” page is to give everybody (transmitters and receivers alike) a survey of conditions on the amateur bands during the past month; it must not be looked upon as a “shop window,” and we pick the best lists to achieve the main object—usefulness.

Club Contest

The only reply to our suggestion of a six-cornered Club Contest comes from Geoffrey Talbot (2FTD), 46 Snaresbrook Drive, Stanmore, Middx., who is the secretary of the Willesden and District Short-Wave Club. We therefore take it that this is an open challenge to any other Club including Sheffield (the winners of the last test) and Peckham. We hope that clubs have taken our suggestion seriously that all members should be equipped for five-band reception. Listening to 14 Mc ‘phone exclusively does not represent a true picture of Amateur Radio, as can be seen by Bob Everard’s 3.5 Mc log and the 7 Mc CW effort from S. Read, 2ATM. We hope, too, that all serious short-wave clubs will inaugurate Morse classes where such do not now exist. No keen listener is complete without a working knowledge of the code.

We suggest running this contest in July, if club secretaries interested will notify us as soon as possible.

Well Done

Two of our readers, Martin Bourke (7,390 points) and R. J. Lee were first and second respectively in the receiving section of the last VK/ZL Contest. 2AOU was the winner of the two premier Receiving Contests in 1938—the B.E.R.U. and the VK/ZL.

Two New Features

This month sees two new features for SWLs. In response to a large number of requests we print on the inside back cover the Magazine List of Countries of the World and their prefixes. Every country listed may be counted separately, and although there are many others where no prefixes exist, we have not included them as no amateur stations have so far made themselves known from them. It will be noted that Labrador is shown as separate from Newfoundland—a deviation from our American friends’ ruling, who also count Baluchistan. We have so far failed to find any justification for this in view of the fact that Baluchistan is a state of India. Incidentally, if you heard Austria (OE) or Saar (EZ or TS) before they became absorbed in the Reich, it is permissible to count them in your country list, but not if heard signing with a “D” call. Although we have listed Czecho-Slovakia, we anticipate that Slovakia will probably take its place in country totals in the near future.

The other item, which we hope will interest you, is a rare card from your Scribe’s collection; one such will appear monthly.

50 in a Day Again

This is a good “yardstick” of conditions on any one day, and it may be taken that you have missed some good listening if you failed to turn on the receiver when “50 in a day” are reported. F. Jones, 6 Sutherland Street, Fenton, Stoke-on-Trent received the following on May 7 in 4 hours 29 minutes actual listening time on 7 and 14 Mc, logging 92 individual stations:—CT1, CT2, CT3, CR6, CR7, CE, CN8, CX, D, F, FA, FB, FM, G, GM, HA, HB, H1, HK,
A glimpse inside the station of Conrad Tilley of Bristol, one of our regular contributors. Nothing much in the way of DX telephony escapes Conrad's ear.

I, KA, LA, LU, LX, LY, OH, ON, OQ, OZ, PA, PK1, PK4, PY, SM, SP, SU, UE3, UK5, VK, VP5, VQ3, VST, UV2, W, YT, YV, ZC8, ZB1, ZE, ZS.

Rarities

Up to two months ago, Cape Verde Islands had been one of the rarest countries in the world, as the only recorded amateur was CR4AD, who used to operate with 5 watts in 1939 (oh yes, we have his card, too!) However, CR4HT and CR4MM are now pumping it out nightly on CW outside the HF end of 14 Mc. The address of CR4HT is: Henrique Torres, Praia, and CR4MM, Mario Moutinho, Praia, Cape Verde Is., and both QSL.

Another rare country, this time on 'phone, is represented by ZS2B, heard by many listeners. ZS2A, who only operated there for 10 days, was the first amateur and he informed us that it was possible that 2B would be starting, so it looks as if we have the genuine thing here. Norman Stevens overheard his QRA: P.O. Box 201, Gibraltar.

Lee Morgan, 45 Parkwood Road, Bournemouth has just received a card from UV2FA, reported by everyone, and many have requested his address. Here it is: Major Atkinson, Kasauli, Simla Hills, Punjab, India. Although only using 15 watts, the altitude of 3,000 feet makes the signal one of the loudest on the band. We pity the Major his mail is so.

Another “rarin’” represented in April and May by K6PMP (14300) and KB6ILT (ECO HF end). Both are using CW and working strings of Europeans. The only other known Guam stations to have worked Europe in the past are OM2CS and OM2RX, both using the old prefix. It is noted that K6PMP still sticks to K, presumably because he has not yet obtained official permission to change to KH6.

2FTD of Stanmore, Middx., asks us why some Monmouthshire stations use GW, as the atlas shows this county to be in England.

Nothing much in the way of DX telephony escapes Conrad's ear.

QSLs Received

D. Simpson, 37 Royal Park, Clifton, Bristol, 8, from HC2CC, VE4ZK, ZE1JA, VS7RA, VK3YL, HC1JW, ZS1BL, UV2FA, K0FKN, XE1LK, VK2TI, W6FUO (Nev.); CX2CO; B. Cage, C/o R. H. S. Holbrook, from VK4TF; Roger Legge, 20 Beethoven Street, Binghampton, N.Y, U.S.A., from VP6FO, PK2WJ, 2AY, SU1JMJ, K5AF, 5AN, ZS4L, 4H, CM8AL, 8AR, VP1WB, CE2BX, VP2LC (St. Lucia).—(28 Mc), ZL's 1HY, 1LC, 2FY, 3IF, 3AY, KG6G, T62CD, SV1CA; C. Cutiberti, 286 Northdown Road, Margate, Kent, from V6TRA, ZL4GM, ZS4H, VQ4KTB, ZC, LUS5, VP6FO, EA7RT, G. C. Lidstone (2FDN), 18 Chalan Drive, London, N.2, from VP6FO, W6EJC, CO6OM, QSL15, ZS4AA; D. Higginbottom (BR3RS567), “The Dorset, Boundary Road, Grange, West Kirby, Cheshire, from CO3AM, KAIFG, OA4AR, PY5AG, W7AMX; B. H. C. Sykes, Eton College, Windsor, from VS7RA, ZSQQ, Bob Everard, from WI1UV, 2JKB (for 1.7 Mc), ZS6HS, W9ZHY, 9SOQ (both for 14 Mc), ZS6ET, 7VZ2AL, 6AK, 6BE, UV2LJ, PK2LZ, VQ2CM, and several Police stations between 9-10 metres. Bob has now heard and verified all districts (except W7) on police 'phone'! Lionel Le Breton, 95 Bridport Road, Dorchester, Dorset, from (for 7 Mc), All district USA, K5AM, CM7AF, 8AQ, 2LL, FA3RY, ZL2MM, 2GP, VP1O, VP2LC (St. Lucia), YV1AD, Y4MBA; F. Jones, 6 Sutherland Street, Fenton, Stoke-on-Trent from ZS6DY, KA1PFE, VR6AY, ZM4AB, T69BA; LUS5; Norma Stevens, 30 College Street, Kenilworth, London, N.W.10, from ZL2AA, 2BZ, ZS6DK, 6AG, 1BL, QSL15, HP1A, VP4TO, XZ2JB; Conrad Tilley (see shack photo) from PK1PK, K5AF, VP6MY, LUS5, HC3CC, K6QOE, PY1FN, ZS4LS, VP6FO, VP4QV, CO2RR, ZC, VQ2AFM, VK3AE, V6MNRR, YV4AE, H13N, PY2KF, T65JJ, CT2AB, ZS6HS, UV2FA, ZSQQ, PY3MI, LUS3AC, LUS4W (7 Mc). He tells us that EK1AF has changed his postal address to Box 50, Tanger I. Z. Post Office; Derek Steeden, 71 St. David's Road N., St. Anne's-on-Sea, Lanes, from XZ2PB, VS2AL, PK4JTD; Paul Gifford, 21 Bengal Road, Winton, Bournemouth from LUS5, PK3WI, VK2AEQ, VS7RA, ZS4LS, W7ACD (Idaho); Martin Bourke from VP1DM, J3FZ, WP6YB, CR7AK, CE2FX for 28 Mc and VP25C (St. Vincent) for 7 Mc.

Curacao

Martin recorded PJ3CO, who is active on HF end of 14 Mc. He is ex-PA0XX and has had an adventurous career. Starting transmission very much under cover in March 1938, he was eventually located by the police owing to the stupidity of certain
DX — Calls Heard, Worked and QSL'd

American amateurs in attempting to send cards to him direct. An appeal was issued by QST for amateurs all over the world to write to the N.V.I.R. (Dutch Amateur Society) requesting them to use their influence with the Dutch Government. The reappearance of PJ3CO seems to indicate that they were successful, not only in getting him exonerated but also permission to operate as he is asking for cards to be sent via N.V.I.R. The other known station on this Island is PJBV, whose card we have; he is an American operating under cover and is not likely to QSL reports. Both stations use CW exclusively.

Points Cleared Up

We have to make a correction. Last month we stated that Martin Bourke had heard 163 countries including five doubtfuls. This should read excluding doubtfuls, a truly wonderful total. He queries (rather sharply) our remarks about FF8MQ not counting for French West Africa. He admits there is no QRA on the card, but explains that the operator is a doctor in the Foreign Legion; we can state to the very best of our knowledge that FF8MQ has never transmitted in Fr. W. Africa but always in Algeria. FF8BG (another doctor) did the same thing for a while when he was stationed at an oasis in the Sahara. These amateurs had an idea (in those days) that as soon as the Atlas Mountains were crossed it was correct to use FF, though still actually in FM territory. Also note that the ARRL do not accept either of these cards for Fr. W. Africa. The QRA of VP2SC is Aubrey Watson, Richmond Hill, Kingstown, St. Vincent. Martin is still waiting a card from VP8AD in Falkland Is. We learn that this station is shortly to try 'phone and that he is the only amateur in this place.

DX Forecast for June, 1938

<table>
<thead>
<tr>
<th>North America</th>
<th>14 Mc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern States of U.S.A., VE1, 2, 3, VO, K4 and West Indies</td>
<td>2100-0900</td>
</tr>
<tr>
<td>Western States of U.S.A., K7, VE4, 5, XE...</td>
<td>1700-1900</td>
</tr>
<tr>
<td>0400-0700</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>South America</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>2100-0900</td>
</tr>
<tr>
<td>ZS, CR7, VQ8, FR</td>
<td>1700-1900</td>
</tr>
<tr>
<td>VQ2, 3, 4, 5, QO, ZE, ZD, FB, CR4</td>
<td>1700-2100</td>
</tr>
<tr>
<td>F, PT, PN, CN, SU, ST, etc.</td>
<td>All Day</td>
</tr>
</tbody>
</table>

Asia

| JU, MX, VU, U5, VE1, 2, 3, 6, 7, FI, etc. | 1500-2200 |
| Y1, ZC6, VU (North), US, 9 | 1200-2300 (or later) |

Oceanica

| VK2, 3, 4, 5, 7 | 0300-0900 |
| VK6, 9, VK4 (Papua) | 1900-2200 |
| ZL, VR, and Pacific Is. | 0400-0700 |
| FK, KA, KB6, etc. | 1700-1900 |
| 1500-2200 |

Note — Signals may only be heard from South and Central America on some evenings with U.S.A. entirely absent.

Another Certificate

Norman Stevens of London, N.W.10, has noticed frequent references to WBCN on South African cards, and asks what it's all about. This was the SARRL's reply to the British WBCN (Worked the British Empire) and means "Worked the British Commonwealth of Nations," and is open to all members of the South African League. K. Burston (see last issue) visited General log master in TAIAR, SM, YM, CS2V (Portugal), SP, HA, G, I, HB, LY, ZS, ON, YL, VU, ZE, ZBI, VE, FA, YU, W, PA, F, LA, VS7, VQ2, OH, U5, VK, OQ, SU, GW, U1.
GM, CN, VP5, PY, K4, CT2, VP6, ES, FB, EA, VP3, CO, CX, LU, U2, KA, YV, HI. 50 between 1900 and 2330 BST on May 3, in order as heard. He cites another mystery station—KFR3. We suggest that this is in Panama Canal Zone, as the old calls used to be similar to this, i.e., we have a card from KFR5, the first heard from that part of the world—case of another operator being out-of-date!

F. Jones of Stoke wishes to know if GM3TR in the Orkneys counts as a separate country. Although GM3TR himself is the best person to answer such a question we say emphatically—No. The Orkneys and Shetlands are part of Scotland and have not their own government, as have the Channel Is. and the I. of Man. We agree with this reader when he

asks for the QRA of KA3KK (quite genuine, Box212, Baguio, P.I.) and tells us of the difficulty ex-

perienced during the SP contests with dozens of really poor notes from Poland all over the band.

