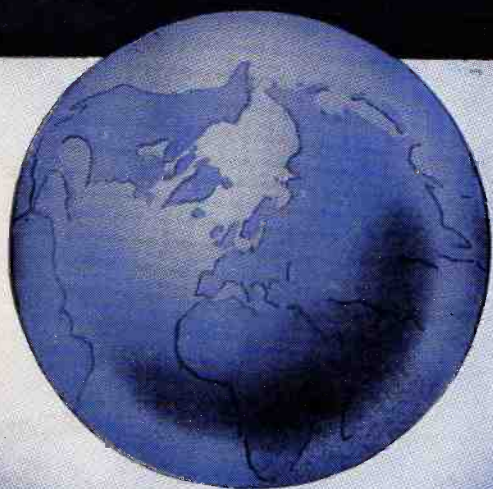


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The
SHORTWAVE
Magazine



CW

**EXCLUSIVELY FOR THE
RADIO EXPERIMENTER &
TRANSMITTING AMATEUR**

VOL IX. No. 3 MAY 1951

H. WHITAKER G3SJ

10 YORKSHIRE STREET, BURNLEY

Phone 4924

FREQUENCY METER. Collins. TS-69/AP. Freq. coverage 340 Mc to 1000 Mc, continuous. Brand new and unused in black crackle cases 22ins. × 6ins. × 5ins. Veda counter dial, individually calibrated throughout the range, with 10 hinge leaf tuning charts. 4½in. × 4in. 200 microamp meter. Resonant cavity tuned. Accuracy is such that on the 420 Mc band average is 8 divisions per Megacycle. One of the nicest lines we have ever offered. £8, Carr. paid.

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1155 RECEIVER. Brand new in original transit cases. Complete with all valves £10 carr. paid. A few new but slightly soiled £7/10/0.

R.C.A. 4336 TRANSMITTER. Frequency coverage 2 to 20 Mc continuous. 5ft. rack and panel, weight 5 cwt. Input 230v 50 cy. Line up 807 xtal Osc. driving a pair of 813's, modulated by a pair of 805's. Complete with all valves including 4 866 rectifiers, and power supply. A speech amplifier is required giving approx. 8 watts to drive the 805's, the input circuit of which is for 500 ohm line. Carr. paid, crated, in the British Isles, £60.

SPEECH AMP. TRANSFORMER. Suitable and specially designed for the speech amp. for the 4336 Tx. P.P. 6L6's to 500 ohm line. Primary 6800 ohm C.T. Manufactured to specification by Woden. Handle up to 20 watts of Audio, 22/6 post free.

4336 SPARES. A complete range of spares available for these Tx's, quotations on receipt of details.

STURDY ELEC. Plate trans, Input 230/50cy. Output 2200/0/2200v. at 200 mills. plus 4v. for pilot lamp. Note the price, 35/- carr. paid. 6/- extra Eire.

PARMEKO. Primary 100 to 250v/50cy. Output 670/0/670 at 200 mills. 5v 3 amp. 6.3v 2 amp. 42/- carr. paid.

PLATE TRANS. Input 230v 50 cy. Output 450/0/450 at 250 mills, 7½v 5 amp, 7½v 5 amp. 30/- carr. paid.

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THERMADOR FIL. TRANS. Input 230/50cy, Output 10v ct 10 amp., 10v ct 8 amp. For a pair of 813's plus a pair of 805's, completely screened, 30/- carr. paid.

R.C.A. FIL. TRANS. Input 190/250v 50cy. Output 10v ct twice for a pair of 813's, 25/- post free. Ditto with 105/125v primary 15/- . These are completely screened and potted in copper plated cases.

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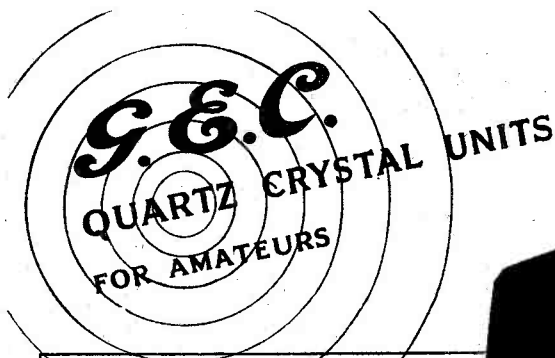
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TUBE LINE UP : 807 C.O./Buffer. Two 813 P.A. Two 805 P.P. Class B Modulator. Four 866A Rectifiers. **CONTROLS :** Manual or Remote. **POWER OUTPUT :** Normal 350 watts, but with the fitted QRP SWITCH output is 100 watts. **FREQUENCY COVERAGE ;** Normal 2 to 20mcs but by doubling in final excellent output may be obtained on 28mcs. **FREQUENCY CONTROL.** THE TRANSMITTER HAS A DETACHABLE FRONT PANEL FOR INSERTION OF WILCOX GAY V.F.O. OR CRYSTAL MULTIPLIER.

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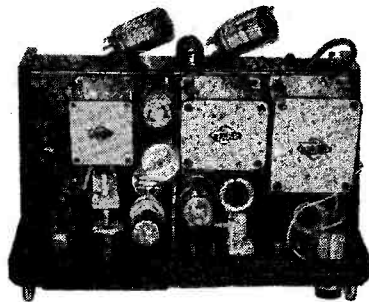
EX-R.A.F. INDICATOR UNIT. Type 62.—Containing VCR-97 CRT with mu-metal screen; crystal unit and valves 16 VR65 (SP61), 2 VR54 (EB34), 2 VR92 (EA50), etc., etc., two-deck chassis in metal case 19in. x 18in. x 1 1/2in. New Condition. 67/6 each, plus 7/6 packing and carriage.

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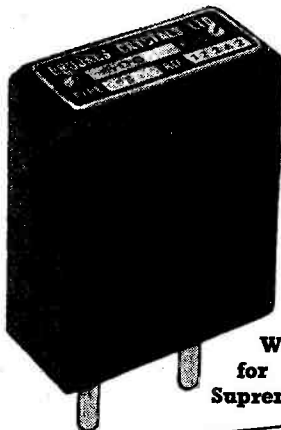
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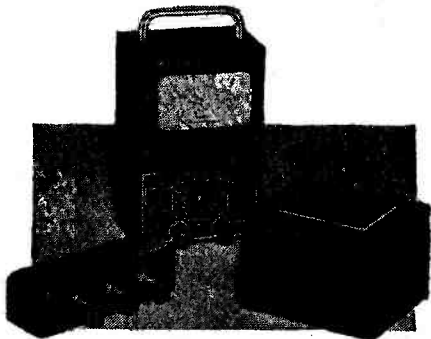
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It is apparent that the required attenuation may be achieved with fewer tuned circuits if the associated valves have a higher input resistance - resulting in less damping of the circuits. The Osram W 77 meets this requirement, having approximately three to four times the input resistance of the normal RF Pentode. This is only one of many applications of the W 77 miniature valve.

Write for a copy of the data sheet on the W 77 to: Osram Valve and Electronics Dept., Magnet House, Kingsway, W.C.2.

W77

MADE IN ENGLAND

W77 PENTODE

DESCRIPTION
Type W77 is an indirectly heated vacuum-tube pentode in the miniature range, not suitable for R.F. and I.F. amplifiers.

RATINGS					
Heater Voltage	2.5	0.1	0.1	0.1	0.1
Heater Current	100	100	100	100	100
Anode Voltage	250	250	250	250	250
Anode Current	1.0	1.0	1.0	1.0	1.0
Screen Voltage	200	200	200	200	200
Screen Current	0.5	0.5	0.5	0.5	0.5
Control Grid Voltage	0-5	0-5	0-5	0-5	0-5
Control Grid Current	0.5	0.5	0.5	0.5	0.5
Mutual Conductance*	20	20	20	20	20

* measured at $V_a = V_{g2} = V_{g1} = 250$, $V_{g1} = 0$

Capacitances (taken on valve with normal screening grid)

Control Grid to All	18	18	18	18	18
Anode to All	25	25	25	25	25
Anode to Control Grid	0-00	0-00	0-00	0-00	0-00

OPERATING CONDITIONS
R.F. Amplifier, Class A

Anode Voltage	250	250	250	250	250
Screen Voltage	200	200	200	200	200
Supereye Voltage	0	0	0	0	0
Anode Current	1.0	1.0	1.0	1.0	1.0
Screen Current	0.5	0.5	0.5	0.5	0.5
Cathode Bias Resistor	250	250	250	250	250
Control Grid Voltage	-2.5	-2.5	-2.5	-2.5	-2.5

The effective external grid to cathode capacitance should not exceed 6 picfarads.

DIMENSIONS

W77

All dimensions are in mm and are made straight unless otherwise stated.

BASE

Pin 1: Cathode Grid, ϕ
 Pin 2: Cathode
 Pin 3: Screen
 Pin 4: Anode
 Pin 5: Supereye Grid
 Pin 6: Control Grid
 Pin 7: Heater Cath.
 Pin 8: Heater Grid, ϕ

Pin 9: Heater Cath. (if used)

An internal shield is fitted to the valve and pinned to pin 9.

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SHORT WAVE MAGAZINE

FOR THE RADIO AMATEUR & AMATEUR RADIO

Vol. IX

MAY 1951

No. 94

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The SHORT-WAVE Magazine

FOR THE RADIO
AMATEUR AND
AMATEUR RADIO

E D I T O R I A L

Background

One of the more interesting sidelights on the practice of Amateur Radio is the great diversity of individuals who have become its devoted adherents, especially in these post-war years. Amateurs are not drawn from one particular segment or stratum of the population, and the minority are radio engineers by profession—though it is widely held that a good radio engineer is all the better for being an active amateur, contending with a set of practical problems quite different from those he encounters in the course of his work.

Active amateurs in this country today are drawn, literally, from every walk of life and all trades and professions. It might well be asked how we know this—the answer is that in the last five years we have seen such a volume of correspondence, and heard so much on the air (to say nothing of having enjoyed a great many personal contacts) that it has not been at all difficult to gain an accurate impression of the background of Amateur Radio in terms of human personalities.

If all this is true in fact, then collectively amateurs comprise a potent body in terms of ability and intelligence, and between them should be able to cope with almost any human problem. Which is a staggering thought. But it is also this very diversity in terms of human personalities that calls for the exercise of tolerance on the part of amateurs in their dealings amongst themselves. And, in these days, tolerance is one of the great virtues.

*Austin Foyll
G6FO.*

Top Band Trans-Atlantics, 1951

SURVEY OF RESULTS ACHIEVED IN A NOTABLE TEST SERIES

By L. H. THOMAS, M.B.E. (G6QB)

For nearly 30 years the potentiality of our lowest-frequency band for yielding real DX in due season has been known, though this fact has often been lost sight of, due to the much higher level of interest and activity on the HF communication bands. Nevertheless, 1.7 mc has always remained as a challenge to the DX enthusiast and the experimenter, giving as it does scope for new achievements under operating conditions much more stringent than on the other DX bands. It is for these reasons that SHORT WAVE MAGAZINE has organised, regularly when the sunspot cycle has served, tests designed to establish the data for DX working on the Top Band and maintain active interest in it. The series reported below is unquestionably the most successful ever to have been held on 1.7 mc as we now know the band, in terms both of support given and results achieved.—Editor.

THIS is a record of present achievement rather than past results. It is not proposed, therefore, to attempt a long history of Trans-Atlantic Top-Band work. However, for the benefit of the many post-war converts to Amateur Radio, it is important to put things in the right perspective and to emphasise the fact that there is nothing new about DX on our lowest frequency band.

The first Trans-Atlantic contacts were made in 1923 and 1924, on various wavelengths between 100 and 200 metres—but under very different conditions on this side from those prevailing today. Special licences were issued, and powers of 250 watts or thereabouts were in use.

After the 1.7 mc band, more or less in its present form, together with the 10-watt limitation, came into being, the first Trans-Atlantic tests were organised privately—late in 1932. In December of that year W1DBM was heard in this country, and then in February, 1933. W1DBM and G6FO made contact for the first G/W QSO under what we may

term present-day conditions, with 10 watts and crystal control at this end.

Similar Tests took place each year until 1937, with varying degrees of success. In 1938 a Test Period was arranged between February 19 and 27; though well supported, results were disappointing, although W1BB (whose call was later to become so well known on 1.7 mc) was heard consistently over here.

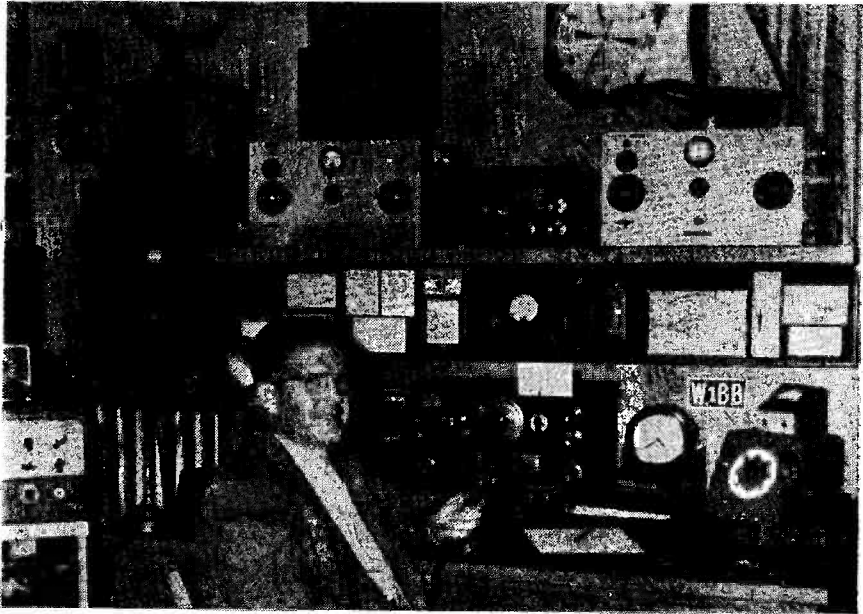
Then, in 1939, a highly successful series of Top Band tests was organised by *Short Wave Magazine*, and the results were quite startling. Again, the outstanding signal from the other side was W1BB's, and VE1EA upheld the honours for Canada. Some thirty stations from the W/VE side were heard or worked from the United Kingdom, and a dozen or so British stations managed to make contact. Some outstanding QRP work by G3JU, of Sandy, Beds., is worthy of special mention even twelve years later, for he succeeded in raising several W's, including two in the 4th district, with an input of 4 watts.

In 1939 the best times were found to be between 0430 and 0830 GMT—a discovery confirmed by results during the 1951 series. The 1939 tests were run during February, and the report on them in our issue of April, 1939, suggests that the peak period might well have been earlier that year.

Some 40 British stations took part and plenty of support came from HA, HB, OZ, SM, FA and other European countries.

The 1951 Tests

From the general run of conditions last year, it was obvious that we were approaching another favourable period for Top Band DX, and so the *Magazine* arranged this series of Tests—once again with the invaluable and enthusiastic assistance of Stewart S. Perry, W1BB, Winthrop, Mass. All those who took part know how much we have to thank W1BB, not only for



A fine view of the operating position at the well-known station of W1BB, Stewart Perry of Winthrop, Mass. with himself at the microphone. He undertook on our behalf the whole organization of the 1951 Top Band Tests on the W/VE side of the water, and his own signals were consistent throughout the Test period.

being the guiding spirit on the other side, but also for providing, as usual, the outstanding signal.

The organized Test periods were fixed for five Sunday mornings (January 14 and 28, February 11 and 25, March 11) and two extra sessions on January 21 and February 18 were added to test the theory that the hours round about midnight might be worth investigating. The results showed that the standard periods of 0500-0800 GMT were undoubtedly the best for two-way work.

In between these organized tests, however, much free-lance operation was taking place, and we propose to review this as well, since a lot of interesting contacts were achieved outside the test periods.

So we will embark right away on a brief but full survey of happenings in chronological order.

The First Openings

On December 31 at 0445 (all times from now on are GMT) G6BQ and VE1EA jumped the gun with the first T/A contact of the season. On January 7, EK1AO (Tangier) appeared on the

band in a big way and knocked off VE1EA and W1BB for the first post-war contacts between North Africa and North America.

On the same day W1BB worked G3PU and G6GM; W1EFN worked G2YS, G3PU and G6GM; VE1EA worked G6GM and heard G3PU. G6GM, who will show up throughout this story as a notable performer, carried on and also worked W2EQS, W2ESO, W8FLH and W8WXV; the two W2's were worked at 0850 and 0852—surely a record for late working!

On January 11, W1LYV came into the picture, working G3ERN, G5KM and GD3UB, and on the 12th he worked G3ERN, G6BQ and heard G3KP. January 14 saw the first of the organized Tests, but, before it started, a new piece of history was written, when VE1EA raised HZ1KE for the first Asia/America contact ever recorded for the band; a grand piece of work at both ends.

First Test, January 14

So we started on the first real run, and conditions were not too good. The

TABLE I. W/VE STATIONS WORKED DURING TOP BAND TEST PERIODS, 1951

STATION	JAN. 14 0500-0800	JAN. 20/21 2200-0200	JAN. 28 0500-0800	FEB. 11 0500-0800	FEB. 17/18 2200-0200	FEB. 25 0500-0800	MAR. 11 0500-0800
G2NM	—	—	—	WIBB, ILYV, ISS, 2PEO, 4KFC	—	—	—
G2PL	WIBB	—	WIBB, 2ESO, VE3AAZ	—	—	—	—
G3DIY	—	—	WIEFN, ISAN, 2EQS	WILYV, 3LII	—	—	—
G3PU	—	—	WIBB, ILYV, ISAN, 2BFA, 2EQS, 3PMG, VE1EA	WIBB, ILYV, ISS, 2BFA, 2KDX, 2PEO, 3LII, 4KFC	—	—	—
G5JU	—	—	—	WIBB	—	W3EIS, 3LOE, VE1EA	—
G6BQ	VE1EA, W1PLO	—	—	WIBB, ISS, 2BFA	—	—	—
G6GM	—	—	WIBB, ILYV, ISAN, 2EQS	WIBB, IEFN, ILYV, 2PPV, 2WC, 3LII	—	WIBB, 3EIS	WIBB, 2PEO, 8BKH, VE1EA
G6LB	—	—	—	WILYV, ISS, 2PEO	—	—	—
G6QB	—	—	WIBB	WIBB, ISS, 2PEO	—	—	—
G8NF	—	—	WIBEU, ILYV	WIBB	—	WIBB, VE1EA	—
GW3FSP	—	—	VE1EA, W2UKS	WIBB, ILYV, ISS, 2PEO, 2WC, 3LII, 3OKU, 4KFC, 9CVQ	—	—	—
GW3ZV	WIBB, IEFN, 2EQS, 2ESO, 2PIV, 3LII, VE1EA, VE3AAZ	—	—	WIBB, ILYV, ISS, 2BFA, 2BLK, 2PEO, 2PIR, 2WC, 3LII, 3OAG, 4KFC, 8BKH, VE1EA (Phone: WILYV, 3FNF, VE1EA)	—	—	—

EKIAO	WIBB, IEFN, 1FLO, 2EQS, 2ESO, 3PMG, 3LII, 3FLH, VE1EA	WIBB, IBEU, IDVS, IEFN, 1KDX, 1LYV, 1PLO, 1RQR, 1SAN, 1ZE, 2BFA, 2BLR, 2ESO, 2UKS, 3LOE, 3PNE, VE1EA, 3AAZ	WIBB, IEFN, 1LYV, 1SS, 2BFA, 2BLR, 2KDX, 2PEO, 2PPV, 2RTR, 2PLT, 2UKS, 2UOX, 2WC, 3LII, 3OAO, 30KU, 4KFC, 8BKH, 9CVQ	KINRE, WIBB, IEFN, 1EZ, 1LYV, 1MOB, 1RQR, 1SS, 2BFA, 2PEO, 8CDT, VE1EA	WIBB, 3EIS, 4KFC, 8BKH, VE1EA	WIBB, 1LYV, 2WC, 3EIS, 3LOE, 4KFC, VE1EA, KV4AA	ZLIAH heard "G6GM(?)"
W/VE Sigs heard in U.K.	WIBB, IEFN, 1FLO, 2CDH, 2ESO, 2PTV, 2UKS, 3FNF, 3LII, 3FLH, VE1EA, VE3AAZ W3AAA (Phone)	WIBB, IDVS, 1LYV, 2ESO, VE1EA	WIBB, IEFN, 1LYV, 1SS, 2BFA, 2BLR, 2KDX, 2PEO, 2PPV, 2RTR, 2PLT, 2UKS, 2UOX, 2WC, 3LII, 3OAO, 30KU, 4KFC, 8BKH, 9CVQ	WIBB	WIBB, 3EIS, 4KFC, 8BKH, VE1EA	WIBB, 1LYV, 2WC, 3EIS, 3LOE, 4KFC, VE1EA, KV4AA	ZLIAH heard "G6GM(?)"
Other Notes	VE1EA worked HZIKE for first QSO between N. America and Asia.	HCLJW worked by W's IBB, 2UKS, 8BKH (0045-0130) HCLJW heard by EKIAO	W2EQS heard G5HB, SRI, 5VB, GW3FSP KV4AA heard by G's for first time G. C. Allen heard WØIQD	—	KV4AA worked W's IBB, IEFN, 2ESO, 2PEO, 3EIS, 3LOE, and VE1EA	—	—

contacts made are summarised in Table I, which shows that only G2PL, G6BQ and GW3ZV got across. The latter, with an enormous Vee-beam, was star performer on this occasion and many others.

WIBB was the best and most reliable station that morning, and many G's, both SWL's and transmitters, heard their first Trans-Atlantic DX when they tuned to his beautiful signal on 1813 kc, peaking at about 569 and fading down to 339.

On January 16, WIEFN worked G5VB, G6GM and G8JR; on January 17 he worked G6BQ, G6GM and G8JR. Then, on January 18, GW3ZV had a night out and raised WIEFN, 1LYV, 1ORP, 2EQS, 2UKS, 2WJE, 3FNF, 4BPD and 9FIM. This seems to have been a really good night; G6GM was there and worked WIEFN, 2EQS and 2WJE, continuing up till 0830. G2PL worked WILYV, 2UKS, 8FLH and 9FIM; G6BQ and G2ACV also got across.

Special Test, January 20/21

During the first trial of the 2200-0200 period, no contacts were made between this country and North America. A startling arrival, however, was HC1JW (reputed to be using 3 kW!) He worked WIBB, 2UKS and 8BKH for the first 1.7 mc contacts between North and South America, and was also heard by EKIAO. Later in the morning, after the test was over, a number of contacts were made, the successful stations on this side being G2PL, G6BQ, G6GM, G8NF and GW3ZV.

On January 22, G3DIY (Penzance) heard HC1JW at midnight, and GD3UB was also heard calling the HC. On January 23, W2QHH was working ZL1HM on 3.5 mc and suggested cross-band testing. W2QHH went on to 1800 kc and ZL1HM told him that he could hear short bursts of signals through the static on an otherwise dead band. This report is as yet unconfirmed.

January 25 was a good morning, with WIBB working G2PL, G3ERN, G3SU, G5KM, G6GM and GW3ZV. The last two also worked a few more W's.

Second Test, January 28

It was obvious that this was going to be a big morning when G3DIY

(over)

started up early and raised W1BEU, 1LYV, 1PLO, 1RQR, 1ZE and VE1EA. Sure enough, when the clock got round to 0500, the signals from the other side were good. The actual contacts made are all shown in Table I under the appropriate date—and note the wonderful work of EK1AO again. GW3ZV was not active, and the absence of his terrific signal on the other side gave some of the weaker ones a chance!

KV4AA put in an appearance on 1995 kc, where he was heard by G. C. Allen (Thornton Heath) and by G6QB. G.C.A. also heard W0TQD in Nebraska, which must be record reception for an overland path on this band. Another outstanding contact that morning was between W9PNE and EK1AO.

After this test there was a distinct lull until February 9, on which date KV4AA worked W1BB. On February 10 a few odd contacts were made as a prelude to the big day which followed.

Third Test, February 11

This was probably the best day of all, among the organised tests, and showed the most impressive number of Trans-Atlantic contacts—See Table I for details. W4KFC came up with a marvellous signal—the first from the 4th district—and proceeded to exchange serial numbers in the ARRL DX Contest! GW3ZV worked him on five bands during that week-end—definitely another record of some kind. (ZV remarks that if he had been working on TV he could have had a look at him, too!) On this morning GW3ZV worked two W's and a VE on *phone*. W9CVQ was another nice piece of DX—he worked GW3FSP and heard G6BQ, G6GM and GW3ZV. W1EFN reported hearing "GM3PIG"—but who this might be we do not know. W1BB confirms that this was the best DX night of the year.

Special Test, February 17/18

This one was definitely a failure, as far as we were concerned. EK1AO, however, managed to work a large batch of W's. W1BB heard him, but absolutely nothing else. Later that morning, however, well after the 2200-0200 test period, the DX boiled up; GW3FSP worked W1BB, 1EFN, 1LYV, 1SS, K1NRE, W2BFA and VE1EA, G6BQ and G6GM also got across.

Fourth Test, February 25

Conditions were tailing off by now

and contacts were becoming difficult. Table I shows the actual contacts made—and note KV4AA's QSO's. Static was pretty bad on this side, and many G stations must have returned to their beds rather quickly.

Free-lance work was also tailing off, but on March 4 GW3ZV was rewarded for many hours of lost sleep. A schedule with KV4AA suddenly "came good," and they had an easy contact, both stations using break-in! This, of course, was yet another "first"—see Table II.

On March 10, KV4AA and EK1AO had another successful morning, but in these latitudes there was nothing doing.

Fifth Test, March 11

The only British station to work on this morning was G6GM (see Table I). Conditions were very poor, and WWV had been heard giving his warning of disturbed ionospheric conditions. But it was on this morning that the real event of the season occurred! ZL1AH, with ZL1MP as witness, heard W1BB (549) and W9CVQ (329). He also reports logging "G6GM??" at RST 219. It really is too bad about that query, since G6GM was certainly on that morning. It *might*, of course, have been a W station calling him. But we all hope that it really was G6GM, and next season will see the ZL's properly organised for the purpose of proving it.

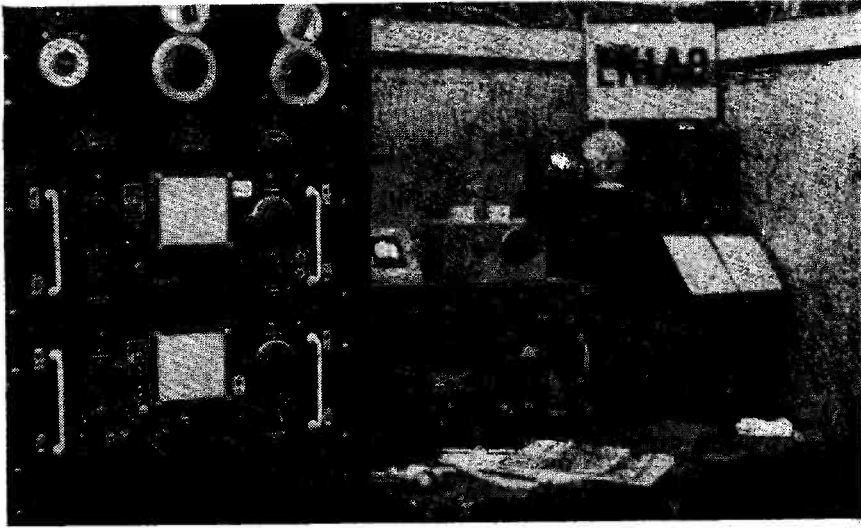
Note that this event has brought all six Continents into action during these Top-Band tests. Truly a most remarkable performance by W1BB and W9CVQ—not forgetting the credit due to the listeners at the New Zealand end.

And that is the end of the chronological survey, so now for some remarks about the stations taking part.

Successful U.K. Stations

It is much to be regretted that by no means all the successful stations sent in their logs to us, so the record is not as complete as it could have been. Our Table I is compiled from the logs of those who *did* put them in, with one or two non-reporters added on the strength of information supplied by W1BB. On the credit side, it must be added that many G's who were not successful reported regularly, and their logs were of great assistance in compiling the full story.

We want particularly to thank all the following for their reports, logs and



Transmitter and operating position at EK1AO, Tangier. The final is an 805 running 250 watts on all bands 1.7 to 28 mc, and the station is very well located for DX work.

general information: G2AMV, 2AOL, 2DPQ, 2HKU, 2NM, 2PL, 2YS, 3DIY, 3GUM, 3GYV, 3PU, 4OU, 4XF, 5JU, 5MR, 6BQ, 6GM, 6LB, 8NF, 8PX, G16YW, GM2HIK, 3EHL, GW3FSP, 3ZV, EK1AO, ZL1AH and SWL's G. C. Allen (Thornton Heath), N. C. Smith (Petts Wood), R. H. Jeakings (Luton), and R. Iball (Worksop).

The gear used on this side is hardly worthy of comment, since one 10-watt transmitter for the Top Band can hardly be much more efficient than another. Aerial systems, however, are capable of infinite variation, and it is obvious that these were the deciding factor.

G3DIY had up a half-wave end-fed running NE/SW. G3PU used a similar wire, direction unspecified, and so did G6LB. G6GM had three different arrangements in operation during the period—a half-wave Zepp, a 264-ft. end-fed arrangement, and a 264-ft. centred doublet, 60 ft. high.

GW3ZV put up a monumental Vee-beam with three wavelengths (we make this roughly 1650 ft.!) on each leg. Later on he had to cut down to 1000 ft. per leg, and it was on this that he worked KV4AA. GW3FSP had another big one, consisting of two half-waves in phase. G6QB had two half-waves at

right-angles to each other, and used them both.

Since this was not a contest and did not set out to prove that anyone was "better" than anyone else, we will not express any opinions about where the credit should fall. But to all those G's who did get across, we say "Good show!"—and to those who didn't, "Try again next year, and good luck."

The Successful W/VE Stations

The foregoing survey and Table I make it quite clear which stations on the other side were most often heard and worked. We have no great wealth of detail concerning their gear, but the following points are of interest: W1BB used 200 watts to a 133-ft. aerial, 70-ft. high with 45-ft. feeders. His receiver was a 1935 HRO, and he describes his location as "good, over moist salt-water ground." His transmitter for the band is "same as always, with P/P 211's in final." Stewart Perry doesn't go in for DX Contests, but can always be counted on to support tests of this nature—and "support" is a mild word to use for his tremendous assistance.

VE1EA runs 100 watts at an "ideal" QTH, on a hill surrounded by salt water, and well away from all sources of noise. W2ESO, by contrast, is in the

noisest location in the world—New York City. W2EQS used only 70 watts, and this was his first Top Band DX. W1MYB ran 75 watts and was also new to it. W3LII used even lower power—30 watts, to a 266-ft. aerial.

W9PNE was running 130 watts to a 133-ft. aerial, and his receiver was an 0-V-1 battery job! W2QHH used 20 watts to an aerial only 12-ft. high. EK1AO wielded 300 watts to a half-wave aerial in an absolutely ideal situation—and made the best of it, obviously. His clear, detailed reports both to ourselves and to W1BB deserve special mention.

General Comment

On the whole, the organisation worked smoothly; a few G stations were foolish enough to go into the W/VE frequency area, but were soon told what others thought of them. The time schedule didn't matter so much; some were able to sneak a quick QSO during a five-minute period instead of calling for five minutes and listening. Because of the frequency separation, this did not hurt anyone.

There were, however, two minor faults committed on this side. Several W stations comment that the G's huddled together far too much, round



This smiling chap is EK1AO, Tangler, one of the heroes of the recent DX activity on 1.7 mc. He has given many G's their African contact, and was also most successful in working W/VE stations during the Tests.

Dec. 31, 1950	G6BQ/VE1EA	First T/A of season
Jan. 6, 1951	VE1EA/EK1AO W1BB/EK1AO	First post-war between N. Africa and American Continent
Jan. 14, 1951	VE1EA/HZ1KE	First recorded QSO between Asia and America
Jan. 21, 1951	W1BB/HCIJW W2UKS/HCIJW W8BKH/HCIJW	First North America/Sth. America contacts
Jan. 28, 1951	KV4AA and WØTQD heard in U.K.	First reception of KV4 and WØ
Mar. 4, 1951	GW3ZV/KV4AA	First KV4/U.K. contact
Mar. 11, 1951	ZL1AH and 1MP heard W1BB, W9CVQ and "G6GM??"	First reception in N.Z. of American or British signals

about the 1780-1800 kc marks, and that if they had spread out as far as 1740 or 1720 kc, many more would have been identified. W1BB had to send a warning—"Keep away from GW3ZV's frequency" (for obvious reasons!). He also had to suggest, over the air, that people should concentrate on their own call-signs instead of sending *his* for three minutes. After all, any signals he heard were likely to be G's, and quite likely to be calling him.

He lost quite a few after hearing his own call, clearly and distinctly, several times, because by the time the sender had decided to sign he had sunk into the noise level or been subjected to QRM.

The best times were again proved to be between 0400 and 0800, with the peak usually occurring between 0530 and 0630.

In conclusion, we must thank all those on the other side who co-operated so nobly. W1BB thinks the conditions were "more rugged" for them than for us, saying that sitting up until 0300 is

more tiring than getting up at 0500 and staying up. (We wouldn't argue on this one). We have already bestowed our thanks, with all sincerity, on W1BB, whose airmail flashes and final log entailed a considerable amount of work for him. And we must also thank the ARRL for publishing, in *QST*, advance notice of the tests, and for giving world-

wide broadcasts over W1AW on all frequencies, both CW and phone.

And so end the 1951 Trans-Atlantics. It will not be long before we announce the dates for the 1952 Tests—which will probably start a little earlier in the season and end somewhat sooner as well. Stand by for them, and get up as much wire as you can!

Amateur Fist Analyser

HOME-BUILT MORSE
RECORDER

By N. P. SPOONER (G2NS)

WHILST an appreciation of good Morse adds greatly to the enjoyment of the hobby and ensures that faulty letter formation and general spacing are not easily overlooked, the decision at an early stage in an operator's progress as to whether improvement or stagnation is taking place may often be misleading if the ear alone is relied upon. Only a permanent visual record can provide the indisputable evidence needed by classes, clubs and individuals who are developing better fists, correcting bad formation habits, working up speed or mastering a bug-key. With the help of a recorder, all these aims may be realised gradually, because the inked reproductions obtained from direct keying make faults immediately visible.

In connection with this type of practice, it might be mentioned in passing that every letter of the alphabet is contained in the old commercial transmitter-testing sentence: "The quick brown fox jumped over the lazy dogs tail" (no apostrophe to the plural of the word "dog" which is brought in to provide the otherwise missing letters "g" and "s").

Practical Considerations

During the inter-war years, of course, Morse Inkers were often available, but they are still expensive and are now out of general circulation.

This article discusses a simplified Morse recorder producing an undulator-type trace, for checking personal keying characteristics and correcting formation faults. In its present form it is not quite suitable for recording off a receiver, but this aspect of the problem is having the further attention of our well-known contributor.—Editor.

To produce the required visible symbols for the original land-line function, an ink-immersed revolving wheel was caused to strike a length of moving slip (as paper tape is properly termed), and although the example word THE of Fig. 1a looks simple enough, ink-wheels in action have to revolve in a direction opposite to that in which the slip is being driven. The home-construction of a strong spring-driven train of wheels to perform these two vital operations is best avoided by the very simple expedient of merely changing the mode of interpretation. If instead of dots and dashes we adopt the commercial undulator signals shown at Fig. 1b, then as the moving slip need not actually be struck for the production of visible symbols, the inking source can be conveniently attached to and actuated by any cheap surplus relay. This altered function requires that the inking source remains in contact with the slip, whether signals are being received or not, and the key-open, no-signal spacer period is thus indicated by a line continuously inked down the centre of the paper. Directly the key is closed, however, and the relay energised thereby, the inking source attached to it is displaced to one side of the central idling line and a marker is accordingly indicated.

Readers will agree that the employment of a surplus relay is simpler and cheaper than the planning and con-

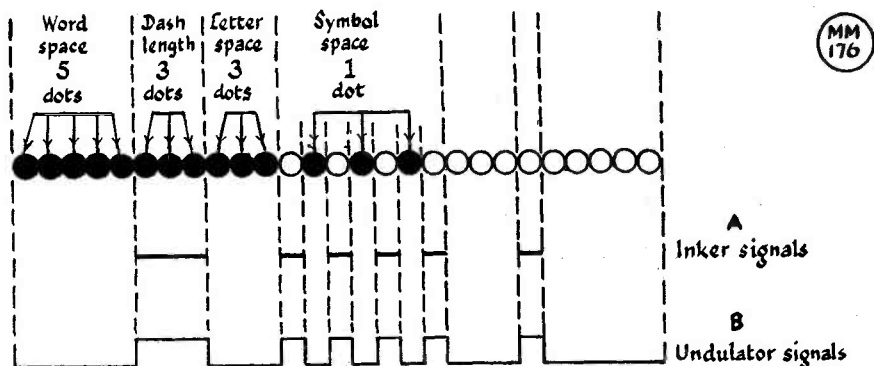


Fig. 1. The standard lengths and spacing for all sound or vision Morse signals. Sent fast or slow, signals should always conform to these relative time intervals.

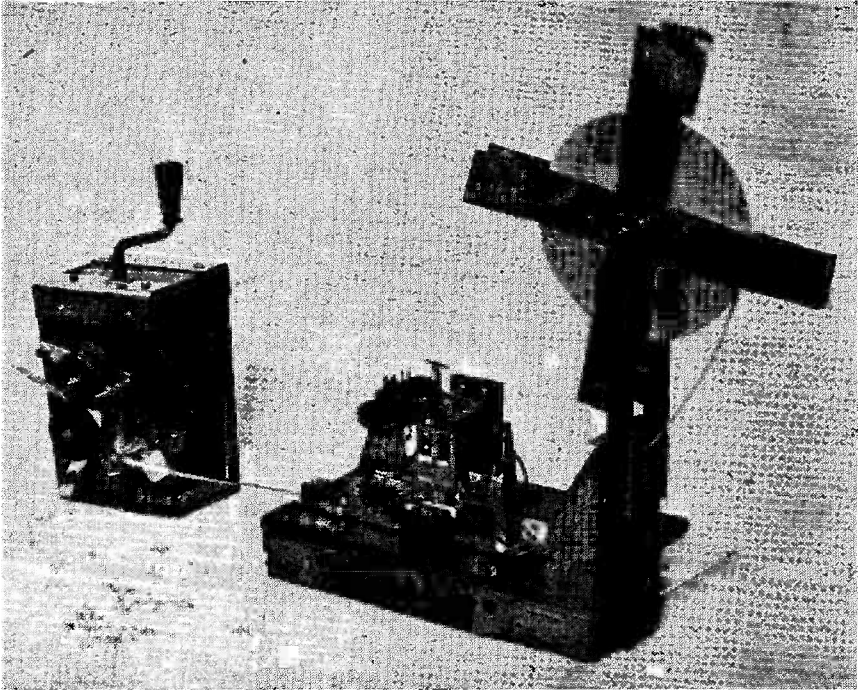
struction of a train of wheels, and they may also rest assured that although dots and dashes may appear to be the oldest of friends, the reading of undulator signals is just as easy to acquire. Thousands of typists were transcribing them at high speeds during the last war after four to six weeks' training; in the present case no *reading speed* whatever is required, because shifts are not being worked and we only need sufficient understanding of a recording to compare the letter formation and general spacing shown thereon, accurately but at leisure.

Principles of Keying

To encourage those to whom these signals may at first appear as strange squiggles, an easy start can be made if everything is covered over except the horizontal portions of the marker displacements themselves. Faults in the Fig. 2 slip will become obvious if automatic Morse is remembered as a standard. Happily for the transmitter mechanism, there are with this none of those long, medium and short dots or dashes that seem to creep into some hand-sending to suit the fancies of various operators. Instead, and quite irrespective of the speed, each perfect machine-made dash is always equal in length to three dots; the space between the symbols forming the same letter is equal to one dot; the space between letters is equal to three dots; the space between words is equal to five dots. The one-dot spacing rule between symbols forming the same letter is, of course, not purposely laboured with hand-

sending, because the actual rebound of the key itself provides just the required interval of time.