Hugh Huxley, 83 Temple Road, Prenton, Birkenhead, HAC earlier he did it with six different stations in eight minutes, these being VK2KS, PY6AG, ZG6HS, VP6YB, G3AP and SU1AM. However, Hugh Huxley, 38 Temple Road, Preston, Birkenhead, HAC in 45 seconds on May 3 with VU2FA, SU1WM, VK2ACX, PY2BH, CT1PK and W1AKY. Hugh asks for the QRA of KA3KK (quite genuine, Box 212, Baguio, P.I.) and tells us of the difficulty experienced during the SP contests with dozens of really poor notes from Poland all over the band. We agree, but it always was the same!

A. Slee-

man, BSWL1102, 20 Elm Road, Exmouth, Devon queries "FN6WE," but this should read SM6WE; the case of another operator being out-of-date!

Hugh asks for the QRA of KA3KK (quite genuine, Box 212, Baguio, P.I.) and tells us of the difficulty experienced during the SP contests with dozens of really poor notes from Poland all over the band. We agree, but it always was the same!

1. The test shall take place between 0001 BST June 9 to 2400 July 15—a period of one week.
2. The 7 and 14 Mc bands only to be used.
3. The HT supply to all stages of the transmitter shall not exceed 120 volts delivered from a standard dry battery.
4. The terms and conditions of the operator's licence shall at all times be observed.
5. Contacts must be established with the 120 volt supply, and at no time during the test must a greater voltage be used.
6. Only one contact on each band with any one station shall count for points.
7. No contact under 50 miles shall count.
8. A complete exchange of RST report shall constitute a contact.
9. One point shall be scored for contacts from 50 to 500 miles, two points from 500 to 1,000 miles of inaccuracy in logging 'phones and mentions the case of an American station heard calling "EKA4S in South Africa." An obvious example of a complete muddle of prefix, call and location. We agree with him and wish that all telephony stations would take greater care in announcing their calls at all times. F. J. Deane, 33 Ashbourne Grove, East Dulwich, S.E.22 sends an ingenious but rather cumbersome scheme involving code letters for amateur 'phones to give an indication of frequency. We feel sure that the simplest way is to ask all transmitting stations to announce their known frequencies on every test or CQ call.

● 7 Mc DX

We have already given a list of DX cards received by Lionel Le Breton (the BSWL QSL manager) for 7 Mc reception, and he tells us he has only listened on this band between last October and a few weeks ago; with a simple 0-v-1 or 0-v-0. All districts USA were heard, including such States as S.Dak., Neb., Okla., Cal., Kans., and Wash., and other countries included, VP2 (St. Lucia), XE, HH, HP, CM, PY, YV, ZS, YI, ZL, VK, FA, CT2, K5, HK. He remarks on the fact that he receives a very high percentage of 7 Mc cards for reports sent, a thing often stressed in these columns; in fact, several amateurs have written to Lionel saying they wished a few more SWLs would listen and report 7 Mc DX. We try our best to interest confirmed 14 Mc 'phone DXers in CW on other bands.

● 1.7 Mc DX Still There in May

Bob Everard sends yet another list of 1.7 Mc 'phones from across the Atlantic, including W1KWQ, 1CTX, 1IYP, 1BES, 1AW, 2LXY, 2JZR, 2EDJ and 3IVT, all heard between April 8 and May 18.

Geof. Hutchinson, Clickem, Ponteland, Newcastle-upon-Tyne, wishes to correspond with a fully-licensed amateur or AA holder. D. M. Duckworth, Park Place, Redfield Road, Darwen, Lanes, raises again the old point of inaccuracy in logging 'phones and mentions the case of another operator being out-of-date!

An obvious example of a complete muddle of prefix, call and location. We agree with him and wish that all telephony stations would take greater care in announcing their calls at all times. F. J. Deane, 33 Ashbourne Grove, East Dulwich, S.E.22 sends an ingenious but rather cumbersome scheme involving code letters for amateur 'phones to give an indication of frequency. We feel sure that the simplest way is to ask all transmitting stations to announce their known frequencies on every test or CQ call.

● Set. Listening Periods—June

June 10—2230—2300 BST—1.7 Mc.
June 25—0600—0800 BST—14 Mc.

While the summer is with us, it is proposed to set two 14 Mc periods, owing to their evident popularity and in order to get an indication of conditions in the morning and evening. 28, 7 and 3.5 Mc will not produce much DX during the summer, but serious-minded SWLs should keep an ear on 28 Mc even so, while it is of interest to note that Stanley Read, 2ATM (see "Calls Heard") received W6NNM on 3.5 Mc CW on March 12 at RST 557.

● Acknowledgment

Once again, it has not been possible to mention quite two-thirds of the letters received nor to print more than a very small proportion of the logs sent in.

★ ★ ★

Transmitters' Section

In response to the suggestion made by G2SO in last month's notes, we have received letters from several enthusiastic supporters of a low-powered Contest. G2OB writes as follows: "A genuine QRP competition is very badly needed, if only to provide a concrete challenge to the large number of QRO workers who obstinately refuse to believe the amazing ability of many low-powered transmitters." G2OB adds that he recently maintained a four-day schedule with OI using only 45 watts at 75 volts. G2SO has kindly forwarded his idea of the rules for this test. We have altered them slightly to accord with our ideas as well, and set them out for your co-operation.

1. The test shall take place between 0001 BST July 9 to 2400 July 15—a period of one week.
2. The 7 and 14 Mc bands only to be used.
3. The HT supply to all stages of the transmitter shall not exceed 120 volts delivered from a standard dry battery.
4. The terms and conditions of the operator's licence shall at all times be observed.
5. Contacts must be established with the 120 volt supply, and at no time during the test must a greater voltage be used.
6. Only one contact on each band with any one station shall count for points.
7. No contact under 50 miles shall count.
8. A complete exchange of RST report shall constitute a contact.
9. One point shall be scored for contacts from 50 to 500 miles, two points from 500 to 1,000 miles...
and three points for a distance greater than 1,000 miles.

10. The number of contacts shall be multiplied by the number of countries worked according to the list appearing in the current issue of the Magazine.

11. The contest is open to any licensed amateur in the British Isles.

12. Only one operator is allowed for the duration of the Test at each station entered.

13. A declaration must be signed by the operator at the foot of the entry form that all these rules have been observed.

14. Completed entry forms must reach the Editor by July 22, any overseas entrants being allowed extra time.

15. The Editor's decision is final.

No prize will be given to the winner, as it is thought that entrants will look upon this Test as an experimental one. Preliminary results will be published in the August issue of the Magazine and it is hoped that all real QRP men will take part. Of interest is the fact, just to hand, that G6WY worked W6MC in Hollywood who was using 4 watts; G6WX requested that he should reduce his power to one watt, the only noticeable difference being a drop from S6 to S5! *Vive la QRP!*

**Danzig—Quick!**

YMAAZ (via Leslie Morgan of Bournemouth) specially requests that British stations look for his QRP signals on 14 Mc. *All QSOs will be acknowledged.*

From GM3TR, up in the Orkneys, we learn that he recently carried out some tests with G3II in London on 'phone. The latter reduced input to *half-a-watt* (70 v. at 7 mA) and was RS8 7/8 with QSB. GM3TR then reduced his power to 3 watts and was still S8. This, for 600 miles, is very good going on 'phone.' GM3TR mentions that he has had many reports from USA on his 7 Mc 'phone signals when using a half-wave Zepp running E-W, with 8 watts input. We don't pretend to understand how his aerial radiates a signal there! With the same input on 14 Mc he has worked W1, 2, 3, 4, 8, 9, CN, ZC6 and XZ2PB—all this with 220 volts and a 6A6 driven by an 89 triit. Being in the Orkneys, GM3TR receives a mass of SWL reports. *"To put it mildly,"* he writes, *"80 per cent. of no use at all and do not conform with the ideas you have so wisely put forward."* In future, he does not want reports from British listeners unless they cover a number of transmissions over a period of days.

**Straight v. Superhet Again**

G5MV sums up this eternal wrangle by saying, *"When conditions are good, there is nothing to choose between the two, but when they are poor, stations can be heard at good readability when they are only just audible on the 1-v-1, and certainly could not have been worked."* Incidentally, G5MV and other Scarborough amateurs have all been presented with local view QSL cards by the enlightened Scarborough Corporation; we believe they do the same thing at Southport.

* [What about single-signal control.—Ed.]

More news of QRP comes from G3KS, also in Scarborough. The *"W8JK" beam has just given him W8E 'phone by a contact with VK at S6-7, input a few watts only.

**1.7 Mc**

Previous remarks on this band seem to have borne considerable fruit, judging by letters from transmitters and listeners alike. Complaints have even been received of bad QRM! G6TC advises all newly-licensed amateurs to come up to "160" as soon as they commence transmission and he also appeals for more week-end afternoon activity. G6TC himself only uses a 45 valve with a 132-ft. aerial. G5MP says he is on this band *"the early evenings from 1700 to 1830 BST, using 1780 or 1790 kc. G6HS also appeals for early evening activity and stresses the fact that BCL interference can easily be overcome if the normal filters are used. It is however useless to key the HT lead and imagine it will produce clickless keying without a simple filter. G6HS puts forward a worthy idea—*all* CWR members to slip in a 1.7 Mc crystal after their exercises and come on the band for a while.*

**Notes and News from the East**

During April the writer spent a very interesting week with VU2FX in Rawalpindi, operating from that station under call VU2EU, and although a considerable number of DX contacts was made, only G2FZ was contacted in England. VU2FX is testing a new transmitter consisting of a 49 CO driving an RK20 and also trying a single wire matched impedance aerial with the main lobe in the direction of Great Britain. Reports will be appreciated. During 1938 VU2FX worked a station signing V6RA but stated he was a portable in Pitcairn Island; later, he received a QSL from V6AY and signed by Young confirming this contact! During the last eighteen months VU2FX has had over 200 QSOs with the States and has been maintaining a fairly regular schedule with W9HLF. VU2JG is staying at Gariaol and operating a portable rig from there; he is busy testing to find the most suitable type of aerial for portable operating.

From the number of SWL cards received by VU2EU for forwarding to VU2FA this station must be putting a very strong signal into G, although the only Indian station who knows anything about VU2FA is VU2FQ, who has been keeping schedule with him. VU2FQ does not give the QTH of VU2FA but all the SWL cards have been forwarded on to him for re-transmission to the former. If re-suitable the QTH of this station will be published in the next issue (see Listeners' DX Notes).

**New Stations**

A new call is VU2BX, who is using a 6L6 triit driving a pair of 6L6's on 14350 kc from DC mains supply in the Central Telegraph Office Compound, McLeod Road, Karachi. The operator of this station is ex-VSSAA and is a great friend of VU7BR in Bahrein Island. During a QSO he mentioned that he would be returning to the Persian Gulf very (Continued on page 27).
CALLS HEARD SECTION

SET LISTENING PERIOD 1, 1.7 Mc
April 6, 2230-2300 GMT

J. G. WARDHAUGH, 2DTT, 29, Hall-
gates, Hexham, Northumberland.

C. T. H. MARTIN, "Linton," Yound
Road, Bursledon, Southampton.

M. D. McCARTHY, "Crook," Old
Colwyn; D. M. Duckworth, Darwen;
H. G. Bourke, 2AOU, Bursledon.

C. F. HARDY, 5EFX, 7EO, Wokingham.

H. OWEN, 2, SM5SM, M.

T. FAIRCHILD, G3YY, la,

F. JONES, 6, Sutherland Street, Fent-
on-street, Portsmouth.

T. SIK, W4ZDH, 14, Basingstoke.

J. C. SYKES, Windsor; C. T. H. MAR-
TIN, "Lynton," Pound Hill Road, York;
H. A. Yarrow, Leeds.

R. C. COLES, "Catharine," Broad
Hill Road, Farnham, Surrey. During
March and April.

R. E. MARTINGELL, G211IV,

H. Alford, Burnham-on-Sea; S. Ash-
worth, Darwen; M. G. Bourke, 2AO;
C. Jerks; K. Haswell, Wembley; D. R.
Greenford; B. Sc., Barnsley; J. Greenwell, Dorking;

K. Haswell, Wembley; D. R. Greenford; B. Sc., Barnsley; J. Greenwell, Dorking; H. Huxley, Birch Hill Road, Coulsdon, Coulsdon; D. H. Harding, Newport;

C. T. H. MARTIN, "Linton," Yound
Road, Bursledon, Southampton.

T. SIK, W4ZDH, 14, Basingstoke.

J. C. SYKES, Windsor; C. T. H. MAR-
TIN, "Lynton," Pound Hill Road, York;
H. A. Yarrow, Leeds.

R. C. COLES, "Catharine," Broad
Hill Road, Farnham, Surrey. During
March and April.

R. E. MARTINGELL, G211IV,

H. Alford, Burnham-on-Sea; S. Ash-
worth, Darwen; M. G. Bourke, 2AO;
C. Jerks; K. Haswell, Wembley; D. R.
Greenford; B. Sc., Barnsley; J. Greenwell, Dorking;

K. Haswell, Wembley; D. R. Greenford; B. Sc., Barnsley; J. Greenwell, Dorking; H. Huxley, Birch Hill Road, Coulsdon, Coulsdon; D. H. Harding, Newport;