Fig. 1 illustrates the internationally accepted standards for all sound and vision Morse signals, and although as radio amateurs we have no commercial standard to satisfy, any efforts we make to approach perfect spacing and length will be amply repaid by increased esteem at the receiving end and the fuller personal enjoyment of smoother operating. If readers accept the fact that (put the other way round) the time taken to send three dots should be the same as the time taken to send one dash, they will understand how a small percentage of careless operators have brought the labour-saving excellence of the ingenious semi-automatic key into such disrepute on this side of the Atlantic. No amount of argument or "demonstration" on the air should convince anyone that Samuel Morse intended the crowding of four, five and even six or more dots into the time it would take to send one dash, and yet this is exactly what advertises to the receiving end and to the listening world in general the sorry and certain fact that the sender is "playing with a bug." That a bug is being used at all should be quite imperceptible if the operator can handle his key well. To produce automatic dots faster than manual dashes can be made to correspond is quite meaningless, so the weights on the key shaft should always be set as far back as reasonable; preliminary attention is usually given to the gap between



The equipment as described by G2NS for recording Morse signals, entirely home-made from oddments. The handle on the left-hand unit winds up the gramophone motor which draws the slip past the (ball-pen refill) inking head; this can just be seen standing vertically in the centre of the right-hand chassis, and is actuated by a relay which follows the keying. Some examples of the record obtained are given in the article.

the dash contacts, but that between the dot contacts, which is the main cause of all the trouble, is often overlooked. The ear alone provides quite fair accuracy in adjustment if this gap is slowly varied until the greatest possible number of dots are produced before coming to rest after one smart stroke of the paddle, but only a recorder can provide indisputable evidence of what is really happening. It is, of course, the standing distance between these two dot contacts when the key is at rest that determines the spacing automatically made between successive dots when the key is in action. If the distance apart is correct, the spacing between each dot will be equal to the length of each dot, as will be shown on the Recorder. If the distance apart is too great, the spacing between each dot will be greater than the trace length of each dot, while if the distance is too short, then

the spacing between each dot will be shorter than the length of each dot, as seen in the trace. A series of dots should therefore be made while the position of the adjustable dot contact is varied and the recorder can be relied upon to indicate immediately when the correct position for permanently fixing the dot contact has been reached. Wider intervals provide clearer comparison, so the slip should be running at its highest speed for this test.

Turning now to the question of the construction of a suitable recorder, few actual measurements are specified because interested readers will build with available components. The photograph gives a general idea of the operating head and the paper drive, each of which has been constructed entirely with what-have-you and junk-box components. [over



Actual size of the trace formed by the G2NS Recorder. It should be noted that all the other examples given are to a reduced scale for reproduction purposes.

The Operating Head

Fig. 3 shows closer details of the head assembly, which is mounted on an old chassis and consists of a cheap surplus relay, a roll of slip and an inking source. The relay coil resistance happens to be 200 ohms, but this is immaterial providing use is made of a sturdy 6, 12 or 24 volt type with an armature that is returned smartly by a tension-spring. As a DC source to energise this relay, the writer uses two old chargers in series, and chose this particular kind because the fulcrum-balanced armature of the more numerous and popular Type 3000 relay is not suited to the present (entirely original) inking source and mode of operation. As explained later in the text, however, a Type 3000 GPO relay could be used for a different purpose.

The slip used with the recorder is 950 feet in length, wound into a roll measuring 8 inches across, and after use on one side may be re-wound with a hand-drill for use on the other. Automatic re-winding can be carried out if a separate drive is taken from the motor spindle to the spindle of a second spool.

Alternatively, two spools fixed on the same spindle so that one is re-winding as the other is unwinding should work quite satisfactorily. Slip can always be left unattended after it is through the paper drive, as, although it festoons profusely, it very rarely knots itself and may be lifted in a loose heap for re-winding in any more convenient place.

The width of the slip is 3/8th inch and, subject to present-day fluctuations, may be bought through the Sales Manager, Creed & Co., Ltd., Telegraph House, Croydon, Surrey, for 1/8 per roll plus postage and packing. When calculating charges, each roll weighs about 7½ ounces and is described as Tape "ABARP." It is strengthened at its centre by a stout cardboard ring, and a coloured portion of the slip gives warning of the need for renewal. If chosen for size, the sawn-off end of a spool used for wire will be found to fit this cardboard ring, and such a wood plug should be bolted to the middle of a metal cross purposely cut wider than the roll itself in order to prevent any slack outer turn from falling off. To complete one spool, the ring has only to be firmly pushed over the plug and the

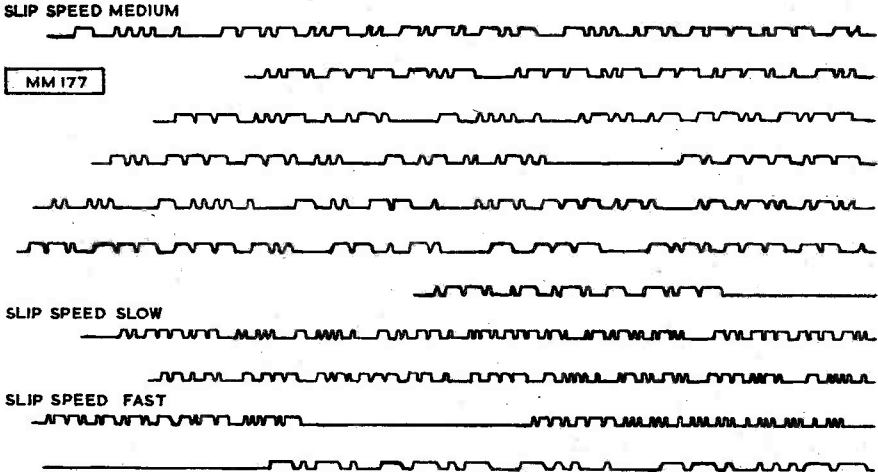


Fig. 2. Some examples of direct keying on the Recorder described by G2NS.

MM 178

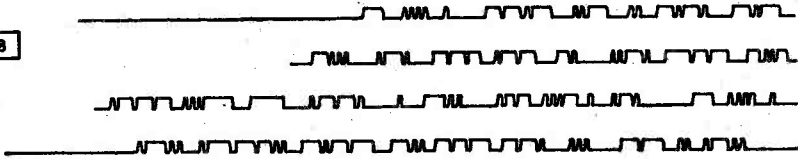


Fig. 2A. First efforts with a bug key, as recorded on the instrument.

entire roll sandwiched by another metal cross. A length of screwed rod through the centre, held by nuts on each side, forms a secure spindle on which the spool will turn. Two metal uprights take the spindle in their slotted heads and, after unpicking the outer turn of a new roll, the slip should first be taken under one of the tension rollers formed by a short piece of hollow tube revolving freely on a fixed bolt standing out from an angle bracket. It is then passed between one of the guides formed by an upright metal "U." Immediately below the armature of the horizontally-mounted relay stands a writing-platform, consisting (in the present case) of a paxolin block with a 3/8th-inch-wide groove cut across its middle; to afford the slip a smooth passage, the groove is hump-backed by extra depth where the slip enters and leaves the platform. The two upright bolts holding the platform should elevate it well above the level of the rollers in order to steady the slip by tension as it passes.

The Inking Device

The operating head of a commercial undulator usually includes two coils, and the armature is saddled with a very fine tube that acts as a syphon when one end is immersed in ink and the other trails on a length of moving slip. A rough syphon for amateur use can be made by extracting, secretly, the tube from the XYL's scent spray and soldering it to a saddle made of a flat piece of tin bolted to the relay armature. It will produce a broad, heavy, but plainly decipherable signal and a rich, quick-drying ink can be made from Crystal Violet, obtainable in powder form for a

few coppers at any chemist. A small quantity should be thoroughly shaken up in equal parts of methylated spirit and distilled water, and the mixture passed several times through filter paper before bottling and tightly corking. Its rate of flow can be controlled to some extent by adding more spirit to quicken or more distilled water to retard, while the addition of glycerine will, when needed, help to prevent undue clogging of the syphon tube and ink container. If recording is only occasional, the tube is best removed and kept in a spirit bath.

Ink containing much the same ingredients but without glycerine can be bought ready mixed from Creed & Co., at 1/3 per quarter-pint can, plus postage and packing. The weight is about 7½ ounces and the description number is 13548. Readers who wish to experiment with recording direct from a receiver may find it necessary to obtain the full advantages and refinement of a standard commercial syphon tube, and these may be purchased from Creed & Co. for a few shillings, the description number being 920/94A. Owing to their remarkable manufacture and extreme lightness, one of these very thin tubes could dispense with a saddle and be fixed directly to the armature of a Type 3000 relay by a blob of beeswax, obtainable in tablet form for a few coppers at most ironmongers. A short length of brass rod heated in a flame will melt the wax for attaching or detaching syphon tubes, and the already-mentioned precautions against clogging should be observed. Wetting the slip when necessary near the mouth of the syphon will usually start the ink flowing, and, when not in

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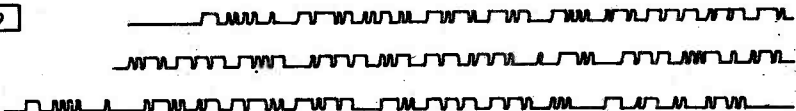


Fig. 2B. The same operator as in Fig. 2A, after practice on a bug key.

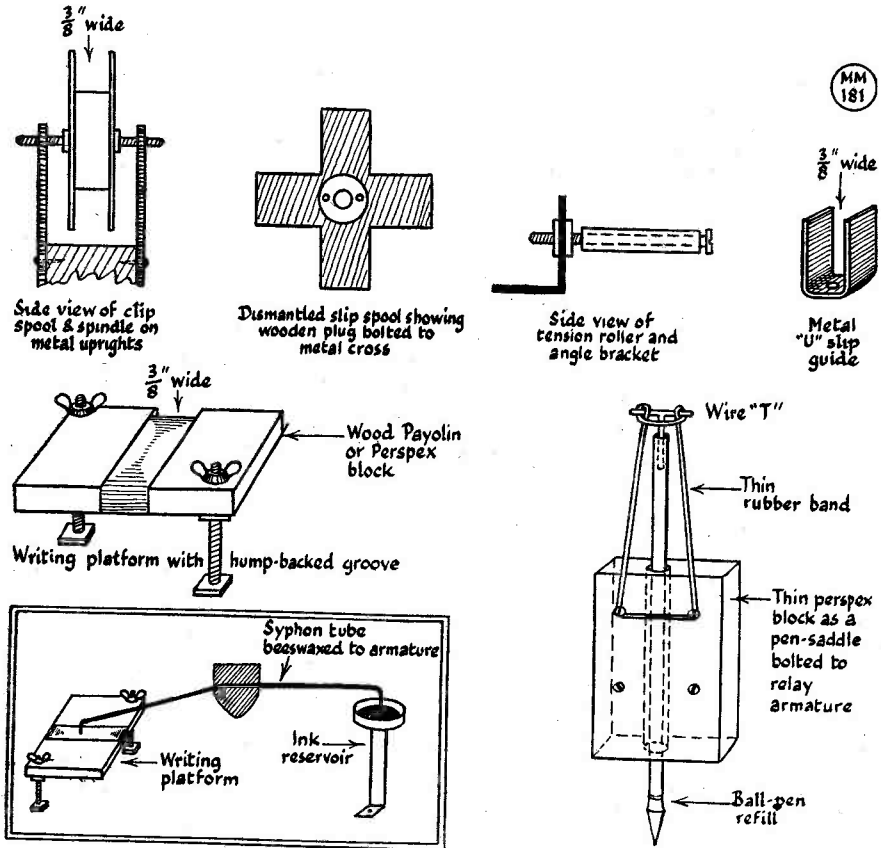


Fig. 3. Detail drawing showing a set of parts required to make up the Recorder.

use, the writing platform and slip should be lowered out of contact to prevent the ink from draining away. Complete clogging of the syphon through neglect may necessitate the use of a bulb and rubber tube to start the flow by suction, and, if this fails, the last resource is the passing through of a very fine strand of steel wire.

Ball-Pen Inker

For the amateur recorder at present being described, however, the writer has hit upon the idea of turning a cheap surplus relay into an undulator operating head, and has replaced the normal syphon tube and ink reservoir by a humble ball-pen ink refill, referred to hereafter as "the pen." Unlike a

freely-flowing syphon, a ball-pen requires constant pressure, and this problem has been overcome by employing a thin rubber band in the manner of a cross-bow. Bolted to the armature of the relay after the removal of all contacts is a thin block of perspex, down the centre of which is drilled a vertical guide-hole very slightly larger than the body (not the tip) of the pen. The open head of the pen is inserted into the bottom of this guide-hole and the pen pushed upwards into position before bolting the block, or pen saddle as it really is, to the armature. When standing vertically upright, the pen has no side-play (to be avoided if uniform signals are to be produced), but the ball-point is still free to press down-

wards on to the moving slip. The required amount of pressure, which is only slight, can then be obtained by first soldering two short pieces of stout wire together in the shape of a letter "T" and dropping the leg down the head of the pen. One end of a thin rubber band is then looped over the "T" and stretched downwards in the manner of a cross-bow until it catches and is held by one of the bolt-heads securing the block to the armature. If the action of the pen is sluggish or markers are being missed, the pressure should be lessened, and when out of use the band should be slipped off and the pen point lifted from the slip to prevent ink action. To commence recording, the cross-bow is stretched, the paper drive is started at the required rate of flow, and keying may then take place.

No attention is required beyond the renewal of spools and the occasional cleaning of the ball-tip with a rag and spot of methylated spirit. The faults to look for on the slip are unequal lengths of dots and dashes, unequal letter- and word-spacing, and disjointed and uncertain letter formation.

The Paper Drive

For this purpose a variable-speed clockwork motor from an old portable gramophone was boxed-in so that it would stand in any position with its

spindle protruding through a hole in the side. The original brake was a friction-pad pressed against the underside of the now unwanted turntable, so the motor for its new function has to be stopped by making use of another friction-pad originally there to restrict the rise of the speed-regulating governor disc. The action of this pad still regulates the speed, but by bending its arm more with a pair of pliers it will, when turned to its lowest point of travel, effectively stop the motor by a downward pressure of the pad on the governor disc itself. These modifications should hold good for most Garrard motors.

In order to obtain drive, the slip must be gripped by two pressure rollers, between which it passes, and, as will be seen from the photograph, these can be plastic 5 ampere sockets with a width of cycle inner tubing slipped over each to provide friction. They turn freely in each case if bored through the centre and allowed to revolve on fixed bolts standing out from the sides of metal arms. A tension spring attached to arm "A" keeps the upper pressure roller in close contact with the lower pressure roller, which, by means of another spring attached to arm "B," is in turn likewise kept in close contact with the tip of the motor spindle upon which the turntable originally sat. If

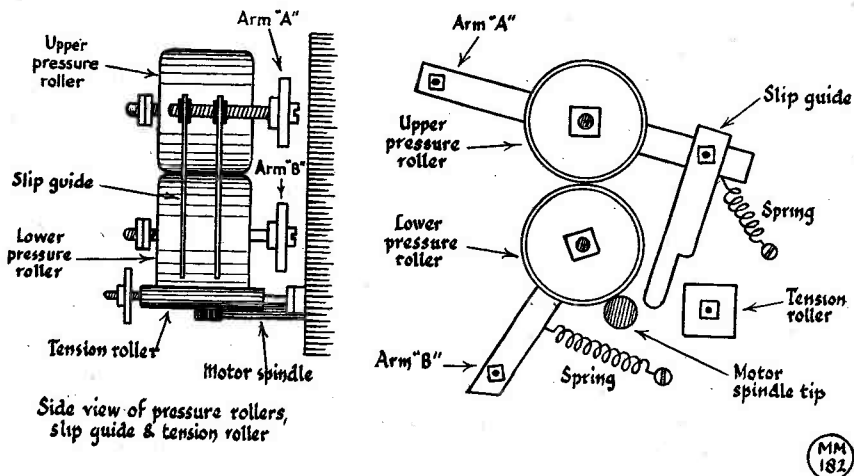


Fig. 4. General arrangement of the paper (slip) drive for the Recorder as described by G2NS.

this tip is wound with a turn or two of insulating tape, it will drive the lower pressure roller by friction at a uniform speed. After the slip from the operating head has passed over the tension roller, two strips of metal hanging down from arm "A" on either side of the slip keep it aimed at the centre of the two revolving pressure rollers and prevent it from riding out. Closer details of construction are shown in Fig. 4. If very much faster speeds are required, the ratio can be altered by feeding the slip between the spindle tip and the lower pressure roller, but precautions should then be taken to prevent frequent riding off.

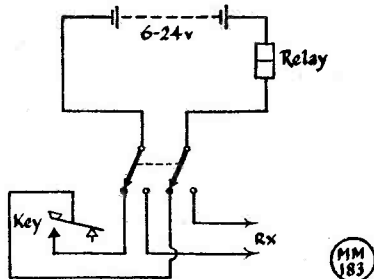


Fig. 5. Change-over switching circuit, for putting the Recorder relay on the key or on the receiver.

AERIAL CHECKS WITH THE GDO

FINDING RESONANCE
POINTS OF
AERIAL/FEEDER SYSTEMS

By J. N. WALKER (G5JU)

WITH the assistance of a Grid Dip Oscillator (and nothing else) a most interesting study can be made of the characteristics of aerials of all types. In many cases, some quite unexpected figures will be obtained and usually it will be possible to effect minor improvements to aerial systems, both for transmission and reception.

Long Wire End-On Aerial

A long wire aerial is generally cut to resonate fundamentally within an amateur band—for instance, 135 feet is a popular length for 3.5 mc operation. However, it is not always recognised that the *actual* resonant frequency is affected by such factors as height above ground, nearness of other objects (metal masts, stay wires, trees, gutter-pipes, etc.) and interaction with other nearby aerial systems—incidentally, these factors affect almost any type of aerial. Again, the total length must include the wire from the aerial lead-in right up to the transmitter or receiver and in many cases the indoor portion is of a length which it will not do to ignore.

The notes below prove the value of a GDO for only one possible practical application at an amateur station, and perhaps the most important—that of finding on what frequency the aerial is resonant under actual operating conditions. For this purpose alone (and there are many others) a calibrated GDO is well worth the time spent in its construction.—Editor.

It is assumed that a GDO of the type described in the April 1951 issue of the *Magazine* is available, complete with a set of calibration curves. The end of the aerial lead—that is to say, the end which normally connects to the equipment—is allowed to rest on the GDO coil and the resulting small capacitive coupling will usually be found sufficient. It will be known roughly to what frequency the aerial ought to respond and a pronounced reading should be obtained somewhere near this frequency, but quite likely not so near as might have been expected.

The harmonic resonances can then be determined and again it may be found that there is an appreciable discrepancy between the actual frequency and the expected frequency, particularly as the harmonic multiple increases. The GDO indication will be quite positive in all cases, although the amplitude of the meter movement will not be constant.

Where interest is taken in the low frequency bands, it will be useful to find

the resonant frequency of a long wire aerial when earthed. To do this, add a few turns of wire (thin insulated PVC flexible is suitable) around the lower part of the GDO coil and connect the ends, one to the aerial lead-in and the other to earth. The resonant frequency will now be about half the figure obtained with the aerial "free."

Where necessary or desirable, adjustments to the physical length of the aerial can follow on the foregoing tests until eventually the resonant point is brought spot-on to the selected frequency. It must, however, be borne in mind that the length will only be absolutely correct on one band and a compromise length must be chosen when the aerial is used on a number of bands.

Aerials Using Untuned Feeders

A number of aerial systems employ feeders of the matched impedance or untuned type—for example, the dipole (folded or simple), the ground plane and the multi-element beam. The impedance of the feeder may be anything between 50 ohms and 600 ohms, but its actual value does not matter for the present purpose.

The incoming feeder should be coupled to the coil on the GDO with a few turns of link winding, as mentioned earlier. One or two turns will be sufficient if the impedance is low (50 to 80 ohms) but more turns will be required—up to six and dependent on frequency—when the feeders are of medium impedance.

As before, the major resonance of the aerial will be immediately and definitely recorded. Explorations should then be made to discover any subsidiary resonances. Some will be found at odd harmonics (e.g. the third and fifth), but there should be little or no response to even harmonics.

One or more resonances may be found for which it is difficult to account. They will not be of importance if well away from any of the transmitting frequencies normally used, but further investigation is desirable should a second resonant frequency be found near the main one. As far as a transmitting amateur is concerned, an aerial of the type being discussed will only be used at its normal fundamental frequency and complications are unlikely to arise. With a receiver, however, subsidiary resonances may occasionally produce peculiar effects—in particular, loss of signal

strength over small bands and perhaps wide variations in noise level.

These subsidiary resonances are due to a mismatch between receiver and feeder—and, of course, such a mismatch is bound to exist at frequencies other than the fundamental. At certain points, the feeder itself will show a resonance independent of the aerial and it is when such a point coincides with a working frequency that action must be taken (by lengthening or shortening the feeder) to avoid it. Again, and usually with unbalanced low impedance co-aerial feeder, the combined length of feeder plus one arm of the aerial proper may give rise to a resonance, much of the lines of an end-on aerial earthed at its free end. Or, if balanced feeder is employed and is not earthed, the effect will be the same as a free end-on aerial, the overall resonance then being at a much higher frequency than when earthed.

The GDO will be found of considerable assistance when lining up a beam aerial. Because of the interaction between parasitic elements and the radiator proper, it is advisable to commence by measuring the natural frequency of the radiating element alone. Adding the parasitic elements will almost surely affect the fundamental resonance. The length of the radiator should not be altered but the frequency brought back to the correct dial reading (on the GDO) by adjustment to the length of reflector and director(s). Obviously a good deal of patience is required but it is worth while to spend some time getting things just right.

Tuned Feeders

The popular Zepp type of aerial uses feeders which are purposely tuned to the frequency in use by the addition of series or parallel capacity. This however does not alter the fact that such feeders have a natural fundamental resonance and further resonances at odd and even harmonics.

The feeders should be terminated in a small coupling coil wound temporarily around the GDO coil and indication will be given on the GDO meter of the aerial resonances, of the feeder resonances and of those resulting from effects where aerial and feeder act as one continuous long wire. The resonances of the aerial proper will be quickly recognised as they will fall in or near amateur bands (presuming the aerial has been designed accordingly).

As before, any odd resonances well removed from a working frequency can be ignored but not if they fall near an amateur band. As a matter of fact, if the fundamental resonance of tuned feeders did happen to be near the working frequency, it would be found most difficult to tune them up properly.

The Windom Aerial

A number of resonant frequencies will be discovered in the case of a single wire fed Windom aerial. First, there will be the fundamental of the horizontal top, then the harmonics of the top, also the long wire effect of the feeder plus the short aerial arm, again, the feeder plus the long aerial arm, and the harmonics of the last two systems. When looking for the frequencies applicable to the

horizontal portion, the feeder should be connected to a few turns of link winding on the GDO coil. The others will show up better if the end of the feeder is laid on the coil, to give a small degree of capacitive coupling.

The foregoing does not take into account mutual effects between two or more aerials, resonant lengths of stray wire, mains wiring, telephone wires, clothes line and many other similar complications, but enough has been said to show how interesting it can be to investigate the resonant frequencies of aerial systems and subsequently to take steps, aided by further measurements, to ensure that any particular aerial is working at maximum efficiency. Which, all said and done, is the vital factor in any amateur station.

BOOK TO BUY

For over 25 years, the ARRL's *Radio Amateur's Handbook* has been the standard manual of Amateur Radio. It covers theory, design, construction and practice—from the LF bands to the VHF's—for receivers, transmitters, power supplies, modulators, aerial systems and much else besides. The "ARRL Handbook," as it is generally known, can truly be said to give the whole story in a way that no other publication can, because it is written for amateurs and is therefore practical. The 1951 (28th) Edition runs to 550 pages of well-illustrated text, with a further 57 pages of detailed valve data. There are 27 chapter headings, covering everything from basic theory to the construction of a wide range of amateur receiving and transmitting equipment for all bands, with large sections on aerial design, VHF communication, mobile equipment, measuring apparatus of every kind, and much practical information on construction generally. The first printing of 75,000 copies of the 1951 ARRL *Handbook* was sold before it had been run through the presses, but further supplies are now available. The cost is 22s. (post 1s. extra), and it can be ordered in this country through Gage & Pollard, Publishers' Agents, 49 Victoria Street, London, S.W.1, who can also accept orders from any other country and in any currency for which an official exchange rate against sterling is quoted.

GEAR FOR GB3FB

Equipment for station GB3FB, to accompany the Festival of Britain Land Travel Exhibition, is being supplied by the following firms: Labgear, All-Power Transformers, Panda Radio, Telegraph Construction & Maintenance Co., Ltd., Teleradio, Q-Max, Stratton & Co., Automatic Coil Winder and Electrical Equipment Co. Ltd., Metropolitan-Vickers Electrical Co. Ltd., Advance Components, W. T. Henley's Telegraph Works, E. K. Cole, Multicore Solders, Walter's Electrical Manufacturing Co., Webb's Radio, Smith's English Clocks, Reslosound, Richard Allan Radio, Whiteley Electrical Radio Co. Ltd., R. Martin & Co. Ltd., and Leabank Chairs Ltd. The first appearance of GB3FB will be at Manchester during the period May 4-26, with G6OM in charge.

CARDS IN THE BOX.

Operators listed below are asked to forward, to BCM/QSL, London, W.C.1, a large S.A.E. with name and call sign, for the delivery of QSL cards held for them in our Bureau. Publication of the call sign/address can also be given in "New QTH's," and in the *Radio Amateur Call Book*, if this is desired.

G2AJL, 2BMP, 2CJK, 2CZS, 2DOZ, 3APG, 3CHQ, 3DYR, 3ETZ, 3EVO, 3EYU, 3FCB, 3FUA, 3GBI, 3GFT, 3HCT, 3HDA, 3HDM, 3HFL, 3HHV, 3HRG, 3QH, 4PV, 4VF, 5YI, 5ZO, 8PT, GI3FWF, GW2DNJ.

VR65 for Audio Use

DESIGN DATA

By P. SHORT, M.Sc., A.M.I.E.E.
(G3CWX)

ATENTION has recently been drawn (*Short Wave Magazine*, August 1950) to the use of the VR65 as a receiver audio output pentode. Design data are given below for pentode and for triode connection. They cover the use of any valve obtained under the titles of:

CV118/CV200/CV1065/VR65/ARP36
POVT200/SP6L (6.3 V, 0.63 A heater)

and:

CV1600 / CV1700/ ARP19/ POVT150
POVT150A/SP41 (4 V, 0.95 A heater)

The pin connections are identical in all these cases. The figures for 8000 and 5000 ohm loads may reassure those who wish to couple this valve (which is very cheap on the surplus market) to existing loudspeakers with built-in output transformers. The valve is then best used triode-connected, the half watt test obtained being quite enough for the average loudspeaker.

Pentode, Class—A

Anode Volts 250
Screen Volts 250
Bias Resistor 150 ohms
Anode Current 10.5 mA
Screen Current 2.5 mA
Optimum Load 20,000 ohms

Load Resistance, ohms	...	20,000	20,000	8000
Input Volts RMS	...	1.4		
Output power, watts	...	1.0	0.5	0.5
2nd harmonic, %	...	7.5	5.5	12.0
3rd harmonic, %	...	9.5	3.0	3.5

Triode, Class—A (Anode, Screen and Suppressor strapped)

Anode Volts 250
Bias Resistor 150 ohms
Anode Current 15 mA
Optimum Load 25,000 ohms

Load Resistance, ohms	...	25,000	8000	5000
Input volts, RMS	...	1.5		
Output power, watts	...	0.5	0.5	0.5
2nd harmonic, %	...	2.0	1.5	4.5
3rd harmonic, %	...	2.5	4.5	5.5

These figures are average values obtained from a number of valves of various origins. The writer is indebted to Professor J. C. Prescott for facilities provided in the Electrical Engineering Department of Kings College, University of Durham, for these measurements.

THE CORRECT QTH

We are still finding that some of our correspondence is being "returned to sender" because our name does not appear on the envelope. The reason is that 53 is a large office building accommodating some sixty firms, several of them publishers, and unless the name **SHORT WAVE MAGAZINE** (and not "S.W.M.," or "S.W. Mag.," or "Ed. S.W.M.") appears on the envelope in full, delay or mis-delivery is almost certain. We know just what happens, because incompletely addressed letters intended for other firms in the same building are frequently delivered to us!



A GERMAN MERGER

With the formation of the Deutscher Amateur Radio Club (DARC), the two publications previously covering amateur interests—*QRV* and *CQ*—have been merged under the title *Das DL QTC*, as the official DARC publication. This is a rational arrangement which has overcome a number of serious difficulties, and the split in the DL (national) ranks during the immediate post-war period has been mended. *Das DL QTC* is a worthy little monthly and is devoted entirely to DL interests.

XTAL XCHANGE

This space is available on a free-of-charge basis for readers who may wish to exchange crystals; buy-or-sell notices cannot be accepted for insertion here. Offers should be set out in the form shown below, on a separate slip headed "Xtal Xchange—Free Insertion," and all negotiations between interested parties conducted direct.

G3EAR, 59 Maple Road, Horfield, Bristol, 7.
Has Standard Radio 7000 kc crystal, ¼-in. mounting. Wants any frequency 3530-3503 kc.

G3GOT, 75 Shaftesbury Road, Romford, Essex.

Has 1000 kc. bar, ex-W.1191, ¼-in. pin spacing. Wants 100 kc bar, any mounting.

G3HDJ, 75 Pittville Avenue, Mossley Hill, Liverpool, 18.

Has QCC 1795 and 7078 kc crystals, with certificate. Wants any frequency 7000-7025 kc.

G8UA, 406 Higher Brunshaw, Burnley, Lancs.

Has 1000, 7500 and 8000 kc crystals, all ¼-in. spacing. Wants frequencies 7000-7060 kc, with or without holder.



By L. H. THOMAS, M.B.E. (G6QB)

ANOTHER very awkward month for the DX fraternity, mostly with conditions just about as low in the noise as they could possibly be. There are those who protest that they *must* have been pretty good, because they worked this, that and the other; but don't you believe it—they've been shocking!

It is a striking fact that some of us in the 1951 Marathon Table have already worked 100 countries this year, but that has largely been a question of trying really hard and deeming nothing too weak to copy. If this had been 1946 or 1947, with the level of activity that there is at present, 100 countries in ten days would *easily* have been possible. The only reason why we didn't go ahead very fast in those years was the lack of stations in certain areas.

From what the sun-spot prognosticators tell us, it seems possible that this summer will see the real trough of the cycle and that next winter will at least be no worse than the past one—and might even be better. We have a dreadful feeling, though, that a sudden spell of really good conditions now would produce QRM the like of which we have never heard before. European activity is at its highest level in history; and the operating is just about at its lowest standard ever.

The Three Grades

This reminds us that an Old Timer who was recently compelled to spend five weeks in bed told us that he did a tremendous amount of listening during that time, with a bedside receiver. He heard lots of things that he would have missed had his Tx been available, and, as a result, he has categorised amateurs into three grades: Types, Bods and Clots. The latter class replaces the "Lid" of olden days and is more insidious.

Calls Heard, Worked & QSL'd

The Lid was usually just a poor operator, who couldn't send, or couldn't copy, or had a bad note. The Clot of modern times is a greater menace, because he may even be a *good* operator when he uses his head; but most of the time he doesn't bother to observe that formality. So, with his beautiful T9x note and wonderful fist, he calls CQ DX on top of the only bit of DX on the band; or he calls a station while the said station is actually replying to someone else on the same frequency; or he butts into two-way phone contacts with facetious remarks; in fact, there's nothing he might not do, just because he's a Clot.

Save them up as you come across them, and we'll have a Clots' Corner each month; not for the Hot-Under-the-Collar fraternity, but so that we can get a good laugh out of them as an antidote to what they do to us when we're on the air.

How to Waste Watts

This "CQ DX" menace seems to get more serious every day. We recently took a series of very rough and very rapid checks on the 14 mc band (CW section) with the following specimen results: Tuning from 14000 to 14120 in five minutes, we heard 72 stations; 20 appeared to be in QSO; 18 were calling other stations; and 34 were calling CQ DX. The total number of DX stations heard among these 72 appeared to be 8—including W's. This was at 1930.

Second check, at 0830 next morning, revealed the following: 36 stations heard; 12 in QSO; 6 calling others; 18 calling CQ DX. DX stations heard, only 3—all ZL's.

From these two rough checks it seems that no less than 50 per cent. of the signals you hear on the band are



This photograph is of particular interest because it shows all the CT3's (Madeira) together for the first time, with G2ML (beret) fourth from right. The CT3's are, left to right: CT3AC, CT3AE, CT3AV, CT3AA, (G2ML), CT3AN, CT3AK and CT3AD. G2ML (Macclesfield) is himself one of the Old Timers having started with his first receiver ' way back in 1911.

calling CQ DX, all at once! If there's practically no DX there to come back to them, this represents not only a complete waste of time and watts, but ensures that they will miss any possible QSO with a DX station that might pop up and call CQ himself.

How long can you listen round what seems a dull band without itching to pull that switch and pound the key? We're all in favour of the odd CQ once every fifteen minutes or so, if nothing else shows up, but some of these Clots do it *all the time*. As a definite example, here's a true story. We worked a nice bit of DX on 7 mc the other evening; while he was calling CQ there was a G on top of him, calling CQ DX. When he came back to us, the G was doing it again; when we signed off, the G was still doing it. The DX station heard him all right, because he complained of his QRM on our frequency. But the chances are that the G never heard the DX station at all. Why call CQ DX if you can't hear 'em, anyway?

The 14 mc Band

There is still plenty of rare material on this band for those who like wasting time! Just after the last issue went to press, FR7ZA (Reunion Island) turned up. Some of the ZS's were the first to

work him, and then the F8's got busy with a kind of "closed shop" technique, so we haven't heard of a G who has worked him, as yet. (*Stop Press*: We got him this very evening!)

By the time you read this there should have been more trouble in the shape of FG7XA and FG7XB—none other than CM9AA and his XYL on a holiday in Guadeloupe. Rather too near the USA for comfort.

A number of CE7's with the "Z" call-sign denoting Antarctica have also appeared—CE7ZA and 7ZB on CW, with 7ZM, 7ZN and 7ZO on phone.

G3ATU (Roker) still maintains his handsome lead in the Marathon table, although he says he has not been very active. He contributes a couple of funnies in the shape of "6K6AA" and "3P6MN." Honestly, some of these calls must just be the product of a mad typist.

G5FA (London, N.11) bagged FP8AW for a new one, plus VT1, VS6, KV4, KR6 and a lot of the usual DX. He, too, heard two good pirates calling themselves M1B and VQ1AU. GM3EST (Motherwell) has been mostly on phone, on which he waylaid YV, YS, CM, VS1, VU and other nice pieces. His only two appearances on CW brought him two new countries—JA4AI and SU1GM.

G3DCU (London, N.W.11), after

holding his G call for three years, is off to become a VK—and we all wish him *bon voyage*.

G3HDA (Kidderminster) has put his score up to 34Z and 103C, which undoubtedly puts him ahead in the "G3H..." class! Recent new ones have been FY8AC, KG6GA, CR5AD and 5AF, YS10, XZ2EM, VK90K, VP7NM, VT1AF, FP8AW, VR1C and ET3Q. Yes—25 watts . . . Why use more?

G8IP (Hampton) queries the station

FOUR BAND MARATHON

(STARTING JANUARY 1, 1951)

Station	Total Points	3.5 mc	7 mc	14 mc	28 mc	Countries
G3ATU	200	20	78	99	3	123
G6QB	185	17	55	100	13	113
G5BZ	175	21	44	107	2	117
G5FA	167	15	68	79	5	98
G5JU	147	24	45	69	9	82
G6QX	138	32	57	47	2	77
G3FXB	135	14	55	65	1	90
G3ABG	132	20	63	44	5	78
G8IP	112	12	48	44	8	72
G2AJ	101	13	34	38	16	57
G2BW	96	14	28	51	3	63
G6TC	89	12	32	43	2	56
GM2DBX	87	1	8	36	42	68
G8KU	85	13	26	44	3	59
G3EDA	79	12	32	34	1	51
W2WC	74	16	25	28	5	43
G3GUM	68	14	19	34	1	46
G2YS	40	9	21	4	6	27
G6AT	39	7	20	10	2	27
G3COI	35	10	5	19	1	28
G3IAR	18	4	10	3	1	18

(Note that new entries to this table must not include QSO's dating back more than two months from the time of entry. Regular reporters should send in their score month by month—three months' failure to do so will be taken to indicate loss of interest and the score will be deleted).

signing FP8BX—chiefly because he heard him without the usual "rat race" going on. He's perfectly genuine and used to work sporadically as FP8PX a long time ago. Lots of G's have now worked him, both on 14 and 7 mc.

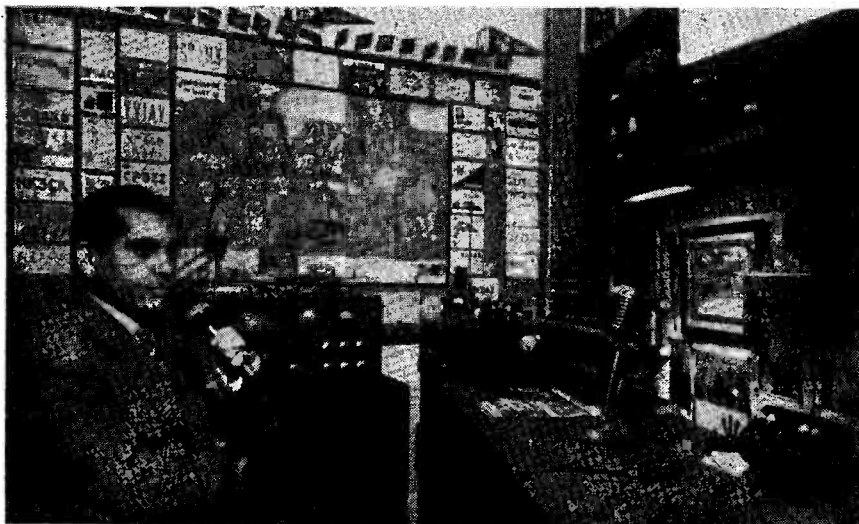
G2HKU (Sheerness) complains about a number of G's who have been working (or trying to work) a rare DX phone operating on 14010 kc. He has heard FR7ZA and FQ8AE in the mornings, round about 0630. HKU has just received his DXCC Certificate, and the ARRL have told him that he is among the first five for QRP DXCC, although his Certificate is No. 1216. He wonders whether he is the lowest-powered G to claim it—input being round about 21 watts from batteries and vibrator. Nice piece of work, HKU, in any case.

G2BW (Walton-on-Thames) has collected a few new ones on the band, including EK, EQ, CT2, FP8 and GD! He hopes by next month to have the Tx on full power, to have mastered an electronic key, and to be the possessor of a Ground Plane that works.

Those who are still short of confirmations from these parts may be consoled to know that G2DHV has recently had cards from MD4GC, ZK1BC and ZS3K. (Personally, we're held up on the All Africa Award for a ZS3 card, although we've worked four of them!)

G3GUM (Formby) notches up a few more, such as DU6IV, 15ZU, PJ5HM, PZIAL, VP9AAA, FP8BX and AP2Z. In addition, he heard a lot of nice ones, including AC4NC, who may well be genuine. This chap called "CQ W," and all Europe seemed to hold off except an SP, who called him and offered to "QSP to W." This, though a new one on 'GUM, is an old trick which we have used ourselves before now, though seldom with any success. In the case of this SP, it worked. 'GUM, by the way, is up to 122 countries with his 18-20 watts, and wonders how long it would have taken with 150 watts and a good piece of the sunspot cycle.