C. T. H. MARTIN, "Linton," Yound
Road, Bursledon, Southampton.

T. SIK, W4ZDH, 14, Basingstoke.

J. C. SYKES, Windsor; C. T. H. MAR-
TIN, "Lynton," Pound Hill Road, York;
H. A. Yarrow, Leeds.

R. C. COLES, "Catharine," Broad
Hill Road, Farnham, Surrey. During
March and April.

R. E. MARTINGELL, G211IV,

H. Alford, Burnham-on-Sea; S. Ash-
worth, Darwen; M. G. Bourke, 2AO;
C. Jerks; K. Haswell, Wembley; D. R.
Greenford; B. Sc., Barnsley; J. Greenwell, Dorking;

K. Haswell, Wembley; D. R. Greenford; B. Sc., Barnsley; J. Greenwell, Dorking; H. Huxley, Birch Hill Road, Coulsdon, Coulsdon; D. H. Harding, Newport;

C. T. H. MARTIN, "Linton," Yound
Road, Bursledon, Southampton.

T. SIK, W4ZDH, 14, Basingstoke.

J. C. SYKES, Windsor; C. T. H. MAR-
TIN, "Lynton," Pound Hill Road, York;
H. A. Yarrow, Leeds.

R. C. COLES, "Catharine," Broad
Hill Road, Farnham, Surrey. During
March and April.

R. E. MARTINGELL, G211IV,

H. Alford, Burnham-on-Sea; S. Ash-
worth, Darwen; M. G. Bourke, 2AO;
C. Jerks; K. Haswell, Wembley; D. R.
Greenford; B. Sc., Barnsley; J. Greenwell, Dorking;

K. Haswell, Wembley; D. R. Greenford; B. Sc., Barnsley; J. Greenwell, Dorking; H. Huxley, Birch Hill Road, Coulsdon, Coulsdon; D. H. Harding, Newport;

C. T. H. MARTIN, "Linton," Yound
Road, Bursledon, Southampton.

T. SIK, W4ZDH, 14, Basingstoke.

J. C. SYKES, Windsor; C. T. H. MAR-
TIN, "Lynton," Pound Hill Road, York;
H. A. Yarrow, Leeds.

R. C. COLES, "Catharine," Broad
Hill Road, Farnham, Surrey. During
March and April.

R. E. MARTINGELL, G211IV,

H. Alford, Burnham-on-Sea; S. Ash-
worth, Darwen; M. G. Bourke, 2AO;
C. Jerks; K. Haswell, Wembley; D. R.
Greenford; B. Sc., Barnsley; J. Greenwell, Dorking;

K. Haswell, Wembley; D. R. Greenford; B. Sc., Barnsley; J. Greenwell, Dorking; H. Huxley, Birch Hill Road, Coulsdon, Coulsdon; D. H. Harding, Newport;

C. T. H. MARTIN, "Linton," Yound
Road, Bursledon, Southampton.

T. SIK, W4ZDH, 14, Basingstoke.

J. C. SYKES, Windsor; C. T. H. MAR-
TIN, "Lynton," Pound Hill Road, York;
H. A. Yarrow, Leeds.

R. C. COLES, "Catharine," Broad
Hill Road, Farnham, Surrey. During
March and April.

R. E. MARTINGELL, G211IV,

H. Alford, Burnham-on-Sea; S. Ash-
worth, Darwen; M. G. Bourke, 2AO;
C. Jerks; K. Haswell, Wembley; D. R.
Greenford; B. Sc., Barnsley; J. Greenwell, Dorking;

K. Haswell, Wembley; D. R. Greenford; B. Sc., Barnsley; J. Greenwell, Dorking; H. Huxley, Birch Hill Road, Coulsdon, Coulsdon; D. H. Harding, Newport;

C. T. H. MARTIN, "Linton," Yound
Road, Bursledon, Southampton.

T. SIK, W4ZDH, 14, Basingstoke.

J. C. SYKES, Windsor; C. T. H. MAR-
TIN, "Lynton," Pound Hill Road, York;
H. A. Yarrow, Leeds.

R. C. COLES, "Catharine," Broad
Hill Road, Farnham, Surrey. During
March and April.

R. E. MARTINGELL, G211IV,

H. Alford, Burnham-on-Sea; S. Ash-
worth, Darwen; M. G. Bourke, 2AO;
C. Jerks; K. Haswell, Wembley; D. R.
Greenford; B. Sc., Barnsley; J. Greenwell, Dorking;

K. Haswell, Wembley; D. R. Greenford; B. Sc., Barnsley; J. Greenwell, Dorking; H. Huxley, Birch Hill Road, Coulsdon, Coulsdon; D. H. Harding, Newport;

C. T. H. MARTIN, "Linton," Yound
Road, Bursledon, Southampton.

T. SIK, W4ZDH, 14, Basingstoke.

J. C. SYKES, Windsor; C. T. H. MAR-
TIN, "Lynton," Pound Hill Road, York;
H. A. Yarrow, Leeds.
HIGH POWER PERMITS

For some time now, applications for power increases above the 25-watt limit have been considered by other Government Departments concerned in addition to the Post Office before a decision has been given. In view of the number of occasions recently on which our advice has been asked on this question of obtaining power facilities above 25 watts, we think it should be explained that as matters stand it is unlikely that any amateur application for more than 50 watts—no matter through what channels it may be submitted or what endorsement it may carry—will succeed, at least for the time being. For the present no existing high-power facilities are being withdrawn and 25-watt permits are still available in the usual way by direct application with reasons.

We should add that this statement is officially authorised by the Post Office.

MULLARD'S MOVE

Readers should note that the new address of the Mullard Wireless Service Co., Ltd., is Century House, Shaftesbury Avenue, London, W.C.2. The Transmitting Division now issues a very comprehensive folder covering all types of low-power transmitting valves, modulators and cathode-ray tubes and instruments, giving essential data and performance figures. This publication is obtainable on request.

THE 1.7 Mc TRANSATLANTIC TESTS

Further note. Since writing the "160-Metre Story" which appeared in our April issue, some belated details have come in reporting DX which we were unable to include then. W1CPL, using only 35 watts and a 1-wave aerial 15-ft. high, worked G2PL and was called by G2DQ as "KPL"; stations heard by W1CPL at Devon, Conn., were FA8BG, G5MP, G5QY, G6GM, G6NF and G6WY, while W2BFA on Long Island logged F8ZF. W1JZJ, New Haven, Conn., received G2DQ, G2PL and G6GM, using an ACR-155 (a 9-valve superhet), his transmitter being simply a 6L6 CO with 35 watts input into a 4-wave end-fed Hertz. This rig brought a contact with G2DQ, and listener reports from our side. W1JZJ remarks that he is particularly interested in 1.7 Mc DX and welcomes British SWL reports.

FOOTLESS VALVES

There will shortly be available something new in Tungsram receiving valves. Briefly, by doing away with the long glass envelope, base construction and pinch, this firm has produced a range of valves which, for want of a better name, are described as "footless." The result is a valve no dearer than the ordinary type, designed as a radio valve and not as an electric lamp, having very small physical dimensions, and characteristics bringing the range somewhere between the specialised HF types and Acorns in terms of efficiency.

Also "out" is new data on the APP4g for RF work, a folder giving full details of their transmitting types for amateur application, and a very useful collection of keyed circuits for speech amplifiers, modulators and other audio purposes, using Tungsram valves from the AF range; all free on request.


W6PCV DEMONSTRATES

It appears that George Kearney, W6PCV, happened to be about the Paramount Studios in Hollywood when they were making a picture called "Grand Jury Secrets." Amateur Radio communication is one of the main features of the plot, and luckily for all concerned, W6PCV noticed that the handling of the amateur angle was, to put it mildly, weak; so much so, that any "ham" seeing the picture would have laughed in the wrong places.

Amateur Radio on the screen. The lady is Gail Patrick, the call a genuine W6, the picture Paramount's "Grand Jury Secrets", the transmitter a prop, and the only G card shown is G6GS.

Anxious to be thorough, as they always are in Hollywood, Paramount immediately scrapped a lot of their ideas about Amateur Radio and took W6PCV on as technical adviser. The result is a picture which, allowing for the over-riding considerations of plot (demanding such unusual phenomena as 28 Mc DX in the middle of the night) is quite a credit to amateurs in general and the co-operation between Paramount and George Kearney in particular.

Acknowledgment is due to Radio, from the May issue of which these details are taken.
ABRIDGED TECHNICAL INDEX

Last month we printed a list of features to be found in Volume 1 of the Magazine, which is now supplemented by the following list of articles from Volume 2. The three sections are priced respectively 1s. 0d., 9d. or 6d. per copy, postage ld. extra per issue.

“The ‘All-World Two’ adapted for mains operation,” March, 1938.


“Transmission for Beginners,” March, 1938, and following 11 months.

“Getting Going on 56 Mc,” March, 1938.


“A 56 Mc PA,” April, 1938.

“More about the Exciter Unit,” 1.7 to 56 Mc, April, 1938.

“Reporting SW Transmissions,” April, 1938.

“Learning Morse,” May, 1938.

“Building Short-Wave Receivers,” May, 1938.


“More about the 56 Mc RF Amplifier,” May, 1938.


“Superhet Adaptor,” February, 1939.


“Two Receiver Circuits,” September, 1938.


“The Cathode-Ray Tube,” November, 1938, and following two months.


MORSE BY SOUND

There is now obtainable a graduated course in learning Morse from gramophone records. In three series, the records are 10-in. double-sided and cost 2s. 6d. singly, or 7s. for the set of three in each series. Starting with a Beginners’ Record with the alphabet and code coming out at 2-4 w.p.m., the course works up to speeds of 12, 20 and 30 w.p.m., the later ones introducing QRM conditions. There are also different sets enabling candidates to train for the Services, Mercantile Marine and Aircraft radio operation, using the correct codes and procedure in the various cases. Readers should get in touch with C. E. Masters, Orchard House, Finchampstead Road, Wokingham, Berks, for fuller details of a practical and effective method of tackling the ever-present problem. Correspondence courses are also given.

25 YEARS OF A.R.R.L.

The May issue of QST records in brief the history of the American Radio Relay League, an amateur organisation first formed in 1914 by Hiram P. Maxim and Clarence D. Tuska, whose apparatus in those early days consisted of brute-force spark transmitters with an audible range nearly as great as that achieved via ether. A.R.R.L.’s official organ, QST, made its first appearance in December, 1915, and this issue carries, by way of commemoration, details of a “one-tube tuner” of the type in use 25 years ago.

DX — Calls Heard, Worked and QSL’d

(Continued from page 24).

 Shortly, so look out for a new call. Another new Asian station is XU5YT, working on the HF end of 14 Mc; he can be QSL’d to Box 20, Sinfeng, Kweichow, China. VU2EU’s old call sign of VU2CR is now in use again by a station operating under cover, but cards may be forwarded via VU2EU. VU2AA is another “under cover” station and cards intended for him may also be sent via the writer. VU2EU portable will be on the air by the time these notes are in print and the operator would welcome reports on the transmissions on 14344 and 14005 kc. The receiver consists of an SP2 RF amplifier and a ’19 as detector and audio, the dimensions of the receiver being 4-in. x 5-in. x 7-in., just about a record for a receiver using standard size parts. The transmitter is simply a ’59 in tritet on 14344 kc and a straight CO on 14005 kc, exciting a delta-fed half-wave aerial 50-ft. above ground on the top of a mountain 5,000 feet a.s.l. !

FNIC is putting out a very fine ’phone signal to a rotating beam and can be heard every evening working strings of VEs and Ws. AC4YN is also maintaining a fairly regular schedule with W9HLF, but his work prevents him from spending a great deal of time on the amateur bands. In the March issue of RADIO there is a very good article on Tibet, with photographs sent in by Reg Fox, AC4YN.

Ø 56 Mc in VU

By July it is hoped that at least ten VU stations will be working on 56 Mc, and a letter budget has been started by VU2AN. From the descriptions of the proposed transmitters some very good 5-metre signals should be heard from India, and although the great distances between the stations will be rather a retarding factor to start with, it is hoped that some contacts will be made. As VU2AN said, “They can do it in America so why not in VU?”

Ø Late News

At 2005 GMT on April 5, VU2EU heard OQ5HR calling CQ on 14080 kc. G8KP and G5NC replied, but OQ5HR was not heard again despite some time spent listening on his frequency. Any information on this station would be appreciated by VU2EU.

—Wm. H. G. Metcalfe, VU2EU.
A Modulator for the Low-Power Station

By Arthur C. Gee (G2 UK)

The unit described herewith will serve very successfully for modulating a transmitter up to 25 watts, as well as for ordinary speech amplification purposes, and it is of interest to note that this amplifier was the one which was used with the relay described in a previous issue (August, 1938) for working a Morse recorder from a receiver.

As can be seen from the diagram, the unit consists of an amplifier and its associated power pack built together on the same chassis, thus forming a compact portable unit. Where two or three transmitters are in use in a station—as say one for 1.7 Mc, another for 7 and 14 Mc and a third for 58 Mc, such a unit is very handy as it can be easily moved from one transmitter to another.