GM2DBX (Methilhill) says it is a Bad Thing to become known as a DX-hound, to such an extent that everyone assumes you're always looking for DX and nothing else. You lose some pleasant QSO'S that way. He also dilates on the vexed question of when to call someone who is presumably signing off with another station. This all boils down, of course, to the one question: Does your VA really mean VA? Surely



The station of EA3GI, Barcelona, who runs a pair of 807's in the PA, with an SX-42 on the receiving side.

the first station to send what he considers his "final" should not send VA, but K? Then, if the other station takes the hint and seals it off, *he* can sign VA and the first station can just send the quickest of OK's and then VA himself. (But you can't make rules in this game—first, because very few people learn of them; and secondly, very few of *them* would stick to them. So we go ahead without any procedure and muddle through somehow).

G3FXB (Hove) seems to have been making hay since going on full power, and weighs in with CO5PN, CX6AD, JA7WH, KR6DT, UA0AA, VP4LZ, YV1AI and many lesser lights. He heard a station signing "C3JK" during the month, but every time he called him another station came on saying "C3JK is phoney." 'FXB wonders why certain stations always have outstanding signals—his present example is LU2FN, always S9 when the other LU's are S6. We have often wondered ourselves, but assume that it's more due to the aerial system than anything else.

Forty-Metre News

This overcrowded band has continued to give us surprises, among which has been the way the signals from VQ3CF hold steady from as early as 1830 until

after midnight. If more African stations were active on the band it would be mighty interesting.

G3HDA has done well on this band too, with VQ3, VS7, ZC4, EK, MP4, ZD4, W's, ZS's and the like. G5FA, as devoted as ever to Forty, has collected VQ3CF, TF5TP, KP4NC, VS7DB, VO1W, ZB2A and a few other choice ones. He heard ZD4BC but had no luck with him. G3FXB doesn't enjoy the European QRM that the summer is bringing, but whipped up CO8AI, FM7WF, FP8BX, HP1BR, KG4AO, ST2TC, TI2TG, VQ3CF and others. (We note that VQ3CF was worked at 0300, which extends his hours even further!) 'FXB thinks the band shows a peak between 0100 and 0200, after which QRM falls off.

G3DHE (Leicester) worked CO8FH at 2325 and gave him RST 589. He was so strong, in fact, that 'DHE appears to have doubted the whole thing, but we would say he was all right.

The VP8's seem to have melted away for the time being, and we heard a nice signal from HH3L the other night, but couldn't raise him; and that just about represents the 7 mc news this time. That band is worth watching, but you have to lose sleep to do it justice!

Eighty Metres

Good news from GW8WJ (Prestatyn), who has done it at last, "it" being a contact with ZL, on 3.5 mc, with 8 watts input. 'WJ has been trying for this for a long time, and is naturally pleased. It's the first GW/ZL contact on the band—with 8 watts input. Since the war, with the same power, GW8WJ has worked VK5, W 1, 2, 3, 4, 8 and 9, VE 1 and 3, OX, ZB1, FA8 and so on. There's nothing magic about his aerial, which is an 84-ft. 'EDP, 20 ft. high. A nice piece of QRP-work.

G2BTO (Bolton) wields 5 watts on the band, although he doesn't chase DX overmuch. But he says the month of March yielded 37 phone QSO's (all 100 per cent.) with G, GM and GW stations, and his low power astonished many of the 150-watters. He finds the way to keep a clear channel is to work a QRO station and let him do most of the talking!

Top Band Topics

Full news of the Trans-Atlantics appears elsewhere in this issue; there are, however, a few interesting snippets about the band. Apparently a recent Russian contest sent a whole crowd of them on to the Top Band, and SWL G. C. Allen logged UA1KMC, 3AW, 3CR, 4FC, UB5BO, 5BY, 5BP, 5KAA, 5KAE and 5KAO. He stayed up late, hoping that some UD6 or UG6 might break through, but the band folded up. There was, however, an OK station calling UG6KAA—so anything might happen out that way.

G2BTO tells us that GM3CCK is in Kirkwall, Orkney, and therefore a nice prize for the county-collectors. As soon as the GM's QTH was discovered, the band apparently came to life! Thanks also to GM3DZB for "sponsoring" him.

We can probably assume that Top-Band DX will by now have disappeared for the season—but look out for it next winter. This band has had a lot of publicity this year, and if we find some VP6, VP7, CT2, CR4, TF and other stations up there next winter we shall be pleased but not surprised.

General Patter

G2PL (Wallington) reports a peculiar happening; G5UX, only ten miles away, worked VT1AB and 1AF when they weren't even an S1 signal with G2PL, but later he heard them and 'UX lost them. Unusual for 14 mc.

G3FXB had an experience that underlines the importance of getting conditions just right for a contact, when FP8BX came back to his CQ on 7 mc, with the band loaded with W's. No queues, no spivs, no trouble . . . Obviously the skip was just about right and the W's weren't hearing the FP8.

GM3EST would like to find a Wireless Company supplying operators for DX islands. He means it—he really would like to go DX and become VR6EST or perhaps ZD7EST! Any offers of help will be appreciated.

Just about the only mention of 28 mc this month comes from G5JU, who heard VT1AF calling CQ, on CW, well up in the phone portion of the band, with few taking any notice of him.

G6QX (Hornchurch) seems to have doubts about HE9LAA, but we had a very long chat with him and he appears to be all right. 'QX worked a UA9 in Zone 18 on 7 mc (new Zone for him) and has had cards returned from VP2AA and OX1FU, both of whom can now be taken as phoney. He reminds

ZONES WORKED LISTING POST WAR

Station	Z	C	Station	Z	C
Phone and CW			Phone and CW		
G6ZO	WAZ	227	G3ABC	37	133
G6RH	WAZ	224	G6QX	37	131
G6QB	WAZ	216	G2EYT	36	133
G5YV	WAZ	205	G2YS	36	130
G3ATU	WAZ	204	G3GIZ	36	127
G2FSR	WAZ	196	G3GUM	35	111
G4CP	WAZ	195	G6TC	35	110
G3DO	WAZ	191	G2DHV	35	106
G8IG	WAZ	188	G3FGT	34	129
G2YD	WAZ	171	GM3CVZ	34	107
G3BI	WAZ	162	G3HDA	34	103
G3TK	WAZ	157	G6AT	34	100
G3AAM	WAZ	154	G3FXB	31	122
G2IO	WAZ	152	G2BBI	30	101
G3YF	WAZ	152	Phone only		
G8IP	WAZ	143	G2AJ	38	156
G3AZ	WAZ	133	G3DO	37	154
G5BJ	WAZ	126	G6WX	37	135
G5VU	WAZ	124	G8QX	36	139
G2AJ	40	197	G3COJ	36	134
G2WW	40	183	G2WW	36	134
G3FNJ	40	150	G2VJ	34	116
G6BB	40	136	GM2DBX	33	98
G3BNE	40	134	G2BBI	30	98
G5MR	40	130			
G3DCU	39	163			
G5FA	39	157			
G8KU	39	156			
G3BDQ	39	140			
G3COJ	38	157			
G2BJY	38	152			
GM3EST	38	133			

us that there are whispers about Saarland being recognised as a country, so keep those 9S's in your pocket until the word comes through.

Several readers reply, for the benefit of G3GWO, that the QTH of UN1AE is Oupa. G3ABG (Cannock) adds that he has a secret method of extracting Russian QSL's, as a result of which he has them back from 17 of the 18 districts. Later, he talks about learning the Russian alphabet, so perhaps the secret is out?

Overseas News

W2QHH (Hamilton, N.Y.) thinks the *Magazine DX Award* should be "duck soup" for anyone over here, but not easy for him because of the 15 countries needed on the Top Band. He is flat out for his DXCC on 80 metres only, and has amassed 86 of them so far. And he tells us that ZA2AA (who sent out QSL's) has now been proved to be in the same category as the notorious CZ2AC—a Swiss pirate. This gen. comes from the Swiss PTT. Strike him off, chaps!

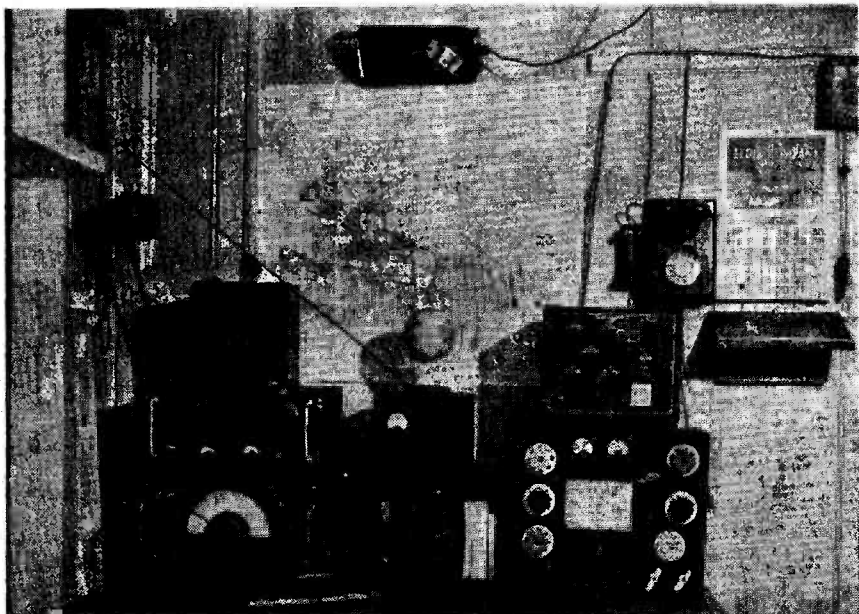
VS9AA, who is ex-VU7JU and G3JU,

tells us that the only active stations in Aden are VE9AA, 9AF and 9AH, though VS9AO is licensed and will be on about June; VS9AH leaves in May, too. By the way, we gather that ex-MT2E is now VQ9E, which will cause some eyebrows to twitch—but he is genuine.

ST2TC (Wadi Halfa) made the first ST/W and ST/VE contacts on 7 mc when he worked W4CEN and VE3XY early in March. Since then he has worked a lot more, and VK's as well. He finds 14 mc a dead loss after 2100 GMT.

VS1DB (Singapore) says the radio society out there is going great guns, and sends us a lot of interesting details. In roughly four months' operating, 'DB has worked 91 countries in 35 Zones. Static on 80 and QRM on 40 makes those bands hardly worth while, so even the local net operates on 20. Recent good ones on 14 mc for him have been FY7YC, KC6WD, UM8KAA, HS1CU and 1VR, T12TG, PK5AA and VT1AF.

A note from Egypt makes it clear that the various SU's are "pirates," but *not* phoney. The position there is some-



GM3AEL, Alves, Morayshire, remarks that he is the "local copper" in that part of the world. He has an 1155A receiver, a TUSB modified to give drive output on Forty, and an 1154. The aerial is a N/S 66-foot Zepp and operation is on CW only for the time being.

what peculiar and conducive to "non-legal" operation in certain quarters. It is inadvisable to say more, except to appeal to people working the SU's not to do silly things in the way of QSL cards. Writing from Ismailia, ex-G3DYY also asks for discretion in the matter of the SU's.

G2AVP has, to his joy, landed in Kenya; he has been heard operating VQ4ERR, and will be on himself as VQ4CM before long—on 7 mc with a ground-plane, of course. KP4HU, who has given countless people their first KP4 on 7 and 3.5 mc, is going home to W4-land, whence he will be operating, at first, as KP4HU/W4. By the time you read this he will be on the banks

of the Mississippi.

Late Flash: G2MI forwards a cable from Zomba, Nyasaland, stating that ZD6NJC will be on the air from May 15 to 17 in connection with the Nyasaland Jubilee Celebrations. Working all bands—100 per cent. QSL with special Celebration cards.

That's all for this time; next month's deadline is **first post on May 16**. Overseas readers please note the closing date for July issue: *June 13*. All your reports and results to "DX Commentary," *Short Wave Magazine*, 53 Victoria Street, London, S.W.1. Until next time, cheerio, 73 and BCNU.

Invisible Sky-Wire

ANOTHER LOCAL
PROBLEM SOLVED

By J. D. HEYS (G3BDQ)

THE writer is unfortunate enough to live in a densely built-up area; the view from the window of the first-floor shack consists of roofs, chimney stacks, water tanks, wire clothes lines, and BCL aerials! When first arriving at this QTH (which is also only 50 feet a.s.l.) eighteen months ago, one had doubts of ever getting signals out at all. However, many experiments with all types of 33-foot aerials 20 feet up at the "high" end and but 12 feet at the low end culminated in the adoption of centre-feed, using 17 feet of tuned 600-ohm open-wire line. This has worked wonders on 14 mc, despite the screening and its southward slope; the only noticeable dead spots are VE7 and 8, and KL7. On 7 mc the whole thing is loaded up as a half-wave, although, of course, only the top is an effective radiator. This makes DX on 7 mc difficult, and W, VE and KP4 QSO's are hard work! The decision to enter DX contests seemed to make 3.5 and 7 mc operation a "must," and a long-wire had to be fitted in somewhere, somehow.

Getting Outside

The complete inaccessibility of helpful-looking chimney pots at the rear

of the house turned attention to the front, or street side. Running a wire from the front of the house would mean having either about 27 feet of radiator indoors or else building a remote tuning unit linked to the transmitter with a low-impedance line. The latter course was abandoned; the idea of running through to the next room when tuning up or changing bands evoked no enthusiasm in the occupants of the other room!

A "W3EDP" type of aerial was finally selected, multi-band operation being the deciding factor. Thought of 57 feet of flat top in the clear 30 degrees North of West was a spur, and some 18 SWG wire was soon up indoors for the 17-foot counterpoise and the 27-foot lead to the proposed outdoor section.

Alas! a final snag was encountered. The jungle telegraph had it that the local Council *strongly* objected to "obstructions" either on or over their highways, although the road in question happens to be a dead end.

The Solution

It seemed as though G3BDQ's *debut* in competitive DX would have to wait still longer. Then, when all seemed lost, another local operator mentioned the possibility of an invisible aerial, as described in *QST* some time back. A search was rewarded by details of a very thin 132-foot long-wire which had worked well on Eighty at 20 watts input.

Deciding it was worth the trial, a 57-foot length of 30 SWG enamelled

wire (taken from an old transformer) was craftily slung in place during the doldrums of one Sunday morning. Normal insulators were out of the question, and those used were made up from $\frac{1}{4}$ -inch lengths of 4 mm. polystyrene wire sleeving. A hot iron sealed the ends and helped towards weather-proofing, and three of these "insulators" were put at either end of the wire. A word of warning—beware kinks, and do not pull hard when tying up at the ends.

At a height of 20 feet, the aerial was almost invisible from the ground; a timid application of 50 watts on 7 mc brought back a G station immediately, who gave 589. This was an S-point better than the average report with the 33-foot top on 7 mc, and further European contacts confirmed this. Later in the day, defying all the rules on the current-carrying capabilities of the 30 g.

wire, QRO to 150 watts was tried—rather expecting to lose 57 feet of radiator! For some reason, this was not the case; and after dusk, with a book on the key, no red glow could be observed in the sky!

Results

Extensive tests with this aerial have shown it to hold its own with more normal radiators on 3.5 and 7 mc, and operated on Ten as an end-fed five-half-wavelength long-wire (leaving off the counterpoise) good reports were forthcoming from North America, VK and East Africa. On 14 mc, however, the old 33-footer seems best, although the W3EDP raises stations in what used to be the dead spots.

The weight of the 57 feet of 30 SWG wire is under half an ounce, and it easily supports its own weight.

GIBF Here

MORE AUTHENTIC GEN

Persistent demand by 1000's readers (well—Susie, Popoff and old pal MO1FFI) compels Editor open pages again to well known authority OMØTO this of course is me GIBF. Have said am prepared give benefit my advice provided beginners watch this space for reliable technical dope without prejudice and results always guaranteed.

But pse don't waste my time asking what ant I use for working super DX. Beginners should know by now it's not ant but watts you need to raise DX specialities such as QP, SR, JF, LQ, to mention only few. Even stuff like this chicken feed if my principles thoroughly grasped.

Have now completed rebuild OMØTO-EH5HE-SI5SI/MM (all these of course are me GIBF) with principle Watts for DX as theme new station. Hence am running three 813's in final, two in parallel and one as triggered-bashing-amplifier; TBA stage is urged by T20 in SEO and whole Tx designed to keep all tuned circuits on same band, as have eliminated fiddle-faddle with doublers, neutring and bias; all valves run free for max RF output, as indicated by loop-lamp held near tank coil.

Key in common cathode of course and

efficiency whole set-up proved by $\frac{1}{2}$ -inch arc drawn across contacts any time I like. Note is maybe slightly rusty but all beginners now know that is FB for real DX using exotic calls.

When I give handle (Mynddisllwyn, to test whether they can read Morse) and describe rig other operators very envious my 813's and often ask Do they run warm, Joe OM? Answer is Fairly, but explain of course no need to worry till you can see grids through anode. Beginners should specially note this point in management 813's, ignored by all other technical writers. Locals naturally very jealous my rig and results and make remarks like Your Tx FB for jamming Russian BC, and Why not try 21 mc band. Laugh it all off with some crack like QRX on *my* freq when DX is breaking through.

Next month: How to Modulate the TBA Stage.

(Not if we can help it.—Editor)



MORE SSB STATIONS ON

In a recent "Radio Amateur Programme" in a Voice of America broadcast, it was mentioned that there are now known to be 75 stations in the States and Canada operating on SSB. European activity is also increasing steadily, and an interesting QSO was that between W2ALG and CN8EJ, both using SSB, on the 14 mc band.

GDO for VHF

GRID DIP OSCILLATOR FOR THE 30-160 MC RANGE

By J. N. WALKER (G5JU)

THE April 1951 issue of *Short Wave Magazine* contained a description of a grid dip oscillator having a frequency range of 32 mc to 820 kc, obtained with five plug-in coils. It was pointed out that the design lent itself to the construction of a similar instrument covering very high frequencies, and the present article deals with this VHF version. Four plug-in coils, of a simple type and wound to the specification given later, permit a frequency coverage of 31 mc to 164 mc, making the instrument invaluable for experimental work of many kinds. The 145 mc amateur band is included and the harmonic frequencies (48 and 72 mc) encountered in a 145 mc transmitter. Also, the frequencies employed by the BBC station at Wrotham (Kent) are covered, not to mention the whole of the television band.

Circuit

The particular feature of the HF instrument, considerably increasing its sensitivity as a GDO, was the inclusion of the DC amplifier, and this principle is, of course, retained. The circuit of the VHF Grid Dip Oscillator is shown in Fig. 1, and it will be seen to resemble closely the circuit of its predecessor. The only real difference lies in the oscillator section, which uses a Colpitts circuit and incorporates a split-stator tuning condenser.

Construction

The photographs illustrate the construction clearly, and little more information is required. Again a diecast metal box holds all components (except the plug-in coil), and the same type of valve—a miniature double-triode—is employed. As (in the writer's case) this instrument will not be used so frequently as the HF version, it was decided not to fit a meter in the box but to provide instead a jack to allow easy connection of an external meter when required. In many cases, of course, the VHF version will be of

This article will be of particular interest to all VHF experimenters, as it describes a practicable GDO for the upper frequency ranges. If built exactly as specified, the calibration given should be approximately correct, and can be adjusted for more accurate readings by reference to the known points around 40, 60, 90 and 145 mc.—Editor.

greater importance than the HF instrument, and then it will be desirable to fit a flush-type meter, 2-in. diameter, with a full-scale deflection of either 500 microamperes or 1 milliamperes—the values given for the resistors will suit either. Fitting a meter also eliminates an additional loose lead. A slight rearrangement of some parts may be necessary when the meter is included but there is a fair amount of space available.