The Circuit

The circuit is as follows: A 6A6 double-triode type valve is used, with its two grids and its two anodes strapped to form two single electrodes, thus converting it virtually into a triode. This stage acts as a speech amplifier and also drives the second 6A6, used in its normal way as a twin triode, as a class-B amplifier.

The transformers are Thordarson and can be obtained from the amateur supply houses advertising in the magazine. The T6750 is used on the driver side and the T6759 as the output transformer. These two particular types are designed to operate with 6A6 valves; they have been in fairly constant use in the writer's station and have proved perfectly satisfactory.

Running rapidly over the circuit, we see that the input is applied across the resistor to the grids of the first valves. The value of it is 250,000 ohms and a fixed resistor is used as it was thought unnecessary to have any form of input control to such a small amplifier as this. One is certainly not needed if the unit is used with a carbon microphone and if operated in conjunction with a receiver, the volume control on the latter will vary the input as required.

The bias for the valve is looked after by a 1000-ohm 1-watt resistor and 50 mF electrolytic condenser as shown. The first 6A6 gets its HT from the power pack via the primary winding of the driver transformer, and it will be noted that the full voltage—300 volts—is applied and that no dropping resistor is required. The terminals of the transformers recommended are clearly marked and no error need occur in wiring up the circuit.

The second valve functions normally as a class B amplifier. The two ends of the driver transformer secondary winding go to the grids whilst the centre point is earthed. The cathode of this valve is also earthed. The two plates go to the ends of the primary of the output transformer and the HT is applied to the centre tap. The circuit diagram makes this clear.

If the unit is to be used as a modulator, the HT to the PA valve is taken via the secondary winding of the output transformer so that plate modulation of the PA results.

It may be wondered why an ordinary triode was not used as the first valve. The reason for this is merely a matter of convenience. The filament rating of the two valves becomes identical, the same HT voltage can be applied to both—thus eliminating the necessity of a voltage dropping resistor and also one additional 6A6 can be kept handy as a spare for either position—and finally a 6A6 connected in this way does make a very excellent amplifier.
Power Pack

As regards the power pack, this should supply about 100 mA at 300 volts. It does not matter what rectifier or transmitter is used provided it has an output of approximately this rating. In the writer's case a MU12 is used as rectifier with a home-made transformer, but any other valve such as, say, an American type 80 could equally well be employed with a transformer having a filament winding suitable for the particular type chosen. The HT transformer should have a 300-0-300 volt winding and a centre-tapped heater supply suitable for the rectifier. The heater current for the 6A6's can also come from a winding on the power transformer if a suitable one is available or preferably a separate transformer can be fitted. One giving 2amps at 6 volts is quite suitable.

Ample smoothing is provided by two 8 mF electrolytic condensers and a smoothing choke to carry about 150 mA. A switch is provided in the mains lead to the transformers for switching on and off the whole amplifier and another in the HT negative lead for breaking the HT only. All negative leads are taken to the nearest earth point both in the amplifier itself and in the power pack. A milliammeter reading to 100 mA is wired in series with the positive lead to the second valve as shown. The circuit diagram should make all these points clear.

Construction and Layout

A chassis can be constructed of plywood, with dimensions 18-in. by 12-in. by 4-in. deep. The top is covered with a sheet of 16-gauge aluminum, and holes must be cut in this for the valve-holders and connections from the transformers. All negative leads are taken directly to this aluminum sheet, which also acts as a screen between the wiring beneath the chassis and the transformers and smoothing choke above.

The positions of the driver and output transformers and their associated valves can be seen from the illustration. The output transformer is the larger of the two and immediately below it are the output terminals on the far side of the meter. The smaller transformer is the driver and the valve associated with it is the triode-connected 6A6 in the first stage. Beneath it, this side of the meter, are the input terminals.

In the power pack section the positions of the choke, rectifier valve, HT transformer, and the two electrolytic condensers are clearly shown. The two switches mentioned are placed on one side of the chassis—it does not matter which. The mains input position in the unit illustrated is on the far end of the chassis and consists of a two-pin plug and socket, but here again its position can be varied to suit individual requirements. No pilot light has been fitted, but if one is thought desirable and there is a spare winding on one of the transformers, there is no reason why one should not be provided beside the switches, but refinements of this sort can be left to individual taste. Finally, a carrying handle is fixed at either end of the chassis as shown to facilitate transport.

The filament transformer is located beneath the chassis as it is quite small and is more conveniently situated there. The filament wiring should be of good thick lighting flex. It can be screened from the rest of the wiring by running it through a short length of flexible metalic gas piping and earthing the piping to the aluminum sheet at two or three points. The rest of the wiring can be done with ordinary No. 18 tinned copper insulated with sleeving.

Operation

There is nothing particular to note about operation except to say that when used with a single-button carbon microphone, the no-signal current drawn by the second valve should be in the region of 30-40 mA, kicking up to 50-60 mA with speech. The amplifier has worked very well with an ordinary cheap "home broadcaster" type of microphone and when used to modulate a 25-watt carrier, reports of very good speech quality and full modulation have invariably been obtained and no trouble has ever been experienced with hum. It should be noted that when used with a microphone, the microphone should have its own transformer. It is far better to have the microphone transformer mounted along with the microphone than to incorporate it in the speech amplifier. The latter procedure is a frequent cause of bad speech amplifier hum.

Finally, note that whilst this amplifier will be perfectly all right with an ordinary carbon microphone, it will not work with the more insensitive types, unless a one- or two-stage "head amplifier" is used.

ANOTHER BRITISH 807

The Osram KT8 at the very attractive figure of 22s. 6d., is a further contribution to the excellent range of reasonably-priced amateur transmitting valves now coming from British factories. The KT8 is very similar in performance to the popular and useful American 807 and has the additional advantage of being of improved structural design. We shall be applying this valve to certain of our forthcoming designs, but might remark here that it has a British 5-pin base (top anode), can be operated at an input of nearly 60 watts under efficient Class-C conditions, has an anode-grid capacity of 0.13 mF only, and a 6.3 volt heater. The rated dissipation is 25 watts and the mutual conductance 6.0 mA/V, the permissible plate voltage being 600v.

The Osram Valve Technical Department of The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2, are particularly to be congratulated on issuing very complete data with the KT8, covering its applications for frequency multiplying, class-B and C 'phone and CW operation, including curves and two useful circuits.
More Ideas

Collected by “Tester”

Pre-Selector — Band Switching —
Wall-Mounting Wooden Chassis

We have two pages this month in which to discuss three ideas of general interest—or rather, one standard circuit and two ideas.

The former is shown at Fig. 1 and is a simple but effective design for a regenerative pre-selector which can be used in front of practically any type of receiver; even a battery set if there is mains power for the pre-selector itself. All values are given and the construction is quite straightforward, though it is advisable to build this tuned RF amplifier (which is what a pre-selector would have been called ten years ago) in a separate screened box. This ensures maximum gain from the stage and the minimum of interaction with the receiver itself, while in order to limit direct pick-up on the latter, the connection from the plate of the 6D6—which could also be a Mullard EF8—should be as short as possible and the aerial lead kept away from the parent set.

In many cases, the existing receiver power supply will suffice to run the 6D6, or it can be fed from a 6-volt accumulator, with 150-200 volt DC mains or battery for HT. If using DC mains under these conditions, a 2 mF condenser should be inserted in series with the lead connecting the two chassis together, the negative side of the DC feeder going of course direct to the chassis of the pre-selector. The idea of this is to prevent any shorting due to the DC positive side being earthed, as is the case with some systems.

For the tuning circuit L in Fig. 1, the two-section coils can either be home-made or plug-in forms, or standard four-pin assemblies. Whenever adopted, the coils for L should be selected to cover the same tuning ranges as on the receiver itself, and a three-terminal strip should be used for the aerial/earth connection so that either the doublet type or long-wire aerials can be brought in. The 100 mmF tuning capacity is just about right for the range 1.7-28 Mc—neglecting the possibilities of band-spread, which can be added if desired—and will give reasonable coverage without making the tuning too sharp. If only the HF bands 7-28 Mc are required, the capacity can be reduced to 65 mmF or even less, though there is not actually much point in doing so.

Regeneration or feed-back is controlled by the 50,000 ohm potentiometer, which should be a good noiseless type, rated high, such as the Varley. Operation is quite simple: A signal is tuned in on the main receiver and the pre-selector dial then adjusted till a peaking effect is obtained. The regeneration control is advanced till the pre-selector valve is very near oscillation and the dials then re-touched. The result will be a great increase in signal strength, together with improved selectivity and a high degree of image suppression.

Once the operating point for the pre-selector has been found, it is only a matter of rotating its dial in step with the main receiver for the peaking effect to hold all round the band. It will, however, probably be necessary to re-adjust the regeneration control slightly at either end of the range if it is set for the middle.

The only other point to mention is the cathode tap—this should be ten per cent. of the number of turns up from the earthy end of the grid coil, and will have to be made specially in the case of commercial plug-in types. All resistors should be 1-watt rating, and if the full range 1.7-28 Mc is required, it is wise to use two RF chokes in series at RFC.

**Band-Switching**

One of the most fascinating ideas in transmitter design is that of being able to put the rig on any pre-tuned frequency band by the click of a single switch. In practice, it is difficult completely to achieve this object due to losses with dead-ended windings, finding switches to carry the heavy RF currents circulating in even a 25-watt output stage, and the mechanical and electrical complications involved in tracking inductances selected on a turret coil assembly.

A useful compromise arrangement is suggested by the sketch Fig. 2, which indicates a simple band-switching circuit suitable to small transmitters or exciter units, applicable to both single and double-ended RF stages. A portion of the coil is shorted out—yes, it does involve some loss, but that is not too important in a low-power exciter already giving more than enough drive—and an additional tuning capacity is brought in on the other switch position.

**FIG. 1.**

Regenerative pre-selector circuit, which could in many cases be operated from the existing receiver power supply. The point marked “RX” goes to the aerial terminal of the receiver and the earth line to its chassis. Coil L can be standard four-pin plug-in, to cover the desired ranges.

---

**TWO pages this month in which to discuss three ideas of general interest—or rather, one standard circuit and two ideas.**

The former is shown at Fig. 1 and is a simple but effective design for a regenerative pre-selector which can be used in front of practically any type of receiver; even a battery set if there is mains power for the pre-selector itself. All values are given and the construction is quite straightforward, though it is advisable to build this tuned RF amplifier (which is what a pre-selector would have been called ten years ago) in a separate screened box. This ensures maximum gain from the stage and the minimum of interaction with the receiver itself, while in order to limit direct pick-up on the latter, the connection from the plate of the 6D6—which could also be a Mullard EF8—should be as short as possible and the aerial lead kept away from the parent set.

In many cases, the existing receiver power supply will suffice to run the 6D6, or it can be fed from a 6-volt accumulator, with 150-200 volt DC mains or battery for HT. If using DC mains under these conditions, a 2 mF condenser should be inserted in series with the lead connecting the two chassis together, the negative side of the DC feeder going of course direct to the chassis of the pre-selector. The idea of this is to prevent any shorting due to the DC positive side being earthed, as is the case with some systems.

For the tuning circuit L in Fig. 1, the two-section coils can either be home-made or plug-in forms, or standard four-pin assemblies. Whenever adopted, the coils for L should be selected to cover the same tuning ranges as on the receiver itself, and a three-terminal strip should be used for the aerial/earth connection so that either the doublet type or long-wire aerials can be brought in. The 100 mmF tuning capacity is just about right for the range 1.7-28 Mc—neglecting the possibilities of band-spread, which can be added if desired—and will give reasonable coverage without making the tuning too sharp. If only the HF bands 7-28 Mc are required, the capacity can be reduced to 65 mmF or even less, though there is not actually much point in doing so.

Regeneration or feed-back is controlled by the 50,000 ohm potentiometer, which should be a good noiseless type, rated high, such as the Varley. Operation is quite simple: A signal is tuned in on the main receiver and the pre-selector dial then adjusted till a peaking effect is obtained. The regeneration control is advanced till the pre-selector valve is very near oscillation and the dials then re-touched. The result will be a great increase in signal strength, together with improved selectivity and a high degree of image suppression.

Once the operating point for the pre-selector has been found, it is only a matter of rotating its dial in step with the main receiver for the peaking effect to hold all round the band. It will, however, probably be necessary to re-adjust the regeneration control slightly at either end of the range if it is set for the middle.

The only other point to mention is the cathode tap—this should be ten per cent. of the number of turns up from the earthy end of the grid coil, and will have to be made specially in the case of commercial plug-in types. All resistors should be 1-watt rating, and if the full range 1.7-28 Mc is required, it is wise to use two RF chokes in series at RFC.