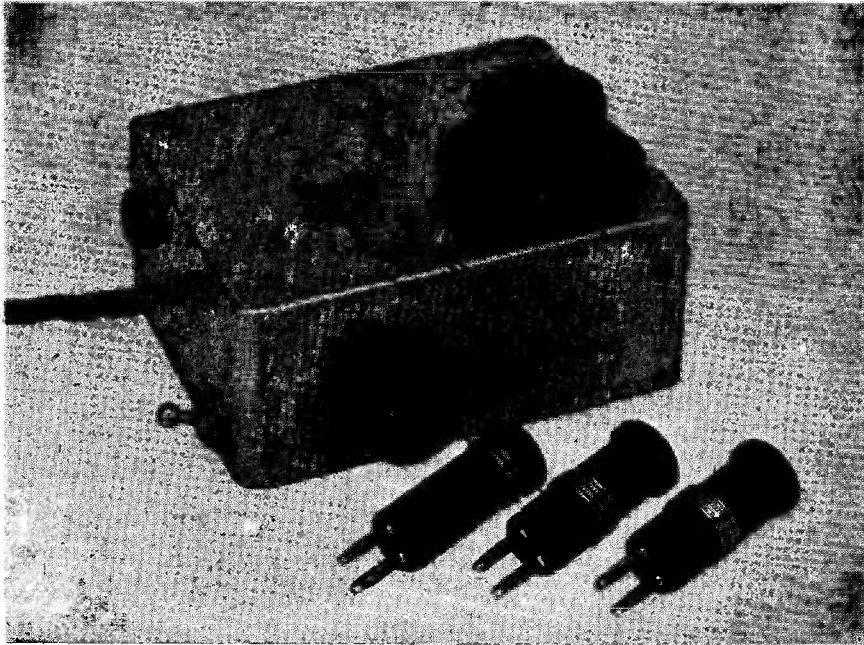
The wiring of the oscillator circuit should be followed closely—it is important to keep all leads very short, as otherwise the frequency range will be affected to a considerable degree. Fig. 2 indicates the connections to be made to the valveholder *before* it is bolted in position. The wires from the A1 anode tag and from C2 (connected to the G1 grid tag) are aligned so that they point directly towards the tuning condenser to which they are soldered.

Coils

The variation in capacity across the tuned circuit is only 11 $\mu\mu\text{F}$, and, as every quarter of an inch makes a difference, the actual frequency coverage is dependent on the distance up the former the turns are placed, on the number of turns, and on the spacing between them. A wider range, using fewer coils, could be achieved by replacing the tuning condenser with a butterfly condenser (Eddystone 584), but then the effective scale would be reduced to fifty dial divisions.

Each coil is wound with 18 SWG enamelled wire on two-pin formers $\frac{1}{8}$ -in. diameter. Details are as follows:—

- Coil No. 1. 10 $\frac{1}{2}$ turns close wound, lowest hole $\frac{1}{16}$ in., second hole 1 in. from base of former.
- Coil No. 2. 6 $\frac{1}{2}$ turns close wound, lowest hole $\frac{1}{16}$ in., second hole $\frac{1}{16}$ in. from base of former.
- Coil No. 3. 3 $\frac{1}{4}$ turns spaced one diameter, lowest hole $\frac{1}{16}$ in., second hole $\frac{1}{16}$ in. from base of former.
- Coil No. 4. 1 $\frac{1}{2}$ turns spaced one diameter. One hole $\frac{1}{16}$ in. from top, other hole $\frac{1}{16}$ in. from top of former.



General view of the completed GDO for the VHF range, with coils used in the foreground; they plug in externally.

If it is desired to include the 28 mc amateur band, a coil

having $12\frac{1}{2}$ turns is necessary. As a matter of interest, it might be remarked here that a coil with only *half* a turn, near the centre of the former, oscillated quite readily, the

VHF Grid Dip Oscillator

LIST OF COMPONENTS

- | | | |
|---|--------------------------------|------------------------|
| 1 | Diecast Metal Box | Cat. No. 650 Eddystone |
| 1 | Microdenser (C1) 25 × 25 μF | Cat. No. 583 Eddystone |
| 1 | Coil Base (2 pin) | Cat. No. 782 Eddystone |
| 4 | Coil Formers (2 pin) | Cat. No. 781 Eddystone |
| 1 | Direct Drive Dial | Cat. No. 595 Eddystone |
| 1 | Knob | Cat. No. 785 Eddystone |
| 1 | Valve type ECC91 | Mullard |
| 1 | Valveholder type XM7/U | McMurdo |
| 1 | Jack type P72 | Igranic |
| 1 | Switch SP on/off | |
| 1 | Potentiometer 50,000 ohms (R7) | |
| 1 | 5 way Tag Strip | |
| 1 | 3 way Tag Strip | |

Fixed Condensers

- C2-50 μF Silvered Mica
 C3, C4-100 μF Ceramic Tubular

Resistors

- | | | |
|------------|--------------|--------------------|
| R1 | 4,700 ohms | $\frac{1}{2}$ watt |
| R1 | 10,000 ohms | $\frac{1}{2}$ watt |
| R3 | 100,000 ohms | $\frac{1}{2}$ watt |
| R4, R5, R6 | 47,000 ohms | $\frac{1}{2}$ watt |
| R8 | 27,000 ohms | $\frac{1}{2}$ watt |

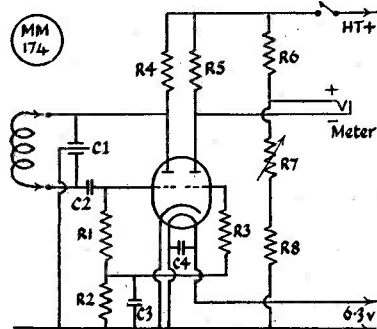


Fig. 1. Circuit diagram of the VHF grid dip oscillator designed by G5JU for the 30-160 mc range of frequencies.

VHF Grid Dip Oscillator

TABLE OF AVERAGE DIAL READINGS

Dial Reading	Frequency in megacycles			
	1½ Turns	3½ Turns	6½ Turns	10½ Turns
0	110	70	44.5	31
10	112	72	46	32
20	114	74	47.5	33.4
30	118	77	49	35.2
40	123	81	51	37.1
50	130	85	53	37.8
60	137	89	55.5	40.8
70	144	94	58	42.6
80	151	100	60	44.2
90	158	105	62	45.7
100	164	111	64	47

The calibrations obtained with the VHF GDO as described and illustrated in the accompanying text. It is unlikely that individual instruments will give the same readings, but the calibration can be adjusted by checking against known frequencies in the range of each coil.

lower frequency limit being in the region of 160 mc; no measurement was made of the upper limit, which probably approached the 200 mc mark. As frequencies in this range are of no immediate interest to amateurs, the coil was not retained.

Power Supplies

The requirements are 6.3 volts 0.45 amps LT and 150 volts 4 or 5 mA HT. As mentioned in the previous article, a small power unit built to match is desirable, but a suitable mains transformer is difficult to come by. The power supplies are therefore fed in via a three-core cable from any convenient source. It is of benefit if the HT voltage is stabilised at 150 volts and, in any case, it should not exceed 200 volts.

Calibration

The dial is fixed to read zero when the capacity of the condenser is at maximum, so that the dial reading increases directly with frequency.

It is appreciated that, in the majority of cases, calibration will present something of a problem. If an S27 or similar wide coverage VHF receiver is available, the signal emitted by the

GDO can be picked up and direct readings taken on each range. Failing this, an absorption wavemeter will enable indications of resonance to be obtained at various frequencies.

Where no means at all exists of securing accurate calibrations, the constructor will have to rely on the figures given in the panel, at the same time taking particular care to duplicate as exactly as possible the construction of the instrument itself and of the coils. It is fortunate that, for most purposes and except in rare instances, accurate calibrations throughout the range will not be necessary. With the aid of equipment already in the possession of the constructor (or his friends) it will not be difficult to secure a number of spot frequencies. For instance, any kind of receiver which tunes to 32 mc will enable a check to be made of the lower limit to which the GDO tunes, and similarly any 145 mc converter (or complete receiver), provided it is known to be in good working order and on the right frequency, will fix points within the 2-metre band and also give further checks at the frequency of the oscillator local to the converter. Then, in many parts of the country, transmissions from Alexandra Palace or Sutton Coldfield are audible, and their frequencies can be noted on the dial of the GDO. A few such figures will act as a useful guide to the differences which may exist between the actual dial readings and those shown in the panel, and, when opportunities offer, the gaps can be filled in. Slight adjustment to the spacing of the turns may be found necessary to give an overlap between one range and another.

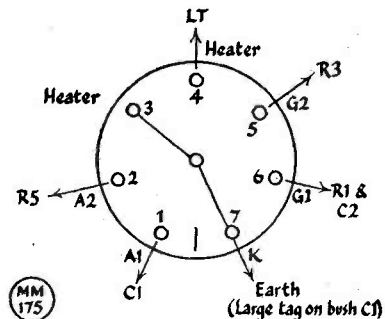
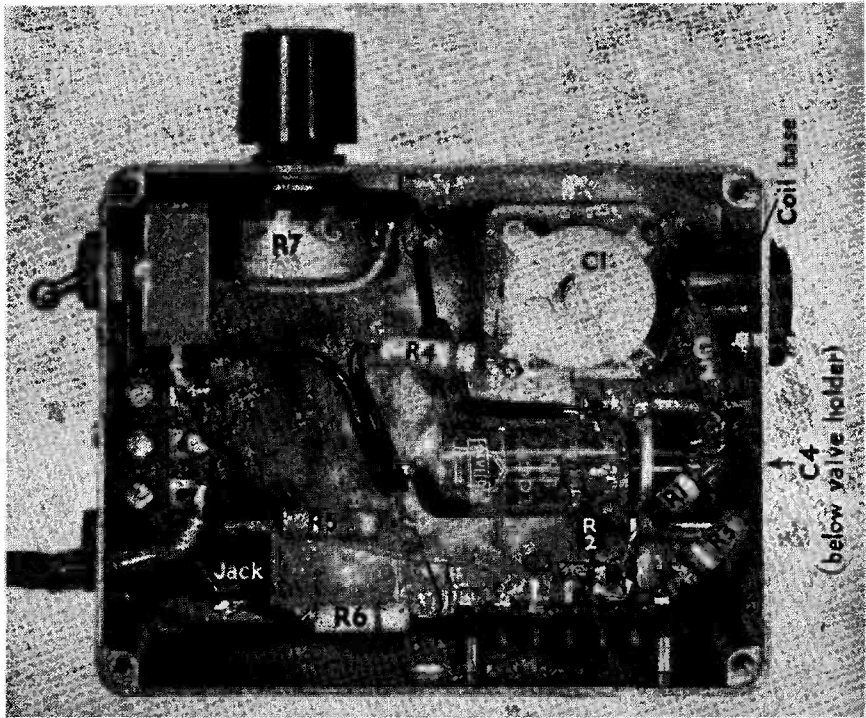


Fig. 2. The valve base connections; they should be made before the valve-holder is bolted into place.



In the die-cast aluminium box housing the parts for the VHF grid dip oscillator. Keyed components can be referred to the circuit diagram, Fig. 1, and table of values.

Uses

The meter is used in exactly the same way as the HF version, except of course that the tuned circuits tested will be in the VHF range. It is, perhaps, worth pointing out that sharp indications will be seen when the circuit under test possesses high "Q," but the rise and fall of the needle will be less pro-

nounced (and coupling between the two circuits will need to be tighter) when the circuit is loaded, as it may well be, by aerial coupling, by damping resistors for wide bandwidth, and perhaps by a valve. In this connection, it is interesting to note the effect on the meter of a circuit, first with the associated valve cold and then after it has warmed up.

SUBSCRIPTION NOTE

Just to remind you that with effect from June 1st, the direct subscriber rate for *Short Wave Magazine* becomes 24s., home and abroad, for a year of 12 issues—but, as announced on p.85 of our April issue, new subscriptions and renewals at the existing rate of 20s. will be accepted until June 1st, and from overseas up to June 30. Readers wish-

ing to purchase their copies on a monthly basis direct from us can do so by remitting a postal order for 2s. 2d. Remittances should be made payable to Short Wave Magazine, Ltd., and all subscription or copy orders addressed to The Circulation Manager, Short Wave Magazine, Ltd., 53 Victoria Street, London, S.W.1.

VHF BANDS

By E. J. WILLIAMS, B.Sc. (G2XC)

IF anyone had any doubts that VHF propagation was under the control of the weather, the first three months of 1951 should have served to dispel those doubts. G3EHY summarised the matter very aptly last month, when he wrote: "One fine warm day and everything is OK, but the trouble is we only average one fine warm day per month." In the four weeks under review in this "VHF Bands" the fine warm day was April 5, and although it did not produce the excellent 300-mile DX of March 4, things were certainly above average—at least in the southern half of the country, and contacts beyond the 100-mile mark were numerous. The good spell was, as usual, short-lived, and by April 7 and 8, the Activity Week-end, conditions were just about as poor as they have ever been. It is only natural that such conditions should discourage activity, but, in spite of the discouragement, the remarkable fact remains that the total number of stations listed in the current Activity List is over 200, and once again your conductor would stress that these stations have actually been reported active in *this month's* correspondence. These remarks apply, of course, to Two Metres, but activity also appears to have been maintained on Seventycems, and it is suggested that a 70 cm Activity List by Counties might now also be produced. If space permits, this will be done next month.

The Activity Week-end

As already mentioned, conditions during the April Contest and Activity

Conditions Still Disappointing—

Activity Well Maintained—

The Fiveband Club Dinner—

Station Reports & DX News

Week-end were extremely poor, and most who entered worked nothing beyond the hundred-mile distance. With the final date for receipt of entries as late as April 14, it is impossible to give a full analysis for the results of the Contest in this issue of the *Magazine*, as we originally promised. But at the present moment we can say that G3ENS (Loughborough, Leics.) and G6AG (Bexley, Kent) appear to be well ahead in the race for first place. The former worked stations in 15 counties and claims G2FTS (Hailsham) as his best DX, while G6AG worked 16 counties and G3ENS was his best DX contact. There is still time, as we write this, for further entries to come in, so maybe some even higher scores will be claimed; but under the conditions that existed, to work 15 or 16 counties was an achievement, and congratulations must go to both these operators. Little was heard of Continental stations, and only two reports have reached us of contacts with the French stations, who were also running a VHF contest. G5MR (Hythe) worked F8QL, and G2MV heard F8NW working G2AVR. DL2DV (Fassberg) confirms that conditions on the Continent were also extremely poor. He describes them as "heart-breaking," and says he was very sorry for DL1SI and DL1SJ in Detmold, who had erected a 100-watt CC transmitter on a lorry and taken it to the top of a 1600-foot hill, together with some complex aerial arrays. They worked DL4XS and DL3JI at about 150 miles, but with the rain pouring into their van and a gale which blew their aerial down, DL2DV did not need to understand much German in order to gather that they were rather browned off! DL7AH was active in Berlin, but, as far as is known, he worked no DX. The DL's have another 2-metre event on May 19-20, and they hope for something better then. Our own Activity Week-end for May is May 5 and 6. This will not be

TWO-METRE ACTIVITY BY ZONES AND COUNTIES

(Based on reports for current issue only)

Zone A (144.0 to 144.2 mc)

Ayr: GM2BUD, GM3DDE, GM3DIQ, GM3FVX
 Bute: GM3DOC
 Dumfries: GM30L
 Fife: GM3EGW, GM3ENJ
 Lanark: GM3BDA, GM6WL, GM6ZV

Zone C (144.2 to 144.4 mc)

Cumberland: G3BW
 Durham: G2DKH
 Lancashire: G2ALN, G2DCI, G2FCV, G2HGR,
 G2IN, G2OI, G3AGS, G3A00, G3BKS,
 G3BY, G3CSC, G3DA, G3GMX, G3GUU,
 G3HII, G5TH, G6QT
 Yorkshire: G2IQ, G3DMK

Zone D (145.8 to 146 mc)

Nil

Zone E (144.4 to 144.65 mc)

Cheshire: G3AOS, G3ATZ, G3BOC, G3DH,
 G3FMI
 Derbyshire: G2DLJ/A, G2FZU, G5RW
 Leicestershire: G2BVW, G2FNW, G2RI,
 G3CHY, G3ENS, G3FFC
 Nottinghamshire: G2XS, G3APY, G6CW
 Staffordshire: G3CXD, G8KL
 Warwickshire: G2AK, G2ATK, G3ABA,
 G3HAZ, G4RK, G5SK, G6CI, G6XY, G6YU,
 G8QY

Zone F (145.65 to 145.8 mc)

Flintshire: GW2FVZ, GW5MQ
 Glamorgan: GW3EJM
 Montgomeryshire: GW2ADZ
 Worcestershire: G5IW

Zone G (144.65 to 144.85 mc)

Bedfordshire: G3CGQ
 Buckinghamshire: G3CVO, G3GBO, G3MI,
 G4MR, G6JK, G6NB, G6PR, G8WV
 Cambridgeshire: G2UQ, G2XV, G3GGP,
 G3WW, G4MW
 Hertfordshire: G4RO, G5UM
 Huntingdonshire: G2FQP

Norfolk: G3VM
 Northants: G2HCG, G2HOP, G3BA
 Suffolk: G2CPL

Zone H (145.25 to 145.5 mc)

Berkshire: G3AVO/A, G3CCP, G4SA, G8LG
 Dorset: G3ABH
 Gloucestershire: G2AOK/A, G2HX, G3FRY,
 G3FSL, G3GEN, G3VH, G5BM, G8ML
 Hampshire: G2DSW, G2NS, G2VH, G2XC,
 G3ARL, G3BHS, G3BNC, G3CVE, G3DEF,
 G3FAN, G3GAV, G3GOP, G6TS, G6XM,
 G8LY
 Oxfordshire: G6KB
 Wiltshire: G2BUJ, G4AP, G8IL

Zone I (145.5 to 145.65 mc)

Devonshire: G2BMZ, G3AUS, G3AVF, G3GAO,
 G5BY, G5QA
 Somerset: G3EHY

Zone J (144.85 to 145.25 mc)

Essex: G2WJ, G3ECA, G4HQ, G6NR
 Kent: G2AJ, G2KF, G2UJ, G2WS, G3BVA,
 G3BTC, G3DCC, G4FB, G5MR, G6AG,
 G6VX
 London: G2AOW, G2BZ, G2DTO, G2ZI,
 G3BCY, G3CNF, G3EIW, G3ENI, G3EYV,
 G3FLP, G3FSD, G3FZL, G3GTH, G4DC,
 G4HQ, G5CD, G5KH, G5LI, G5LN, G6LO/A,
 G6LR
 Middlesex: G2AHP, G2BMI, G2FME, G2HDZ,
 G2YC, G3BWC, G3CWW, G3EEI/A, G3EOH,
 G3GSE, G3GXO, G3SM, G4KD, G5LQ,
 G6HG, G6JP, G6UH
 Surrey: G2KI, G2MV, G3BLP, G3GHI,
 G3HCU, G3HEA, G4CG, G5AS, G5DS,
 G5LC, G5MA, G5NF, G6BZ, G6CB, G6QN,
 G8OU
 Sussex: G2AVR, G2FTS, G2JU, G2MC,
 G3BEX/A, G3DIV/A, G3FEX, G3HCK,
 G8OS

Note: The frequency areas given above are in accordance with the Two-Metre Zone Plan, as accepted by the majority of VHF operators. A few stations are not conforming.

a contest, and the times are, as usual, 1830 to midnight on the Saturday and 1000 to 1600 on Sunday.

Station News

From Scotland, GM3DIQ (Saltcoats) reports that his 16-element stack has survived four more gales. GM3DDE (Largs) has discovered that the only way to get signals into Glasgow, some 30 miles to the east of him over the hills, is to aim his array to the south-west on Arran. His signals are then S6-7 in Glasgow, with no signs of fade or flutter. Both GM3DIQ and GM3DDE are running a schedule with G3BLP on Wednesday and Friday evenings from 2230 to 2330. The GM's transmit for the first ten minutes, listen

for the second, and so on throughout the hour. News that GM3DOC is active in Rothesay (County and Island of Bute) should interest the county-hunters.

The GM's are not the only ones to find it necessary to aim beams in unexpected directions in order to get through or over hilly country. GW5MQ (Rhosemor) works GW2ADZ (Llanymynech) by reflection. GW2ADZ has found he has to aim his beam due south so that, presumably, his signals rebound off a range of hills near Welshpool in order to reach GW5MQ in a more northerly location. Similarly, during a demonstration at Bolton Radio Club it was necessary to align the beam in a south-east direction in order to hear

GW5MQ to the south-west. GW5MQ has been having considerable trouble with oscillator frequency shift in his converter, due to mains voltage variations. He has now changed to crystal-controlled injection, and says it is a pleasure copying weak signals which stay put, instead of having to chase them as the mains volts vary. Not only has the weather made conditions poor, but, as with many others, it has prevented GW5MQ from making any aerial amendments. Most consistent station heard during the April Contest was G3CXD.