**Band-Switching**

One of the most fascinating ideas in transmitter design is that of being able to put the rig on any pre-tuned frequency band by the click of a single switch. In practice, it is difficult completely to achieve this object due to losses with dead-ended windings, finding switches to carry the heavy RF currents circulating in even a 25-watt output stage, and the mechanical and electrical complications involved in tracking inductances selected on a turret coil assembly.

A useful compromise arrangement is suggested by the sketch Fig. 2, which indicates a simple band-switching circuit suitable to small transmitters or exciter units, applicable to both single and double-ended RF stages. A portion of the coil is shorted out—yes, it does involve some loss, but that is not too important in a low-power exciter already giving more than enough drive—and an additional tuning capacity is brought in on the other switch position.
The adjustment and operation is in this sequence: The coil is selected for a range coming somewhere between the two to be covered. The tap is made so that a normal L/C ratio is obtained on the higher frequency band and the circuit tuned in the usual way, with this portion of the winding shorted out. On throwing over the switch, the extra or ballast capacity is brought in which, with the added inductance, makes it possible to tune to the lower frequency, the actual adjustment for this being made on the ballast condenser alone, so as to leave the higher frequency tuning untouched.

In effect, therefore, on the higher frequency band there is one condenser and a portion of coil, and on the lower the whole of the coil plus extra capacity. A single switch movement can be available on 7, 14 and 28 Mc equally.

On throwing over the switch, the circuit having previously been tuned to the higher frequency with one condenser only. By ganging the switches and extending the number of taps, three or four bands can be controlled through several stages and selected by a single switch movement.

For the lower frequency, the ballast condenser is brought in, the circuits having previously been tuned to the higher frequency with one condenser only. By ganging the switches and extending the number of taps, three or four bands can be controlled through several stages and selected by a single switch movement.

As can be gathered from these brief remarks, there is a great deal of scope for ingenuity and originality in devising multi-way band-switch systems bringing in not only multiples of the original drive frequency but also other crystals in the same range of frequencies, thus aiming at band-switch, frequency-change, and signal-shifting with ECO drive.

No Room for Gear?

Well, hang it on the wall! The photograph here suggests what may be an idea to many people. The caption tells practically the whole story, and it only remains to give some leading details as to dimensions. In our case, the backboard is 40 ins. long by 13½ ins. wide (happening to be the finished width of the American whitewood used) and the shelves are spaced with 8 ins. clean between them. The Venesta plywood blocks are just under 12 ins. square, so that a runnel is left on each side for carrying leads between the units of the transmitter. From the bottom up, the shelves are for bias batteries, power pack, modulator, CO-PA transmitter and aerial tuning network, all quite neat, compact and easy to get at. The various units can be individually built or taken off for alteration or adjustment—merely by removing the appropriate pair of brackets, the interconnection being by plug-and-socket.

And if you want to be specially smart, give the whole thing a coat of grey paint and make a hinged cover for it, using "Windowlite" (see p. 19, April, 1938), but don't forget the ventilating holes.

F. A. Beane's short-wave BC feature is held over for this month.
The Month's Club News

By S. W. CLARK, 2AMW (Assistant Editor)

We are always pleased to see new names in our ever-growing roll of monthly reports, whether they are newly-formed clubs, old ones with a new name, or well-established societies writing us for the first time. So to the following four Clubs we say

• Welcome!

As usual, we try to be impartial by arranging reports in alphabetical order, therefore the ALDERSHOT and District Radio Society's notes, nicely typed by their honorary secretary, tell of its inaugural meeting a few weeks ago when it was decided to divide the scattered districts covered into two areas: Farnham, and Aldershot with Farnborough. There is a monthly meeting when both sections gather, but weekly area meetings are also held. Morse tuition is a strong point and in the A. with F, area ex-VU2ED has charge. A few days ago the first Field Day was planned and we hope success was with them, for the optimism expressed deserved much for G6XMP's 6L6-807 14 Mc portable. Already Aldershot pass a tip for others; a scheme, by which members (including two ladies) make lists of gear needed or for disposal, these being made public at the combined meeting. Any sale effected benefits the Society by ten per cent., of the proceeds. Visits and all the other usual facilities are available.

Throughout the summer, we shall be very glad to have photographs of field stations for publication in these pages.

NORTH BRADFORD now has a Short-Wave and Television Society and already they are going strong with regular Friday meetings at 13, Rushton Villas, Thornbury from 7.45 to 10.45.

We have a note from the BRISTOL Experimental Radio Club extending a very warm welcome to visitors. The headquarters are at Kings Corridor, Old Market Street, Bristol, 1, and we are sure that this newly-formed club has come to stay, partly because Bristol needs one and secondly we imagine the business-like publicity efforts portend serious endeavour. Good luck, Bristol.

EAST GRINSTEAD sounds somewhat familiar in these columns and we had wondered what had become of those hardy lads who used to build club rooms and make their own power plant. Apparently the sequel is a new body bearing the title Aether Patrol Club, with our old friend E. G. Cooper acting as secretary. Friday night is patrol night, and with two AAs and more following it is hoped that the society will be useful even outside its own immediate sphere by supplying listening data on any 3.5 or 1.7 Mc. transmissions, application to be made to the secretary; if his enthusiasm goes for anything our encouragement is not needed!

• In the Open

Field days take prominence in the next reports, and we have chosen the following five as being most concerned, though many other clubs have such events in mind.

ASHTON and District are looking forward to July 9, when their 56 Mc event takes place. On the 25th of this month there is to be a try-out at Hartshead Pike, 900-ft. above sea level, using G3BY's new portable permit. The gear is 6J5 CO-6V6 FD, 35212 kc, and the aerial (two half-waves in phase) will be tried in various directions from 10 a.m. onwards. Co-operation is looked for and we are sure that both listening and transmitting readers will be on the watch. Book the date!

Well in advance are DEPTFORD Men's Institute SW Club plans for two field days—June 25 and July 9; Westerham; 'phone and CW on 7187 and 7156 kc; call G2UX. It is hoped that contacts made on the first date will be renewed on the second occasion, so that useful aerial data may be sifted. Please send all reports to G2UX, and if you devotees of Sunday QRM will remember the call and give a hand Deptford will thank you. Two interesting meetings are noted; the first being a C-R demonstration by a member, and then H. T. Scott (2COT) of Bulgin lectured yesterday.

Although we have no late news from the HODDESDON Society the weather on May 21 was all set for their 1.7 Mc outing, when it was intended to test some special gear, including two 30-ft. portable masts. This must have been something of a feat, but as similar tests are to take place throughout the year we imagine they will soon be pretty good at pole-raising. The 56 Mc band is also being tion by a member, and then H. T. Stott (2COT) of and 2DXO is soon to join him.

June 3-4 seems to have been the week-end for most outside activity, and during the fine Whitsun spell G5XB of the MAIDSTONE Society got in some early testing for the direction-finding contest to take place locally on June 18; he is busy now helping members with their 160-metre DP receiver problems. There is a prize for the first home and nearby readers are invited to help, first making application to the secretary. The club's 8-valve communication receiver is on test and it should ere now have found a permanent place in headquarters.

Titsey was chosen as the hunting ground of the THORNTON HEATH Society, also on June 4, when two portable stations (G2DP at Sanderstead and G2RD, Titsey) tried some field work. If any readers heard either station a report to the secretary would be appreciated and of course acknowledged. G44A is augmenting the weekly Morse lessons by slow 7 Mc Sunday transmissions.

During the same June week-end WEST HERTS might have been heard on 7 Mc from Northchurch Common. The local Boy Scouts were to be drawn into this, for the society endeavoured to persuade them to loan a tent and in return for the service we suppose the Scouts were allowed to pitch it for them! It seems that G6VS has been hiding in this district for six months.

• North and West

In April we mentioned an effort to form a Durham Club and now record that 25 enthusiasts came forward and finally decided that due to localisation the club should be known as the COXHOE and District Amateur Radio Society. The constitution has been
approved and it is hoped that permanent Hq. will soon be available; in the meantime the Cornforth Lane Council School is being used. Still more members are required, and among those enrolled are 2DTA, 2FWX and ex-SUl3FS.

A well-attended first annual general meeting of the DONCASTER Society was held recently, when Dr. Lawton, Principal of the Doncaster Technical College, was elected president. An exhibition of amateur-made gear was on view, which included an oscilloscope by 2BCQ, 2FTO's two-stage transmitter and the 36 Mc rig of G3NJ. On May 4, a spare night, G4DF told of his experiences as a flying-boat operator in the Far East (Singapore-Australia-Calcutta routes). The next Thursday, assisted by 2CRK, the same speaker lectured on accumulators. The May 27 meeting heard 2CLK talk on transformer construction.

A lecture and demonstration of ECO and a signal shifter was given by KILMARNOCK'S May event and GM3NK of Glasgow made the evening both instructive and enjoyable. The Society's president, GM3PB, has commenced a series of A to Z Amateur Radio lectures, which are presented every Thursday evening.

SHEFFIELD SW Club have some new members and the RF users - 2BLT and G4JW; five others are awaited and we have heard it whispered that their secretary is a little perturbed to hear that G4KB radiates on 80 Mc; and we have heard it whispered that their secretary is a little perturbed to hear that G4KB radiates on 80 Mc.

The next Thursday, assisted by 2CRK, the same speaker lectured on accumulators. The May 27 meeting heard 2CLK talk on transformer construction.

A lecture and demonstration of ECO and a signal shifter was given by KILMARNOCK'S May event and GM3NK of Glasgow made the evening both instructive and enjoyable. The Society's president, GM3PB, has commenced a series of A to Z Amateur Radio lectures, which are presented every Thursday evening.

The theory of tuned circuits and the various factors which govern efficiency were first dealt with; then the effect of connecting a valve to a circuit and how, as the signal frequency increases, the damping caused by the following stage increases. It was mentioned that valves have now been evolved which reduce this damping to a large extent. Different oscillator circuits were also covered and finally, personal experiences with the superhet, which included some unusual occurrences.

Three EDGWARE Short-Wave Society members have now obtained permits, making a total of 18 fully licensed members. P. A. Thorogood, chairman, has obtained G4KD; F. Bell, secretary, is now G4JU; M. Pugh, G4JD. Several others are applying for full calls. The debate between G2AI and G2IM on May 10, "Phone versus CW," ended in a draw after an exciting start. It was agreed, however, that CW should be separated from phone.

Future meetings are for 5-metre field-day arrangements, and a lecture by Dr. Smith on Telcon cables.

Fortnightly meetings are held by the NEWBURY Short-Wave Club at their rented shack, where members may enter at any time for individual work. The subscription is only 6d. per week, with "special concessions" to school members. How do you do it, Newbury?

DX Competitions are a regular weekly feature at PECKHAM Short-Wave Club; E. Dilnot is in charge of them, and to assist judging he has invested in an RME70. The club transmitter is nearing completion and in the meantime members take along their own gear for collective ideas; 2FKZ's very complete apparatus has been inspected, and is used mainly for recording. G3ZF, after much experiment on an enclosed site, gave the results of his aerial experiences, but is not yet quite satisfied with his present two half-waves in phase for 14 Mc.

He also gave a demonstration with a 25-watt modulator, using members' favourite records for the purpose of a quality test.

Recent activities of the ENFIELD Radio Society included a lecture by Dr. Reynolds on "Reliability in Radio Receivers," and a junk sale when about 12 members went away laden with "snips." Visits are being arranged to the Science Museum Radio Section and to a local cinema to inspect audio gear.

GRAVESEND and District Amateur Radio Society held a field day on June 3 to 4 at Shorne Mill, Kent. Several AAs are progressing with Morse practice, held on Monday evenings at the club Hq.

MEDWAY Amateur Transmitters' Society held a hamfest on May 10, when the following clubs were represented: Maidstone, Tonbridge with Tunbridge
Further information regarding any of these societies may be had from the officials concerned, whose addresses appear below.

ASHTON-UNDER-LYNE—K. Gooding, G3PM, 7, Broadway Avenue, Ashton-under-Lyne.
BRADFORD (NORTH)—R. H. Forward, G4AV, 8, Willow Road, Farsley, Leeds.
BRISTOL—D. James, 40, Robertson Road, Bristol, 6.
COXHOE—D. F. Chait, 21, North View, Selsdon Hill; or R. Bowes, 2DTA, 10, Blackgate, Coxhoe.
DEPFOG—G. Edwards, G2UX, 14a, Louisville Road, Upper Tooting, S.W.7.
DOLLY HILL—E. Eldridge, 79 Oxgate Gardens, N.W.2.
DONCASTER—A. Dickinson, G4DP, 111, Spothoro Road, Doncaster.
EASTKILBRIDE—G. R. Dowsett, 48 Grove Road, Eastbourne, Sussex.
EDGWARE—F. Bell, G4JU, 118, Colin Crescent, Edgware, Middlesex.
ENFIELD—N. E. Hyde, 2DVJ, 39, Shaw Road, Enfield.
GRAVESEND—R. S. Martin, G2IZ, 41 Mayfield Road, Gravesend.
HODDESCON—T. Knight, Junr., 8FUU, Caxton House, High Street, Hoddesdon.
KINGSEY—K. Mitchell, 2FSD, 16, Bonnyton Road, Kilmarnock.
MAIDSTONE—P. M. S. Hedeland, 2DBA, "Hill View," Southwood Road, Maidstone, Kent.
NEWBURY—L. Harden, 44, Chandos Road, Newbury.
PECKHAM—L. J. Orange, 11 Grenards Road, Peckham, S.E.13.
ROMFORD—R. Beards, 8FT, 3, Geneva Gardens, Chadwell Heath. 'Phone Seven Kings 3390.
SHEFFIELD—D. H. Tomlin, 32 Moorsyde Avenue, Walkley, Sheffield, 10.
SLOUGH—K. A. S. Sly, 16, Ruckland Avenue, Slough.
SOUTHPORT—R. W. Rogers, G6GVR, 21, Chester Avenue, Southport.
SUDBURY—S. A. Morley, 22, Old Farleigh Road, Selsdon, Surrey.
THORNTON HEATH—R. E. Dabbs, G2RD, 4, Nutfield Road, Thornton Heath.
TONYREFAIL—E. Powell, G3WQJ, 44, Pritchard Street, Tonyrefail, Glam.
TUNFELL PArk—J. G. Wright, 78, Glimsuir Road, Highgate, N.19.
WEST HERTS—A. W. Birt, G3NR, 6, Hempstead Road, Kings Langley, Herts.
WILLESDEN—G. H. Talbot, 2FTD, 46, Snarebrook Drive, Stanmore. Edgware 3740.
WICKRAL—J. R. Williamson, 13, Harrow Gro., Bromborough.

Piracy

G4BC, G. H. Woolmer, 35 New Road, Wood Green, London, is receiving cards addressed "GM4ABC," "GW4ABC" and "G4BC," evidently prompted by pirate stations using these calls. G4AO, E. G King, 111, Frinton Drive, Stanmore, Middlesex, is also suffering in the same way, as is G4GD, Nigel G. Anslow, 35 Gilpin Avenue, East Sheen, London, S.W.14, who says that any 7 Mc station using this call is a pirate.

E17P, J. G. White, now at LMS School of Transport, Derby, is hearing a station on 7 Mc signing his call; he is QRT till the beginning of August, but asks to be put in touch with licensed transmitters in Derby.

A further list of new two-letter G calls which we are glad to publish month by month, with the QRA's of any overseas readers.

G4KB—A. Baker, 31, Moorsyde Avenue, Sheffield, 10.
G4JU—F. Bell, 118, Colin Crescent, Edgware, Middlesex.
G4DR—A. Dickinson, 111, Spotboro Road, Doncaster.
G4K—R. T. O'Neall, 37, Arnold Street, Rugby, Warwick.
G4FW—J. R. Petty, 79, Glebe Road, Sheffield, 10.
G4HC—H. V. Watling, 15, Lucas Road, Colchester.
A NEW BRITISH VALVE

...Designed for British Amateurs

OSRAM KT8 BEAM TETRODE

Aligned grids produce directed electron beams resulting in very low screen current and high overall efficiency as:

OSCILLATOR, AMPLIFIER OR DOUBLER FOR FREQUENCIES UP TO 60 Mc/s

Anode Input 57 watts (max.)
Anode Dissipation 25 watts (max.)
Grid driving power 0.5 to 1.5 watts (according to frequency)
Indirectly Heated | 6.3 v.
Cathode | 1.27A
Anode connected to top cap.

22'6 LIST PRICE

Write for leaflet giving full technical and operating data to The Osram Valve Dept. of The GENERAL ELECTRIC CO. Ltd., Magnet House, Kingsway, London, W.C.2.
No wonder these wonderful headphones were chosen for use with the "S.-W. Improved Straight Four"!

Only the very best components will "do" in the modern SW set. To get the very utmost from your "Improved Straight 4," follow the example of "The Short-Wave Magazine" experts and hook up a pair of Ericsson Supersensitive Telephones to your output.

Wonderfully sensitive, comfortable in wear and very pure in tone, Ericsson Supersensitive Headphones have come to be regarded as standard for the keen short-wave enthusiast's equipment.

ERICSSON TELEPHONES LTD.
22, Lincoln's Inn Fields, W.C.2.
Tel: H0Lborn 6936

★ At all good radio dealers.
If you have any difficulty in procuring, write direct
THE NEW 70 RANGE

TAYLOR METER
FOR INEXPENSIVE ACCURACY

BRITISH MADE

FULLY GUARANTEED

EACH INSTRUMENT HAND CALIBRATED

This precision built Universal Meter with its sturdy 4½" Moving Coil movement covers D.C. volts 0.002 - 2,000; A.C. Output volts 0.2 - 2,000; D.C. Current 10μA - 20 Amps; A.C. Current 10 μ A - 5 Amps. Resistance 0.1 Ohms - 5 megohms. Output -18 to +60 DB. Although unusually low in price it is extremely reliable, sensitive and accurate.

10 Gns.
Low Deposit. Easy Terms Available.

Fill in and post this coupon now.
To TAYLOR ELECTRICAL INSTRUMENTS LTD.,
45, Foubert's Place, Regent St., London, W.I.
Please send me full details of the TAYLOR-METER.
NAME.................................................. ADDRESS..................................................

NEW RECEIVERS

We list below a selection of receivers, both new and second-hand, together with details of some new components. It is, of course, impossible to mention all of our range in this space, but we shall be happy to forward you a free catalogue of our equipment giving technical data on all types of receivers with particulars of Approval facilities and Easy-payment arrangements.

Our New Stock of Receivers includes,
The HALLICRAFTERS SKY RIDER SX-23, the latest and finest of the famous Skyrider series, complete with crystal Special Hallicrafters Speaker to match SX-23 £33 10 0
The HALLICRAFTERS SKY CHAMPION, still the favourite in the medium price range, complete with crystal £4 0 0
PHILIPS Model 382A. Built primarily for export, we consider this the finest table model available for Allwave reception for those not requiring all the refinements of the Communication type receiver. 5-550 metres. £21 0 0
RME 70 receiver complete with crystal and noise suppressor with speaker £36 15 0
NATIONAL NC-44, 10-550 meters, with speaker £16 10 0

NEW COMPONENTS,
"S" Meters for Sky Champion and Challenger Receivers £2 15 0
Edison Crystals, type "T-9" 7 Mc, all frequencies 10 6
All "NK Products" including table racks and panels.
TUBES. We are now stocking all types of HYTRON transmitting tubes and can confidently recommend them. HY-23 15/6, HY-40 24/6, HY-60 33/6, HY-61 26/6, HY-61A and 51B 42/6, HY-57 30/6, HY-615 18/6.

RE-CONDITIONED BARGAINS.
RME 69, perfect condition, re-aligned £20 0 0
Sky Buddy Type S-19, 16-550 metres, new £7 10 0
National NC-101X, amateur band special £26 10 0
For full details of these and all other receivers and components write co-

A.C.S.RADIO TECHNICAL G2NK
16 GRAYS INN ROAD, LONDON, W.C.1
Telephone: HOLBORN 5894-5

SHORT WAVE Type 'E' CONDENSER

C603 Suitable for transmitters over 14-56 Mc range with up to 1500-v. D.C. plate voltage. D.C. peak flashover voltage 4000-v. Available in capacity variations from 3.2 mmf up to 28.4 mmf with minimums from 4.5 to 6 mmf.
Vanes of hard brass soldered into position, and mounted on ceramic base. Panel or baseboard mounting. Two-gang suitable for parallel, series-gap or split stator.

PRICES: 2-gang 10/6 Single 5/-

Write to-day for free fully illustrated catalogue of Polar and N.S.F. Components.

WINGROVE & ROGERS LTD.
12, DARTMOUTH STREET,
LONDON - - - S.W.1
POLAR WORKS - OLD SWAN - LIVERPOOL

MALT SHORT-WAVE CONDENSERS

SHORT WAVE Type 'E' CONDENSER

C602 Similar to above but suitable for low power transmitters with up to 350-v. D.C. plate voltage over frequency range 1.7 to 14 Mc. D.C. peak flashover voltage 1500-v. Available in capacity variations from 36 mmf. up to 162 mmf., the minimum ranging from 4.5 to 6 mmf.

PRICES: 2-gang, 10/6 Single, 5/-

POLAR WORKS - OLD SWAN - LIVERPOOL

16 GRAYS INN ROAD, LONDON, W.C.1
Preserve Your Copies
The Short-Wave Magazine

SELF-BINDING CASE will take 12 copies, and make a fine volume, fit for any book-shelf.
- Copies inserted or removed in a few seconds.
- No bookbinders' charges.
- Every page opens flat.
- No need to send your books away.

PRICE 3s. 6d. EACH
(Postage—6d. extra)

Send to:
SHORT-WAVE MAGAZINE,
84/86 Tabernacle Street, E.C.2.

BRITISH AND AMERICAN MAINS TRANSFORMERS with filament windings 4v and 4v, 6.3v and 5v, or 2.5v and 5v.
350v-0-350v, 9/-; 275v-0-275v, 6/11
Fully guaranteed, tested to 2000 volts A/C with insulation resistance of not less than 200 megs.

MICROPHONES. Insets, as used in latest P.O. mikes and Home Broadcasters, 2/-.
Button type P.O. Mikes with Transformer, 3/6.
Transverse current type in bakelite case, 3/6.

Money back guarantee, prompt personal attention
Complete Catalogue free on request.

GW8WU, 32, CITY ROAD, CARDIFF
Eddystone and Hamrad Agent

DENCO

ADDITIONS TO THE RANGE OF ULTRA LOW LOSS COMPONENTS USING POLYSTYRENE (TROLITUL) INSULATION

TX COILS. 1.5 to 60 Mc now available with fixed or variable links. (Variable link either centre rotating or hinged on coil base and travelling in centre of split tank colt.) Further details and prices on request.

A NEW RANGE of low power coils suitable for co. doubler or QRP final stages 11" diam. 20 SWG enamelled wire, minimum of insulation yet rigid. Plug-in base. 14 Mc 2/9, 7 Mc 3/-, 3.5 Mc 4/-, 1.7 Mc 5/-.

COMING SHORTLY. Denco specialised short-wave superhet receivers. From 12 gns.

DENCO, 234 Burrs Road, Clacton — (770)

You hear more with “BROWN’S” HEADPHONES because of their excellence of design and construction. Each type gives exceptional value for money.

The following Stockists are ready to serve you:
Day & Elliott, 50, All Saint's Road, Peterborough.
Holiliday & Hennedinger Ltd., 74-78, Hardman St., Deansgate, Manchester, 3.

QUARTZ CRYSTAL Co. Ltd., Kingston Rd., New Malden, Surrey.
Radiomart (GSNJ), 44, Holloway Head, B'ham.
N. E. Read, 24, Church St., Oswestry, Shropshire.
Short-Wave Radio Ltd., 97, Park Lane, Leeds 1.
Webb's Radio, 14, Soho St., Oxford St., London, W.1., and 41 Carrs Lane, B'ham.

 call and inspect, or write any of the above suppliers for illustrated leaflet, “S.W.M.”

S. G. BROWN, LTD.
VICTORIA ROAD, NORTH ACTON, W.3
Telephone: ACoRi 1174

DAY & ELLIOTT
50 ALL SAINTS’ RD., PETERBOROUGH
FINE
Trophy Preselector £6 15 0.
QUALITY
7-550 m. Self-powered (AC).
SHORT
2 stages low-noise EF8's. Really worthwhile. FB job.
WAVE
GEAR
SEND FOR LIST, 2d.
WAVE
The famous Brown headsets.
QUALITY
“A” 50/-, “D” 35/–, “F” 20/–.
FINE
Finest phones in the world.

RESISTORS 1 and 3 watt; BULGIN 20 watt. Ceramic octals.

Q.C.G. Type S5 FREQUENCY Control UNITS
Ground to within 5kc. of your specified frequency in the 7Mc amateur band, and supplied complete with official calibration certificate to an accuracy of 0.025 per cent.

Send 1/-st. stamp for our full list of all types of quartz crystals and radio transmission components.

PRICES:
S$ Unit (as illus) 20/–
S$ Crystal without holder 15/–
Baseboard Moun ‘for for the type S$ unit 1/3
THE QUARTZ CRYSTAL CO. LTD., KINGSTON ROAD, NEW MALDEN, SURREY.

38
CLASSIFIED ADVERTISEMENTS

RECEIVERS, TRANSMITTERS AND COMPONENTS
TRANSMITTING RACKS AND CHASSIS complete with panels in any metal and finish to your own requirements. Keenest prices and prompt service.—THE UNIVERSAL PRODUCTS, Rigby Lane, Bromsgrove, Warks.


TEN WATT TRANSMITTERS, rack and panel built, complete, ready for the air, 15/- — Write for component lists. Cheap Tubes, Octals 3/- each. Prices of big rigs on application. "Hamrad Agent." G4J, 41, Willoughby Road, Boston, Lincs. Phone : 23527.