A newcomer to Two in Lancashire is G3HII (Liverpool). So far he has worked all four stations he has heard and is hoping for some long-distance contacts. G3CXD (Newcastle, Staffs.) found no DX during the Contest, and is still running an SCR522 at 18 watts input. A 3-over-3 Yagi type beam is doing duty until a more ambitious array can be erected in the summer. A 6J6 converter is used with an HRO.

G3CXD needs only two more cards for his VHFCC.

It was good news to hear that old-stalwart G6YU (Coventry) is back on VHF once more. To your conductor it recalled the old five-metre days, when G6YU and G2XC ran some early morning schedules. G6YU is now on 144.8 mc, with an Eimac 4/65A in the final of his transmitter. Normal input is 30 watts, but this can be switched up to 90 watts if required. The aerial is a 4-element Yagi with .15-wave spacing throughout, and fed with 100-ohm balanced screened cable. The receiver has a 6J6 RF stage, Z77 mixer, 6J6 oscillator operating on half injection frequency. G6YU finds this much superior to the modified SCR522 which he tried first. G6CI (Kenilworth) is on 144.45 mc and has enrolled in the Five-band Club, after 16 months of continuous work on two metres.

G3ENS (Loughborough) heard little of the southern stations during the Sunday of the Contest and wonders if

TWO-METRE ACTIVITY REPORT

GW5MQ, Rhosesmor, Mold, Flint. NGR 33/209695.

WORKED: G2ALN, 2DCI, 3FCV, 3HGR, 2IN, 3A0O, 3A0S, 2AGS, 2ATZ, 3BKs, 3BOC, 3BW, 3BY, 3CSC, 3CXD, 3DA, 3DH, 3ENS, 3EHY, 3FMI, 3GMX, 3GUU, 3HII, 5TH, 6CW, 6QT/P, 6M3BDA, 3OL, GW2ADZ.

(March 13 to April 8).

G3BEX/A, Hove, Sussex.

WORKED: G2DSW, 2JU, 2MC, 2XC, 3ARL, 3BNC, 3DIV/A, 3FAN, 3FEF, 3GAO, 3HCU, 3UF, 6LK, 6NB, 6UH, 8IL, 8LY, **HEARD:** F9AE, G2AVR, 2AHP, 2BMZ, 3AUS, 3AVO/A, 3DEP, 3EHY, 3GHI, 5BY, 5MA, 6AG, 6XM, 8OS.

(March 12 to April 8).

G3BA, Daventry, Northants.

WORKED: G2AK, 2AOK/A, 2ATK, 2FNW, 2FQP, 2FZU, 2HCG, 2HDZ, 2IQ, 2MV, 2OI, 2XS, 2YC, 3AKU, 3BCY, 3BLP, 3BVJ, 3BW, 3CGO, 3CXD, 3DUP, 3ECA, 3ENS, 3FAN, 3FD, 3FFC, 3FMI, 3FXG, 3GHS, 3GOP, 3GSE, 3GWB, 3HAZ, 3WW, 4AP, 4RK, 4RO, 4SA, 5BY, 5DS, 5IW, 5LN, 5MA, 5SK, 6AG, 6CI, 6CW, 6LK, 6XM, 6XY, 6YP, 6YU, 8KL, 8MZ, 8OU, 8QK, GW2ADZ, 5MQ.

(March 1 to April 8).

G2HOP, Wothorpe, Northants

WORKED: G2FNW, 2FQP, 2UO, 3AEP, 6BNS, 3WW, 6YU. **HEARD:** G2HCG, 3BA, 3BK, 6CW, GW2ADZ.

G3FRY, Cheltenham, Glos.

WORKED: G2BUJ, 3EHY, 6NB/A, 8ML. **HEARD:** G3AHX, 3BA, 3CCP, 3FSL, 3MA, 4VH, 8KL, GW2ADZ, 5MQ.

G6YU, Coventry, Warwickshire

WORKED: G2AK, 2AOK/A, 2ATK, 2BFT, 2BVG, 2FNW, 2FZU, 2HCG, 2HOP, 3ABA, 3AHX, 3BA, 3BLP, 3BVJ, 3CHY, 3DUP, 3DWK, 3EHY, 3ENS, 3GHI, 3GR, 3HAZ, 3WW, 4HT, 4NB, 4RO, 4RK, 4SA, 5BM, 5IW, 5LJ, 5SK, 6CI, 6NB, 6XM, 6XY, 8KL, 8QK, 8QY, GW2ADZ. **HEARD:** G2BUJ, 2MV, 2OI, 2XC, 5DS, 6AG, 6CW, 6LK, 6VX.

(February 28 to April 9).

G3HCU, Chiddingfold, Surrey.

WORKED: G2AHP, 2ANT, 2DIO, 2MV, 2XC, 3BCY, 3BLP, 3BNC, 3EYV, 3FAN, 3FEF, 3FXG, 3GDR, 3GSE, 3GTH, 3HCK, 4CG, 4HT, 4MR, 5DS, 5LI, 5MA, 5NF, 5QL, 6AG, 6KB, 6LK, 6XM, 6UH, 8OS.

G2XC, Portsmouth, Hants.

WORKED: G2AHP, 2DSW, 2HDZ, 2MC, 2MV, 2VH, 2WJ, 2XS, 2YC, 3ARL, 3AUS, 3BCY, 3BEX/A, 3BNC, 3CGO, 3CVE, 3DEP, 3DIV/A, 3EYV, 3FAN, 3GAV, 3GHI, 3GHS, 3GSE, 3HCK, 3HCU, 3WW, 4CG, 4HT, 4MR, 4MW, 4RO, 5BC, 5DS, 5IW, 5LI, 5MA, 5NF, 5SK, 6AG, 6JK, 6KB, 8IL, 8LY, 8OU.

HEARD: G2HCG, 2XV, 3ABA, 3BA, 3BLP, 3ENI, 3GAO, 3GRA, 6CB, 6UH, 6XM, 8OS, GW2ADZ.

(March 14 to April 11).

G2FNW, Melton Mowbray, Leics.

WORKED: G2AOK/A, 2BWW, 2CPL, 2DLJ/A, 2FQP, 2HCG, 2IQ, 2RI, 2XS, 3ABA, 3BA, 3BK, 3CGO, 3CHY, 3EMJ, 3FFC, 3WW, 5MA, 5RW, 5SK, 6CW, 6XM, 6XY, 6YU, 8QY, GW5MQ. **HEARD:** G2ATK, 2FO, 2FZU, 2UQ, 2XV, 3BLP, 3CXD, 3DUP, 3EHY, 3ENS, 3GHI, 4HT, 4RK, 6VX, 6UH, 8SB, GW2ADZ.

(March 1 to March 31).

G4HT, Ealing, Middlesex.

WORKED: G2AVR, 2FTS, 2HCG, 2XC, 2XS, 2XV, 3BEX/A, 3CUA, 3DIV/A, 3DUP, 3EDH/A, 3ENS, 3FEF, 3FUL, 3HCK, 4SA, 5IW, 6CI, 6CW, 6YU, 8OS, GW5MQ.

(March 3 to April 8).

70 cm Activity Report

G4HT, Ealing, Middlesex.

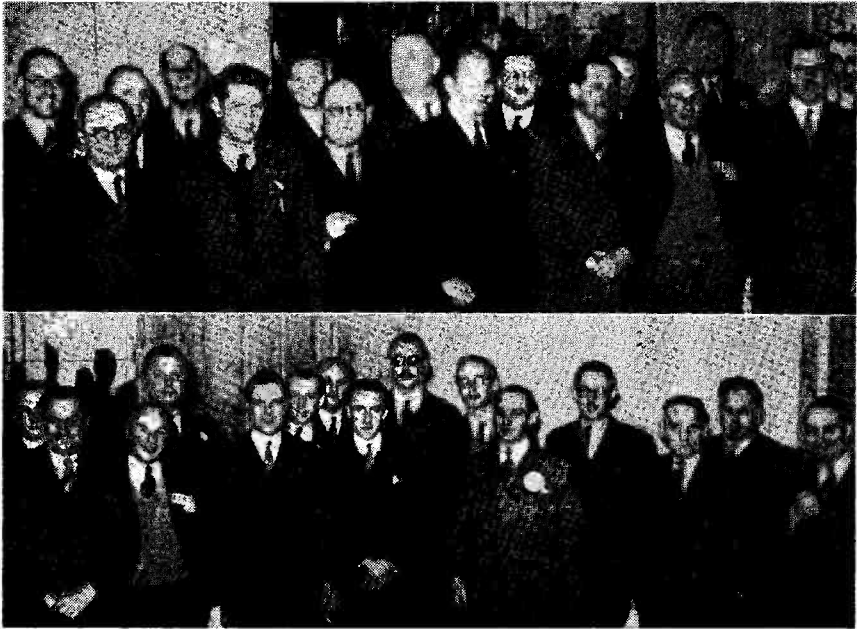
HEARD: G2DD, 2FKZ, 2QY, 2RD, 3FP, 4CG, 5CD, 5DT, 5TP, 6VX, 8KZ, 8SM.

(March 25 to April 8).

GW5MQ, Mold, Flint.

WORKED: G2DCI, 2JT, 2OI, 3DA, 3ELT.

(March 13 to April 8).



Members of the VHF Century Club present at the FBC Dinner on April 14. The photograph was taken in two sections, hence the double appearance in some cases

they were all beaming on France. G2FNW (Melton Mowbray) comments that, in addition to himself, G2BVW, G3CHY and G3FFC are active most nights. G2HOP (Stamford) tells us that Stamford is in three counties: Lincs., Northants. and Rutland. This, however, does not mean that you can kill three counties with one stone, as it were, by working G2HOP. His postal address is Lincs., but geographically he is in Northants. His frequency is 144.77 mc, and an 832A is running at 32 watts and feeding a 5-element Yagi 50 feet high. A G2IQ converter pulls in the signals, and G2HOP is usually on from 1900 to 2300. He is active on the LF bands as well, and will be glad to arrange two-metre schedules with stations he works on these bands.

G3VM (Norwich) has succumbed to the lure of 1.7 mc after about two years of almost exclusive 2-metre working. During the Activity Week-end he spent quite a lot of time on Two, but, with the barometer down to 29.81 and frequent statically-charged hail and rain, it was a dead loss. G3VM regrets that his remarks last month were misunder-

stood and, in fact, he intended his comments regarding GW2ADZ and your conductor to be taken as compliments! In a contact with G2FO on Top Band, it was learnt by G3VM that there is nightly activity in the Durham area. G2FO, G3DMK, G3EHZ, G5QU, G5XT are all reported to be regularly on. Judging by the little heard of them down south, it looks as if the Durham Closed Shop extends to VHF as well! Or is it an Iron Curtain?

G3BA (Daventry), a comparative newcomer to VHF, has been putting out a very consistent signal during the adverse conditions that have existed in recent months. He is using about 60 watts to an 829B, while the aerial is a 16-element stack mounted on the roof, and rotatable. It can also be raised or lowered at will, so that it lies in the horizontal on a cradle when not in use. The converter is fundamentally a G2IQ type, but has been modified by using Lecher lines and separating the RF and mixer stages by inductive instead of capacitative coupling. The 300-ohm feeder taps directly on to the input

lines and gives an accurate match to the aerial. The oscillator is of the SEO type, as the many high-power commercial stations in the vicinity of G3BA's QTH make crystal control out of the question. He comments that push-pull 955 acorns give a much superior note to a 6J6.

G3FRY (Cheltenham) is suffering from having to run into the garden every time he wants to turn the beam. However, he hopes to have a suitable motor installed soon. The beam is a 6-element wide-spaced Yagi, the transmitter an SCR522 and the converter a 6AJ5-6J6 type. Being at the foot of the Cleve Hills, he is handicapped to the north-east. G3EHY (Banwell) has found conditions patchy but with a few good openings now and again. March 10, 15 and 25 were fair nights, but April 5 the best of all. He reports a strong revival of interest in the Gloucester area, which is heartening, and G5QA (Exeter) advises us that he is still active on two metres.

G3FAN (Ryde) found the Contest conditions generally poor, although he heard G2HCG and G3ENS and worked G3BA. On the other hand, he was surprised at his failure to attract the attention of a number of stations who were S8 or more with him. G3CVE (Christchurch) is a welcome newcomer in the Hampshire area. G3GAV (Winchester) has been trying out a new 4-element Yagi in place of his turnstile. There appears to be a marked improvement.

G3BEX/A (Hove) has been meeting with much more success from his /A QTH than he did from his home location. The increase in activity is Sussex has been very encouraging. G2FTS (Hailsham) is running an 832 PA at 35 watts, into a 6-element stack 45 feet high. Further east along the coast G5MR (Hythe) decided to concentrate on France during the Contest, but found conditions in that direction very poor. His best DX was F8OL at 162 miles.

Leaving the coast, we must welcome two new correspondents, G3HCU (Chiddingfold) and G8OU (Ashtead). The former had some trouble with his aerial feeder on the Sunday morning of the Activity period and had to spend about two hours doing repairs. He is using a modified '522 as transmitter. Input is 15 watts, and the beam is a 5-element Yagi 36 feet above the ground. G8OU was active during the April 7 and 8 week-end and was delighted to discover that he could get a signal over the hills to G2XC.

[over

TWO METRES	
ALL-TIME COUNTIES WORKED LIST	
Starting Figure, 14	
From Fixed QTH only	
Worked	Station
49	G2OI (183)
46	G3BLP (363)
45	G3EHY (213)
43	G2AJ (304), G3COJ (123), G5WP, G6NB
41	G2NH (283), G3ABA (182), G5MA
39	G3WW, G4HT (344), G6XM (208)
38	G2IQ, G3APY, G5BY
36	G2XC, G3CGQ, G3CXD
35	G6LK
34	G3VM (143), G4AU, G4DC, G5BM, G8SB
33	G2XS (147), G5JU
32	G2CPL (200), G3BK, G6CW, G8WV
31	G2CIW (231), G5RP, G8IP (216)
30	G2FNW, G3BOB, G4CI (181), G8IL, G8SM (172)
29	G5DS (182), G5NF
28	G3BW
27	G3DAH, G6UH (223), G8QY
26	G3BHS, G4NB
25	G3FAN (123), G3GSE (201)
24	G2AIQ, G3FXG, G3AKU, G8KL
23	G2NM, G3AVO/A, G4RO, G5PY, G6CI
22	G3GBO (174), G4RK, G5SK
21	G3FMF
20	G2ANT, G3AEP, G3EYV (142), G8KZ
19	G6CB
18	GM3OL, GW5MQ, G6YU
17	G3HBW, G4MR, GM3BDA
16	G2AOL, G5LI (121), G5LQ, G5MR
15	G2AHP (135), G2AVR, G2HDZ

NOTE: Figures in brackets after call are number of different stations worked. Starting figure 100.

G6CB (Wimbledon) finds his beam much sharper on receiving than transmitting, and so fails to hear G2XC calling him! He castigates stations that come on during a Contest just to work any DX that is going and ignore locals who call them. Regarding the Contest scoring, he feels this favours the man who is nicely situated, as huge points are given for distance. (There is no satisfying everyone on this question of Contest scores, but your conductor feels that a Contest which just determines how many local stations can be worked in a given time is no real test of the efficiency of equipment, and therefore the scoring method should be such as to give the longer-distance contacts a markedly greater importance. Admittedly, location does play an important part in deciding the chances of any particular station winning in the Contest, but it is considered impossible to assess handicaps, or the like, on the basis of location, as so many factors would have to be taken into account. Past experience has shown that the extra county bonus points make little or no difference to the positions of stations; they are there just to help produce bigger scores and so make the event a little more exciting and perhaps add to the fun!)

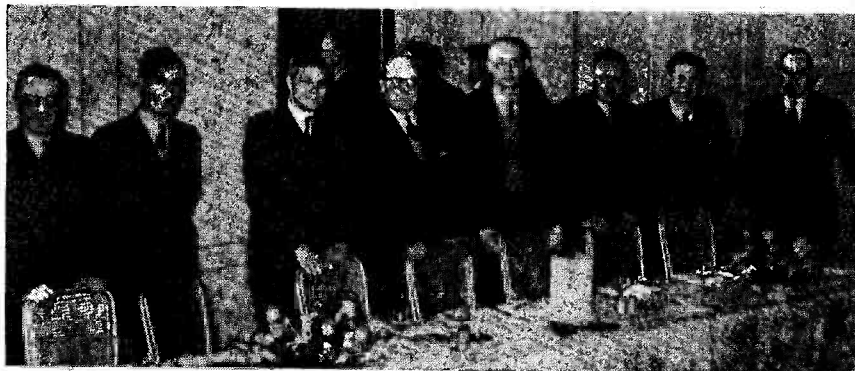
G3EYV (London, S.W.4) thoroughly enjoyed the Contest, and his biggest disappointment was not working G2XC, whom he heard calling G6CB in vain. Regarding G6CB's comment on the Band Plan, G3EYV suggests an additional London assignment from 145.6 mc upwards. (Your conductor

suggested this at the November 1949 Fiveband Club Dinner, but the suggestion was not accepted!) G6AG (Bexley) is running 140 watts to a Mullard QV-06/40, and his aerial is a 16-element stacked array at 65 feet up.

G5LQ (Chiswick) heard nothing further than G3FAN and had difficulty in raising him; he is one of many who ask for a CW-only contest. G3GSE (Kingsbury) rather liked the scoring method and hopes it may be tried out again under better conditions; he used a 3E29 with 40 watts input and a 4-over-4 beam. G2AHP (Perivale) made a bad start when his bias supply transformer burnt out early in the Saturday period; he heard over 50 stations active, but some of them made only a brief appearance. G4HT (Ealing) has now reached 2094 contacts on two metres since July, 1949. He is looking for his 40th county.

G3BLP (Selsdon) relates that one recent Saturday morning he found the band dormant except for one station who called CQ for 2½ minutes, listened for 35 seconds and then repeated the procedure 5 times. (While on this subject of CQ, your conductor would like to suggest that it is the *duty* of a station making a CQ call to search the band for replies to that CQ before deciding to answer someone else's CQ. G2XC has personally experienced several instances of failure to do this in recent weeks.)

G2HDZ (Pinner) had quite a lot of fun in the Activity periods and found the scoring system satisfactory. G3ENI (Kew Gardens), using 20 watts to an 832 and a 2-over-2 indoor beam, heard



At the Fiveband Club Dinner in London on April 14. Left to right : G2UJ, G3APY (Midlands representative, FBC), G3BLP (London area representative, FBC), G6FO (Editor, *Short Wave Magazine*), G2XC ("VHF Bands"), G6VX, G5RP (Western representative, FBC), and G6LX (Assistant organiser) DL4XS, who was also present, unfortunately missed the camera.

nothing over 50 miles and not a whisper from the south coast. (G3ENI was received on the south coast—see Calls Heard).

G4MR (Slough) was disappointed with April activity and conditions, and suggests contest scoring should be one point for every 25 miles (or part thereof). G4SA (Staventon) is using a 4-over-4 array with 15 watts input to an SCR522. He has worked 14 counties in less than one month.

EI2W (Dublin) has made extensive alterations to his two-metre installation and now has two Yagis—one of 6 and the other of 8 elements, both horizontal. He is active every evening from 2100 to 2130 and on Sundays from 1100 to 1130 with the beams aimed east, and would like schedules with G or GW stations; frequency at EI2W is 144.06 mc. He reports there are about six stations active on Two in the Dublin neighbourhood—so we should be hearing of some new “firsts” when conditions serve.

Continental News

ON4BZ (Brussels) sends details of his 2-metre converter, which has good sensitivity and a low noise ratio. He is using coaxial tuned circuits; these consist of silver-plated copper pipes 20 cm long with an inner diameter of 35 mm. The central rod has a diameter of 5 mm. The oscillator is a 9002, and injection is by stray capacity. The whole circuit of the converter consists of two EC80 GG stages and a 6AK5 mixer. He comments that, with grounded grid stages, the best noise figure is obtained with correct matching and peak tuning, a condition which is not true in other circuits.