EVERYTHING FOR THE HAM at bargain prices: Transmitters, Modulators, Receivers, Meters, Valves, Mikes, etc. Send for lists.—11, Hill Crescent, Bexley, Kent.

RAYMOND C. FISHLOCK, A.M.I.R.E., G3DI.—Radio Service Specialists, Public Address Contractors. English and American Makers. Advertisements must be prepaid. Write name of advertisement on reverse. Two lines 4d. per line, minimum 3s. per word. All advertisements must be made payable to "The Short-Wave Magazine, Ltd."

QSL CARDS, PRINT, ETC.
QSL's FROM 4s. 6d. 250. Samples Free. Satisfaction guaranteed.—ATKINSON BROS., Printers, ELLAND.


Tuition.
MORSE CODE EASILY LEARNED in spare time by gramophone records. All speeds. Also correspondence courses. Particularly stamp.—MASTERS, Orchard House, Wokingham.

BOOKS, CATALOGUES, ETC.
ALL WIRELESS AND RADIO ENGINEERING books available on new terms as low as 2/6 monthly. Write a card for details from PHOENIX, Chandos Place, W.C.2.

NK PRODUCTS. introduce a new type of rack construction. Built of steel angle, all welded joints and finished to any colour required, drilled or undrilled. Messrs. A.C.S, RADIO have at their showrooms at 16 Grays Inn Road, W.C.1., the following types:—

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>113-16</td>
<td>12/6</td>
</tr>
<tr>
<td>311-18</td>
<td>15/6</td>
</tr>
</tbody>
</table>

Send for New 1939 List of SWR Specialities. Just issued. EVERYTHING FOR THE TRANSMITTER and books on every other subject, new or secondhand. Catalogues free. JOIN THE SCIENTIFIC BOOK CLUB FOYLES FOR RADIO BOOKS and books on every other subject, new or secondhand. Catalogues free. Telephone : Gerrard 6660 (16 lines)

Send for New 1939 List of SWR Specialities. Just issued. EVERYTHING FOR THE TRANSMITTER and books on every other subject, new or secondhand. Catalogues free. JOIN THE SCIENTIFIC BOOK CLUB FOYLES FOR RADIO BOOKS and books on every other subject, new or secondhand. Catalogues free. Telephone : Gerrard 6660 (16 lines)

VARIABLE DIRECTIONAL AERIALS, 360° rotating arm chair control. 15d. stamp for details.—A. W. MANN, 62, Costa Street, Middlesbrough.

Make certain that your QSL and SWL Cards are correctly mailed.

The RADIO AMATEUR CALL BOOK is essential to "hams" and co-owners of all-wave sets. It is the only radio callbook published that lists all radio amateur stations throughout the entire world. Also contains a World Map showing international radio prefixes, High frequency press, time and weather schedules, etc., the "Q" and "RST" codes.

Send for FREE "Book of Facts" Tel. 24689

Dits and Dahs!!

The language of the air that all "Hams" should know. CANDLER CODE COURSES not only teach you the right way to send, but the right way to read code sounds just as easily as you read print by sight. Courses for Beginners and Radio Operators. Terms: Cash or Monthly. Send for FREE "Book of Facts" CANDLER SYSTEM CO., (S.S.C), 121 KINGSWAY, W.C.2
OSCILLOSCOPE RCO 3in. tube with separate time base and amp. in black cradle cabinet to match, £8—Elmer, 30 Purley Green, Pinner, S.W.6.

FOR SALE : Eddystone ''Ham Band Two'', perfect, comp. with valves. What offers or consider exch.—2APC, 27 Blackwell Av., Walker, Newcastle-on-Tyne, 6.

ROLA 8-in. MC speaker (3000 ohms), £6. 9d. Sound Speaker var. sel. iron conc. TFT (465 kc), £6.—2FDP, 119 Foresters Drive, Wallington, Surrey.

RK30 valve wanted, £5 ordered. For re-sale 3 unused new ESW20s, same as T30s, £5. Ferranti ''FP'' 9-0, 9-150, 16s. ca.—G. R. 1st Dunelm sh., Sunderland.

EDDYSTONE ''All World Two'' as new, with 5 coils (9-170m) and coil box. £5.3. Huggett, Gas Works, Brightlingsea, Essex.

EXCH. Aug. '38 to May '39 ''SWAP'' for $1—2FDP, 72 Main Street, Bingley, Yorks.

SALE : New Linsen Páspread Three, complete ready assembled with specified valves. Offers to 2FDP, 37 Trumpet Road, Cleator, Cumberland.

350-0-350 trans., £5. & other gear : 2APC, 77 3rd Clifton, & 50 Road, Cleator, Cumberland.

EXCH. large powerful telescope, £25 or offers.—2DXY, Chantry, Churchdown, Glos.

WANTED : Cheap Morse key for QRP 12mA out; 6v or more; Rotary 6/12v, 250/500v, 300v Power Pack, £1; 83, 80, 43, 41, 45, 6/39, 13-150m), SWRX parts, Telsen microdenser, &c.—G2KC.

SALE : Ferranti 'Buddy', Vidor AW and SW 0-v-1, mains. SAE—D. C., 32 Addison Road, Wal-thamstow, E.17.


FOR SALE : Eddystone ''Ham Band Two'', perfect, comp. with valves. What offers or consider exch.—2APC, 27 Blackwell Av., Walker, Newcastle-on-Tyne, 6.

FOR SALE : Eddystone ''Ham Band Two'', perfect, comp. with valves. What offers or consider exch.—2APC, 27 Blackwell Av., Walker, Newcastle-on-Tyne, 6.

FOR SALE : Eddystone ''Ham Band Two'', perfect, comp. with valves. What offers or consider exch.—2APC, 27 Blackwell Av., Walker, Newcastle-on-Tyne, 6.

FOR SALE : Eddystone ''Ham Band Two'', perfect, comp. with valves. What offers or consider exch.—2APC, 27 Blackwell Av., Walker, Newcastle-on-Tyne, 6.

WANTED : Cheap Morse key for QRP 12mA out; 6v or more; Rotary 6/12v, 250/500v, 300v Power Pack, £1; 83, 80, 43, 41, 45, 6/39, 13-150m), SWRX parts, Telsen microdenser, &c.—G2KC.
# Authenticated List of International Prefixes — By Countries

(A List with the prefixes arranged alphabetically will appear in a subsequent issue)

<table>
<thead>
<tr>
<th>Country Name</th>
<th>Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFGHANISTAN</td>
<td>YA</td>
</tr>
<tr>
<td>ALASKA</td>
<td>K7</td>
</tr>
<tr>
<td>ALBANIA</td>
<td>ZA</td>
</tr>
<tr>
<td>ALGERIA</td>
<td>FA</td>
</tr>
<tr>
<td>ANDORRA</td>
<td>EX</td>
</tr>
<tr>
<td>ANGOLA</td>
<td>B8</td>
</tr>
<tr>
<td>ARGENTINA</td>
<td>LU</td>
</tr>
<tr>
<td>ASCENSION I.</td>
<td>ZD8</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>VK</td>
</tr>
<tr>
<td>AZORES</td>
<td>CT2</td>
</tr>
<tr>
<td>BAHAMAS</td>
<td>VP1</td>
</tr>
<tr>
<td>BAHREIN</td>
<td>VU5</td>
</tr>
<tr>
<td>BAKER I.</td>
<td>XF8</td>
</tr>
<tr>
<td>BALEARIC IS.</td>
<td>EA6</td>
</tr>
<tr>
<td>BARBADOS</td>
<td>VP6</td>
</tr>
<tr>
<td>BECHUANALAND</td>
<td>ZN</td>
</tr>
<tr>
<td>BELGIUM</td>
<td>B5</td>
</tr>
<tr>
<td>BELGIUM CONGO</td>
<td>ON</td>
</tr>
<tr>
<td>BERKUMA IS.</td>
<td>VP9</td>
</tr>
<tr>
<td>BOLIVIA</td>
<td>CP</td>
</tr>
<tr>
<td>BORNEO, DUTCH</td>
<td>PK3</td>
</tr>
<tr>
<td>BRAZIL</td>
<td>FY</td>
</tr>
<tr>
<td>BR. HONDURAS</td>
<td>VP1</td>
</tr>
<tr>
<td>BR. N. BORNEO</td>
<td>VS4</td>
</tr>
<tr>
<td>BULGARIA</td>
<td>LZ</td>
</tr>
<tr>
<td>BURMA</td>
<td>XZ</td>
</tr>
<tr>
<td>CAMEROONS (BR. MAN.)</td>
<td>ZD9</td>
</tr>
<tr>
<td>CAMEROONS, FR.</td>
<td>FB5</td>
</tr>
<tr>
<td>CANADA</td>
<td>VE</td>
</tr>
<tr>
<td>CANAL ZONE</td>
<td>KS/NY</td>
</tr>
<tr>
<td>CANARY IS.</td>
<td>EA8</td>
</tr>
<tr>
<td>CAPE VERDE IS.</td>
<td>CR4</td>
</tr>
<tr>
<td>CAYMAN IS.</td>
<td>PS5</td>
</tr>
<tr>
<td>CEYLAN</td>
<td>VP8</td>
</tr>
<tr>
<td>CELEBES &amp; MOLUCCA I.</td>
<td>PK8</td>
</tr>
<tr>
<td>CHAGOS IS.</td>
<td>VQ8</td>
</tr>
<tr>
<td>CHILE</td>
<td>FG</td>
</tr>
<tr>
<td>CHILE</td>
<td>CE</td>
</tr>
<tr>
<td>CHINA</td>
<td>XU</td>
</tr>
<tr>
<td>CHOSEN (KOREA)</td>
<td>J8</td>
</tr>
<tr>
<td>CHRISTMAS I.</td>
<td>ZC3</td>
</tr>
<tr>
<td>CLIPPERTON I.</td>
<td>FC</td>
</tr>
<tr>
<td>COCOS IS.</td>
<td>T1</td>
</tr>
<tr>
<td>COCOS KEELING GROUP</td>
<td>VSI</td>
</tr>
<tr>
<td>COLOMBIA</td>
<td>HJ/HK</td>
</tr>
<tr>
<td>COOK IS.</td>
<td>V8</td>
</tr>
<tr>
<td>CORSICA</td>
<td>F</td>
</tr>
<tr>
<td>COSTA RICA</td>
<td>T1</td>
</tr>
<tr>
<td>CRETE</td>
<td>V5</td>
</tr>
<tr>
<td>CUBA</td>
<td>CM-CH</td>
</tr>
<tr>
<td>CYPRUS</td>
<td>ZC4</td>
</tr>
<tr>
<td>CZECHOSLOVAKIA</td>
<td>OK</td>
</tr>
<tr>
<td>DANTZIG</td>
<td>YM</td>
</tr>
<tr>
<td>DENMARK</td>
<td>OZ</td>
</tr>
<tr>
<td>DOMINICAN REP</td>
<td>HI</td>
</tr>
<tr>
<td>DUTCH WEST INDIES</td>
<td>PI</td>
</tr>
<tr>
<td>ECUADOR</td>
<td>HC</td>
</tr>
<tr>
<td>EGYPT</td>
<td>SS</td>
</tr>
<tr>
<td>EIRE</td>
<td>EI</td>
</tr>
<tr>
<td>ENGLAND</td>
<td>G</td>
</tr>
<tr>
<td>ESTONIA</td>
<td>ES</td>
</tr>
<tr>
<td>ETIOPIA</td>
<td>ET1</td>
</tr>
<tr>
<td>FAEROES</td>
<td>OY</td>
</tr>
<tr>
<td>CHRISTMAS I.</td>
<td>VP8</td>
</tr>
<tr>
<td>FANNING IS.</td>
<td>VR3</td>
</tr>
<tr>
<td>FEDERATED MALAY STATES</td>
<td>VS2</td>
</tr>
<tr>
<td>FIJI IS.</td>
<td>V82</td>
</tr>
<tr>
<td>FINLAND</td>
<td>OH</td>
</tr>
<tr>
<td>FRANCE</td>
<td>F</td>
</tr>
<tr>
<td>FRANZ JOSEPH LAND</td>
<td>UX1</td>
</tr>
<tr>
<td>FR. EQUATORIAL AFRICA</td>
<td>FG8</td>
</tr>
<tr>
<td>FR. INDO-CHINA</td>
<td>F13</td>
</tr>
<tr>
<td>FR. INDIA</td>
<td>V</td>
</tr>
<tr>
<td>FR. OCEANIA</td>
<td>FO</td>
</tr>
<tr>
<td>FR. W. AFRICA</td>
<td>F88</td>
</tr>
<tr>
<td>GAMBIA</td>
<td>D</td>
</tr>
<tr>
<td>GERMANY</td>
<td>D</td>
</tr>
<tr>
<td>GIBRALTAR</td>
<td>ZG</td>
</tr>
<tr>
<td>GILBERT &amp; ELLICE IS.</td>
<td>VR1</td>
</tr>
<tr>
<td>GOA (PORT INDIA)</td>
<td>CR8</td>
</tr>
<tr>
<td>GOLD COAST &amp; BR. TOGOLAND</td>
<td>ZD4</td>
</tr>
<tr>
<td>GREECE</td>
<td>SV</td>
</tr>
<tr>
<td>GREENLAND</td>
<td>OX</td>
</tr>
<tr>
<td>GUADALOUPE</td>
<td>FGS</td>
</tr>
<tr>
<td>GUAM</td>
<td>KB6</td>
</tr>
<tr>
<td>GUATEMALA</td>
<td>TG</td>
</tr>
<tr>
<td>GUIANA, BR.</td>
<td>VP8</td>
</tr>
<tr>
<td>GUIANA, DUTCH</td>
<td>Y</td>
</tr>
<tr>
<td>GUIANA, FR.</td>
<td>V8</td>
</tr>
<tr>
<td>GUINEA, PORT.</td>
<td>CR5</td>
</tr>
<tr>
<td>GUINEA, SP.</td>
<td>Z</td>
</tr>
<tr>
<td>HAITI</td>
<td>K8</td>
</tr>
<tr>
<td>HAWAII</td>
<td>K8</td>
</tr>
<tr>
<td>HEJAZ</td>
<td>Z</td>
</tr>
<tr>
<td>HONDURAS</td>
<td>HR</td>
</tr>
<tr>
<td>HONG KONG</td>
<td>VS6</td>
</tr>
<tr>
<td>HUNGARY</td>
<td>HA</td>
</tr>
<tr>
<td>ICELAND</td>
<td>TI</td>
</tr>
<tr>
<td>IPNI</td>
<td>EA8</td>
</tr>
<tr>
<td>INDIA</td>
<td>VD</td>
</tr>
<tr>
<td>IRA</td>
<td>EP</td>
</tr>
<tr>
<td>IRAQ</td>
<td>Y1</td>
</tr>
<tr>
<td>IRELAND, N.</td>
<td>GI</td>
</tr>
<tr>
<td>ITALY</td>
<td>I</td>
</tr>
<tr>
<td>JAMAICA</td>
<td>VD5</td>
</tr>
<tr>
<td>JAN MAYEN I.</td>
<td>OY</td>
</tr>
<tr>
<td>JAPAN</td>
<td>J</td>
</tr>
<tr>
<td>JARVIS I.</td>
<td>KG6</td>
</tr>
<tr>
<td>JAVA</td>
<td>PK</td>
</tr>
<tr>
<td>JOHNSTON I.</td>
<td>KE6</td>
</tr>
<tr>
<td>KENYA</td>
<td>VQ4</td>
</tr>
<tr>
<td>LADACROS</td>
<td>VO6</td>
</tr>
<tr>
<td>LATVIA</td>
<td>VD5</td>
</tr>
<tr>
<td>LEERWAD IS.</td>
<td>VP2</td>
</tr>
<tr>
<td>LIBERIA</td>
<td>VD5</td>
</tr>
<tr>
<td>LITHUANIA</td>
<td>LX</td>
</tr>
<tr>
<td>LUXEMBOURG</td>
<td>LX</td>
</tr>
<tr>
<td>MACAO</td>
<td>CR9</td>
</tr>
<tr>
<td>MADAGASCAR</td>
<td>FB8</td>
</tr>
<tr>
<td>MADEIRA</td>
<td>CT3</td>
</tr>
<tr>
<td>MALDIVE IS.</td>
<td>VS9</td>
</tr>
<tr>
<td>MALTA</td>
<td>ZH</td>
</tr>
<tr>
<td>MANCHUKU</td>
<td>MX</td>
</tr>
<tr>
<td>MARSHALL IS.</td>
<td>J9</td>
</tr>
<tr>
<td>MARTINIQUE</td>
<td>FM8</td>
</tr>
<tr>
<td>MAURITIUS</td>
<td>VQ6</td>
</tr>
<tr>
<td>MEXICO</td>
<td>NB</td>
</tr>
<tr>
<td>MIDWAY IS.</td>
<td>VP8</td>
</tr>
<tr>
<td>MIQUELON &amp; ST. PIERRE</td>
<td>FP5</td>
</tr>
<tr>
<td>MOROCCO, FR.</td>
<td>CN</td>
</tr>
<tr>
<td>MOROCCO, SP.</td>
<td>EA8</td>
</tr>
<tr>
<td>MOZAMBIQUE</td>
<td>CR7</td>
</tr>
<tr>
<td>NETHERLANDS</td>
<td>PA</td>
</tr>
<tr>
<td>NEW CALEDONIA</td>
<td>FK8</td>
</tr>
<tr>
<td>NEWFOUNDLAND</td>
<td>VD5</td>
</tr>
<tr>
<td>NEW GUINEA, BR</td>
<td>VR9</td>
</tr>
<tr>
<td>NEW GUINEA, DUTCH</td>
<td>F88</td>
</tr>
<tr>
<td>NEW HEBRIDES</td>
<td>FU8</td>
</tr>
<tr>
<td>NEW ZEALAND</td>
<td>FL</td>
</tr>
<tr>
<td>NICARAGUA</td>
<td>YN</td>
</tr>
<tr>
<td>NIUE</td>
<td>ZK2</td>
</tr>
<tr>
<td>NON-FEDERATED MALAY STATES</td>
<td>VS3</td>
</tr>
<tr>
<td>NORWAY</td>
<td>LA</td>
</tr>
<tr>
<td>NYASALAND</td>
<td>ZD4</td>
</tr>
<tr>
<td>OMAN IS.</td>
<td>VK1</td>
</tr>
<tr>
<td>PALESTINE</td>
<td>ZCS</td>
</tr>
<tr>
<td>PANAMA</td>
<td>HP</td>
</tr>
<tr>
<td>PAPUA</td>
<td>VK4</td>
</tr>
<tr>
<td>PARAGUAY</td>
<td>ZP</td>
</tr>
<tr>
<td>PHILIPPINES</td>
<td>KA</td>
</tr>
<tr>
<td>PHILIPPINE IS. (HOWLAND)</td>
<td>KF5</td>
</tr>
<tr>
<td>PITCAIRN I.</td>
<td>VR6</td>
</tr>
<tr>
<td>POLAND</td>
<td>SF</td>
</tr>
<tr>
<td>PORTUGAL</td>
<td>CT</td>
</tr>
<tr>
<td>PORTO RICO</td>
<td>K4</td>
</tr>
<tr>
<td>REUNION I.</td>
<td>FR8</td>
</tr>
<tr>
<td>RHODESIA, N.</td>
<td>VQ2</td>
</tr>
<tr>
<td>RHODESIA, S.</td>
<td>ZE</td>
</tr>
<tr>
<td>ROMANIA</td>
<td>YR</td>
</tr>
<tr>
<td>ST. HELENA</td>
<td>ZD7</td>
</tr>
<tr>
<td>SALVADOR</td>
<td>YS</td>
</tr>
<tr>
<td>SARAWAK</td>
<td>VS5</td>
</tr>
<tr>
<td>SCOTLAND</td>
<td>GM</td>
</tr>
<tr>
<td>SIOUX H.</td>
<td>VD5</td>
</tr>
<tr>
<td>SIAM</td>
<td>HS</td>
</tr>
<tr>
<td>SIERRA LEONE</td>
<td>ZDI</td>
</tr>
<tr>
<td>SOLOMON IS.</td>
<td>VR4</td>
</tr>
<tr>
<td>SOMALILAND, BR.</td>
<td>VO6</td>
</tr>
<tr>
<td>SOMALILAND, FR.</td>
<td>FL</td>
</tr>
<tr>
<td>SOUTH GEORGIA</td>
<td>VPS</td>
</tr>
<tr>
<td>SOUTH ORKNEYS</td>
<td>VP8</td>
</tr>
<tr>
<td>SOUTH SHETLANDS</td>
<td>VFS</td>
</tr>
<tr>
<td>SOUTH-WEST AFRICA</td>
<td>ZSI</td>
</tr>
<tr>
<td>SOVIET UNION :</td>
<td></td>
</tr>
<tr>
<td>RUSSIAN S.F.S. REP.</td>
<td>VUL</td>
</tr>
<tr>
<td>WHITE RUSSIA</td>
<td>VU</td>
</tr>
<tr>
<td>UKRAINE</td>
<td>VU</td>
</tr>
<tr>
<td>TRANS-Caucasia</td>
<td>U6</td>
</tr>
<tr>
<td>TURKOMAN</td>
<td>US</td>
</tr>
<tr>
<td>UZBEK</td>
<td>U8</td>
</tr>
<tr>
<td>SPAIN</td>
<td>EA</td>
</tr>
<tr>
<td>STRAITS SETTLEMENTS</td>
<td>VSI</td>
</tr>
<tr>
<td>SUDAN</td>
<td>ST</td>
</tr>
<tr>
<td>SUEDE</td>
<td>PK4</td>
</tr>
<tr>
<td>SWEDEN</td>
<td>SM</td>
</tr>
<tr>
<td>SWITZERLAND</td>
<td>HB</td>
</tr>
<tr>
<td>SYRIA</td>
<td>AR</td>
</tr>
<tr>
<td>TAIWAN (FORMOSA)</td>
<td>J9</td>
</tr>
<tr>
<td>TANGANYIKA</td>
<td>VQ5</td>
</tr>
<tr>
<td>TANZANIA</td>
<td>VQ5</td>
</tr>
<tr>
<td>TOKELAU, S.</td>
<td>FK</td>
</tr>
<tr>
<td>TONGA IS.</td>
<td>YR5</td>
</tr>
<tr>
<td>TRANSJORDAN</td>
<td>ZC1</td>
</tr>
<tr>
<td>TRINIDAD</td>
<td>YP9</td>
</tr>
<tr>
<td>TUNISIA</td>
<td>YT4</td>
</tr>
<tr>
<td>TURKEY</td>
<td>TA</td>
</tr>
<tr>
<td>TURKS IS.</td>
<td>VD5</td>
</tr>
<tr>
<td>UGANDA</td>
<td>VQ5</td>
</tr>
<tr>
<td>UNION OF SOUTH AFRICA</td>
<td>ZS</td>
</tr>
<tr>
<td>UNITED STATES</td>
<td>W</td>
</tr>
<tr>
<td>URUGUAY</td>
<td>CX</td>
</tr>
<tr>
<td>VENEZUELA</td>
<td>VV</td>
</tr>
<tr>
<td>VIRGIN IS. (U.S.)</td>
<td>KB1</td>
</tr>
<tr>
<td>WAKE IS.</td>
<td>KC6</td>
</tr>
<tr>
<td>WAINWARD IS.</td>
<td>VP2</td>
</tr>
<tr>
<td>YUGOSLAVIA</td>
<td>YT-VU</td>
</tr>
<tr>
<td>ZANZIBAR</td>
<td>VQ1</td>
</tr>
</tbody>
</table>
WEBB'S RADIO

SHOP SOILED AND CLEARANCE BARGAINS

RECEIVERS

Sky Buddys  £6 10 0
Sky Chiefs  £7 10 0
Hammarlund Super Pro  £35 0 0
National NC.81X  £20 0 0
Hallicrafter SX-16  £25 0 0
Sky Challenger  £15 0 0
RME.69  £27 0 0
RME.69 LSI  £32 10 0
Hallicrafter SX-16  £18 0 0
Hallicrafter SX-10 Ultra Sky-Rider £17 0 0
RME.DB20 Preselector  £9 0 0

FERRANTI METERS

0-7.5 volts D.C. 1000 ohms P.V. 15/-
0-10 " " " 17/6
0-15 " " " 17/6
0-25 " " " 17/6
0-50 " " " 17/6
0-150 " " " 17/6
0-250 " " " 17/6
0-7.5 A.C. volts 15/-
0-10 A.C.V. Rectifier type 1000 ohms P.V. 25/-
0-100 A.C. volts 17/6
0-1 M/A 30/-
0-2 M/A 27/6
0-500 M/A 17/6
0-1 meg. Resistance Meter 20/-
0-2.5 meg. 20/-
Many other odd meters at bargain prices

Transmitters

CWR. 10 watt CO. PA. Complete less crystal £6 15 0
3-Band Exciter Unit. Complete 15/25 watts output £12 0 0
1 only Hallicrafter HTI demonstration model £63 0 0

All the above and many other Receivers have been thoroughly overhauled and are in excellent condition. Hire Purchase facilities available.

Webb's carry the Largest stock of Communication Receivers, Transmitters and Short Wave Components - - Send for New List

WEBB’S RADIO

(C. WEBB, LTD.)

14 SOHO ST., OXFORD ST., LONDON, W.1 PHONE: GERRARD 2089

BIRMINGHAM DEPOT

41 CARRS LANE

Published by The Short-Wave Magazine, Ltd., 84-86 Tabernacle Street, London, E.C.2 and printed by S. J. Fraser & Co., Ltd. at the same address. Sole agents for Australia and New Zealand, Gordon and Gotch (Australasia), Ltd.