DL2DV (Fassberg) reports he can hear OZ2FR on about three nights out of every five, which is nice going for the distance. SM7BE has not been heard again, in spite of a regular schedule. This seems queer to DL2DV, as the weather conditions have often appeared to be quite suitable.

A very interesting letter from EK1AO (Tangier) discloses that he is now ready for 144 mc work with crystal control (144.144, 144.280 and 145.759 mc), with an SCR-522 driving an 829B to 100 watts, and a 6AG5-6J6-6J6 converter. He is exceptionally well located for VHF, as well as being geographically in an area where long-distance ducting is a fairly common occurrence. EK1AO is a man of parts, as other DX reports in this issue show, and in view of the Malta activity reported in “VHF

Bands” last month, we may expect to hear of some very interesting contacts before long—with G working not at all unlikely when OM Condx gives us the expected summer breaks. Anyway, with active stations in Malta and Tangier, offering schedules and with good equipment (EK1AO has two 145 mc arrays up), one feels sure the G's will get through at the first opportunity.

Incidentally, the summaries above, taken with the other Continental news in recent issues, shows that there is now a chain of active and—what is just as important—effective stations all the way from Scotland into North Africa. Thus, there are opportunities on Two we could only dream of in the days of the old five-metre band. So get those schedules fixed, let us hear about them, and keep a close watch on conditions!

Seventycems

G4CG (Wimbledon) reports that a recent meeting of the South London VHF Group strongly disapproved of any plan to restrict the present 6 mc portion of the 70 cm band being used for crystal controlled transmissions. They feel that any such plan would tend to discourage activity from present two-metre stations. It is suggested that greater use be made of QLH, QLM, in first calling. In addition, a new calling system is being introduced, as follows: CQ 32 means that search will be made from 432 to 433 mc; CQ 33, search from 433 to 434 mc; *et seq.* (We are not sure that we are particularly in favour of this idea. It may be all right in the London area, but G2XC, and DL4XS we imagine, is going to find it very annoying to hear a London station calling CQ 32 and realise the impossibility of making contact, as his crystal is in the wrong section of the band.)

G3FZL (East Dulwich) has 25 watts input to a STC 3B/401J, which gives 8 watts output. The receiver gives an S3 CW output for 0.3 microvolt input. A composite 2-metre and 70 cm beam has been constructed and is being erected. The 70 cm section consists of a 12-element collinear array backed by wire mesh reflector spaced $\frac{1}{4}$ wavelength. This is fed by 2 stub-matched 300 ohm air-spaced lines (one for each bay), the junction of which feeds into a concentric balun transformer and matches into semi-air-spaced 100-ohm coaxial cable by means of a double stub tuner. The array is 45 feet above ground. G4HT (Ealing) has, in spite of last month's

remarks, now got a receiver working on Seventycems.

G5QA (Exeter) is also preparing for 70 cm work, while G3EHY (Banwell) rejoices at having persuaded some South Wales stations to take an interest in the band. Signals from GW3HCH are quite readable in Somerset, the distance being around 30 miles. The GW is using a corner reflector and an 832 trebler. The receiver at Banwell uses a tuned lines 6J6 mixer, with a 6J6 oscillator tuned 30 mc from signal frequency.

GW5MQ (Rhosesmor) has been having trouble due to mains voltage variations causing the tuning to drift on his receiver. This has been overcome on telephony and MCW by using a broader IF, but CW is still difficult to hold at times. G2OI, at 42 miles, produces an S9 plus 15 dB signal, and G2JT, at 50 miles, is S7 when he is using only 1/4-watt input to a 6J6 tripler.

In Germany, DL4CK has made a cross-band contact with DL3NQ over a distance of 70 kilometres. The transmitter was CC and the receiver a superhet. Unfortunately, the DL3's are not allowed to transmit on 70 cm.

Fiveband Club Dinner, April 14

The first 1951 FBC Dinner was held in London on April 14, with no less than 76 members present. The gathering, much larger than we had expected or hoped for, was representative of VHF activity in the West Country, Midlands and the North, as well as in the London and Home Counties area. Several members made long journeys to attend, and we believe they enjoyed what turned out to be a most successful evening, very well organised by G3BLP (London area representative, FBC), assisted by G6LX.

Part of the time was devoted to a general discussion, initiated from the chair, on such matters of VHF interest as the Zone Plan, Contest Scoring and the Seventycem Operating Band. More than 30 of those present contributed to these subjects in the discussion, and—as is right and proper—some conflicting views and opinions were put forward. Many useful ideas were propounded, which to us of *Short Wave Magazine* will be food for future thought.

The evening terminated with a modest prize draw and the usual get-together of old friends and new acquaintances. A full roll of those present, with a summary of the discussions, will appear in the June issue—and, for the information

TWO METRES	
COUNTIES WORKED SINCE SEPTEMBER 1, 1950 Starting Figure, 14	
Worked	Station
34	G3EHY
33	G3WW, G4HT, G5MA
31	G3ABA
28	G5DS, G6CW
25	G2FNW, G2OI, G3GSE
24	G2AIQ, G2AJ, G3VM, G5RP
23	G8IL
22	G2CPL, G2XC, G3FAN
21	G3AKU, G3BOB, G3COJ
20	G3AEP, G3FD, G3GBO
18	G2CIW, G3EYV, G5PY, G6CW, G6YU, GW5MQ
17	G2ANT, G3HBW
15	G8IP

Note: This Table will run for one year to August 31, 1951

of those who may want to know, prints of the photographs taken can be obtained from F. Wise, 5 Victoria Street, London, S.W.1.

Sayings of the Month

"I am in Northamptonshire, but can throw a stone from my QTH into Rutland" (G2HOP) . . . "I do wish stations would learn the meaning of CQ" (G6CB) . . . "Whether I am top or bottom in the Contest result makes no difference to me" (G5LQ) . . . "The weather forecast for the week-end was cold and showery. This proved a masterpiece of under-statement" (G3EHY) . . . "Heard a local calling a local to ask him the QTH of a station he had just worked, as he had missed it. (Perhaps he will not be sending in an entry!)" (G8LY) . . . "You will never satisfy the diehard contest wallahs" (G3BA) . . . "The idea of always signing off a phone QSO with CW is not much good in a contest, as one has not the time to sit on a carrier in the hope that he may do so" (G8LY) . . . "I feel sure some of those owing cards are members of the VHF Century Club" (G3CXD) . . . "Stations around here lost interest. They don't seem to

like working for their points" (G3ENS) . . . "I am looking forward to better luck next time—if only it will stop raining!" (G3VM) . . . "I am still rather staggered by the spate of activity, particularly on Sunday afternoon" (G3EYV) . . . "I was disappointed with activity, especially on Sunday" (G4MR) . . . "A few were reluctant to collect points one at a time" (G2HDZ) . . . "Contest was like a fishing competition. The big 'uns got away" (G2AHP) . . . "A watt in the beam is worth two on the plate" (G4HT).

In Conclusion

Once again, our apologies for not being able to produce the April Contest result this month—there just has not

been the time to do it justice. A number of letters came in a day or two late for the present issue, and in some cases the proper amendments to the various Tables could not be made as a result. However, all this will be rectified next time, and those interested will appreciate that it has been another of those tight months, in the calendar sense.

Reports for the June issue should be with us by May 16, and the address for all VHF correspondence is, as usual, E. J. Williams, G2XC, *Short Wave Magazine*, 53 Victoria Street, London, S.W.1. Be with you again on June 8, and while we think of it, the closing date for the July issue will be June 13—again a tight one, so please note that deadline now! 73.

BOOK REVIEW

"Short Wave Radio and the Ionosphere"

Many readers will already know T. W. Bennington's *Radio Waves and the Ionosphere*, first published in 1943. The author has now entirely re-written this work, and under its new title of *Short Wave Radio and the Ionosphere* it is much more than just a revised edition. The earlier book had 6 chapters and 81 pages, while the new production runs to 10 chapters and 138 much larger pages; some 56 new illustrations have been included.

Among the new chapters is one devoted to amateur transmission. The acknowledgment by the author of the important contributions made by amateurs, often as a result of working on unorthodox frequencies, is noted with pleasure as recognition long overdue. The useful data in this chapter include a series of graphs showing the MUF's which might be expected for certain circuits from this country at various times of the year during sunspot minimum and maximum periods. There is also an account of the effect of sporadic-E ionisation at amateur frequencies and a brief explanation of tropospheric refraction on VHF transmissions. (There appears, however, to be no mention of the auroral reflection type of propagation which has interested amateur VHF workers for some years now).

Other chapters in a useful book give details of the technique of measuring

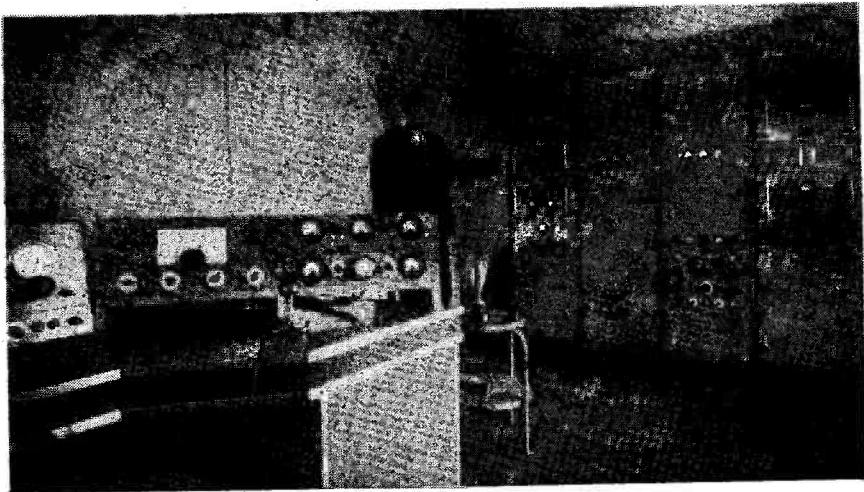
ionospheric characteristics, the variations in the ionosphere and their effect on short-wave transmission, the possibilities and methods of forecasting conditions, the causes and effects of ionospheric disturbances and radio noise. On all these topics the author is an acknowledged expert, and the information given can be taken as authentic and up-to-date.

The opening chapters are given to fundamentals concerning ionisation and the general behaviour of radio waves. Here the author seems less happy, and at times his explanation of simple facts tends to develop into unnecessarily involved sentences. One must also criticise a certain looseness of terminology which may, perhaps, be excused by the author's conversational style. Doubtless a further edition of this book will be required in due course, and it is suggested that the opportunity should then be taken to correct the rather numerous minor errors, mainly of a literary nature, which a critical reader will find in the present edition.

However, those who want authentic information on the ionosphere and are not perturbed by occasional lapses will find this book excellent value. *Short Wave Radio and the Ionosphere*, published by Iliffe & Sons, Ltd., Books Dept., Dorset House, Stamford Street, London, S.E.1, price 10s. 6d.

E.J.W.

The other man's station • G5BY



FOR many years, G5BY—owned and operated by H. L. O’Heffernan, Bolt Tail, South Devon—has been one of the world’s leading amateur stations, with a long record of consistent activity and many “firsts” to his credit. In 1929, the ARRL ran a competition for the world’s best amateur station; the QST cup for the winner of this contest stands on the table in the foreground of our photograph.

A view of the operating position at G5BY appeared on p.105 of our April issue, and the brief description following is of the transmitter side, pictured above, with notes on the aerial system.

The transmitter racks are surplus T1131 cabinets. All panels finished light battleship grey, with Nile green surrounds and dark grey plinth. The left-hand rack, No. 1, starting at the bottom, contains the filament supplies for all transmitters; the 1000 v. HT supply for the 430 and 144 mc exciters; the 430 mc exciter and 2 x 8012 (tripler) PA; the 144 mc exciter and 2 x 834 PA.

Next rack contains two 250 to 700 v. 250 mA variable HT supplies, mainly used for the 430 mc equipment; the grid bias unit containing two separate stabilised 130 v. supplies, so designed that, upon first applying power, the spare unit operates, tests itself out and then changes over to the normal supply

—all whilst the 866 delay relay is warming up. Any failure of the unit in use automatically brings the spare into service, with appropriate warning lights.

The panel with the three spare mA meters also carries the four toggle switches which enable the rack equipment to be powered, keyed, modulated (tone) and run on half power—all without retracing one’s steps to the operating desk. These switches are duplicated on the adjacent panel in the next rack (No. 3), for operating convenience. Meters on this panel read: exciter HT volts, modulator HT volts, and PA HT volts.

In the base of this (No. 3) rack are the exciter and buffer 300 and 800 v. HT supplies; the all-wave wide-band exciter, located immediately above on the 3½-in. wide panel, has outputs on 3.5 through to 28 mc. Then comes the 28 mc PA, with KT8c buffer and 35T PA. Then above this is the 28 mc aerial tuning unit, which has relays to change over from flat to tuned lines, according to whichever aerial is selected.

Rack 4 contains the separate 1000 v. HT supplies for the PA’s and Modulator. Above these two panels is the unit containing the 24 v. DC supply for all relays, the master filament and HT controls, and the delay relays for the 866’s. Next come the spare and

normal Modulator units, each running a pair of TZ40's in the output Class-B stage.

A total of nearly sixty relays is in use throughout the station!

Some of the aerials available are: For 430 mc—a 5-element Yagi with direct feed to receiver. An identical beam with direct feed to transmitter; both beams 40 ft. high and rotatable. A 24-element rotary, 37 ft. high with send/receive relay mounted near beam, and separate feeders to receiver and transmitter. All feeders of 330-ohm open-wire 11 SWG line. For 144 mc—a 14-

element, 50 ft. high, rotary, comprising two 7-element wide-spaced Yagis, stacked one wavelength apart. A 16-element rotary, 50 ft. high, consisting of four 4-element Yagis stacked half-wave apart. A 24-element rotary 50 ft. high. For 28 mc—a Zepp, 137 ft. long, running north and south. A 3-element close-spaced beam, fixed on S. America. Rhombic, 440 ft. per leg, slung from 40-ft. masts and beamed on California. For 50 mc reception—4-element fixed and rotary beams.

With some 19 acres of ground available, there is room for plenty more!

OUR QSL BUREAU

SOME EXPLANATORY NOTES

This has now been in operation for more than four years, and the total of cards handled has shown a progressive increase as the way in which our Bureau works has come to be understood.

There are many who question (a) The reason for our running a QSL Bureau at all, and (b) How it can give service if the IARU bureaux will only handle cards amongst themselves.

The answers to both questions are simple. First, the reason for establishing the *Short Wave Magazine* Bureau remains now as it was in November, 1946—that there are large, and increasing, numbers of unattached amateur transmitters and SWL's who require QSL bureau facilities. It was therefore nothing less than an obligation on us to provide these facilities.

How BCM/QSL Works

As to the functioning of our QSL department, the fact that IARU bureaux do not (officially, at least) accept cards in bulk from independent agencies makes not the slightest difference—because cards outwards from the *Magazine* QSL Bureau are delivered by direct mail to the operators, all over the world, for whom they are intended. This eliminates the fundamental weakness, inherent in all other bureaux' systems, whereby eventual delivery depends upon the addressee being a member of his IARU society and maintaining envelopes at his national bureau; two things which by no means always happen. (In any case, no IARU bureau could in practice reject cards in bulk from any recognised independent agency for the obvious reason that, by so doing,

they would be penalising their own members).

So far as the *Magazine* QSL Bureau is concerned, it is true that cards for G's inwards from overseas are usually bulked via the IARU bureaux concerned, so that a G sending his cards outwards through our Bureau does not necessarily get the return QSL's through us. But this merely means that the operation of our Bureau contributes to the speeding-up of QSL interchanges.

Hence, it can be seen that those operators who can use our Bureau as their *sole QSL address* get a service which cannot be approached by any other agency.

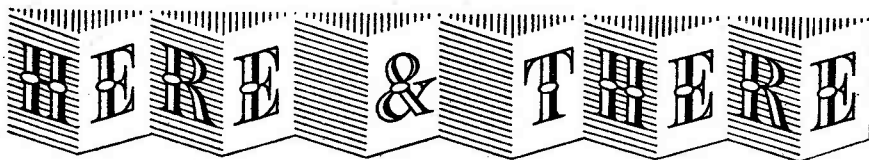
No Conditions

Naturally, for us the operation of our system is extremely expensive in postage alone. Therefore, its *both-way* use is confined to direct subscribers only, who can avail themselves of our QSL service as they please without extra charge.

One-way working, where cards are received for operators at home or overseas who may or may not be subscribers to or even readers of *Short Wave Magazine*, is, of course, automatic and inherent in the functioning of the system.

The Safeguards

Finally, it is perhaps worth adding that since the whole underlying motive of our system of QSL handling is always *delivery* of cards, we have entirely adequate safeguards for the interests of those who do not in the ordinary way feel inclined to make any use of our Bureau—in other words, there is no fear of anyone losing cards, whoever may be the addressee. It can be assumed that in these four years we have met, and have had to overcome, all the problems likely to arise in the operation of our own or any other QSL Bureau!



Getting Around

A recent check through our overseas direct subscriber index discloses that *Short Wave Magazine* now goes to readers in no less than 45 different countries outside the United Kingdom and Eire—from Iceland to the Falklands, and from Russia (yes!) to Alaska. Nor does this survey take account of any additional overseas coverage obtained through supplies in bulk to various export wholesalers for retail sales abroad.

"Clamp Modulator"—Slight Slip

In the circuit on p.19 of our March issue, an error crept in where V2 is concerned; its grid ought *not*, of course, be strapped to the other elements of that valve; only screen, suppressor and plate of V2 should be connected together. We hope that readers interested in the article will have spotted the mistake, and that nobody is still struggling with V2 as drawn. Ink has been drunk in atonement.

AVO Signal Generator

We are informed that it has become necessary to advance the price of this excellent instrument to £30, applying to both the mains and battery-operated models. The "Avo" Signal Generator covers a very wide range—50 kc to 80 mc—and incorporates all the refinements called for in a modern laboratory test instrument of its type.

Army Supplementary Reserve

The Adjutant-General to the Forces has issued, in War Office publication 5746, information in broad outline on the Army's Supplementary Reserve, open both to officers and other ranks, and offering vacancies in a wide range of technical branches of the Service. The openings which will be of interest to amateurs in particular are those in Royal Signals and R.E.M.E., for the operation and maintenance of radio communication and radar equipment.

Except for the 15-day summer training in certain cases, the obligation incurred by those joining the Supplementary Reserve amounts to nothing

more than an undertaking to serve in the Army if a state of emergency arises involving the call-up of the Reserve; those in the SR would go straight to the job for which, as individuals, they had volunteered and been accepted in the first place. In other words, joining the Supplementary Reserve means, in effect, having one's job ready if war should come, instead of being pitch-forked into something probably less congenial for which no choice could be offered. Pay and allowances at full Regular Army rates are drawn by officers and other ranks during training and, in addition, certain cash bounties are earned by those who undertake the 15 days' annual training.

Further details are given in "The Supplementary Reserve," W.O.5746, obtainable on application to the War Office, London, S.W.1, or from local Army Recruiting Offices, of which there are 60 situated in the main centres of population throughout the United Kingdom. The local telephone directory will give the address of the nearest.

Spring 1951 "Call Book"

The U.K. listings alone now occupy some 18 closely-printed pages of the *Radio Amateur Call Book*, and those given in the current (Spring 1951) issue are complete up to and including the callsign/addresses which appeared in "New QTH's" in *Short Wave Magazine* for February, including changes of address and corrections. The *Call Book* costs 20s. post free, obtainable from Gage & Pollard, Publishers' Agents, as advertised in the *Magazine*.

Transmitters-Only Organisation

Certain events recently have tended to focus attention once again on the prospects for a new transmitters-only society, and the possibility of taking active steps towards establishing it. With this end in view, the titles of "British Amateur Radio Transmitters' Society" (BARTS) and "British Amateur Radio Association" (BARA), as the alternative choice, have already been registered. But, for the moment, this is as far as matters have gone.

NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. call signs, as issued, or changes of address of transmitters already licensed. All addresses published here are reprinted in the quarterly issue of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

G2FHF C. D. Didcott, M.B.E., Elmbridge, Rectory Lane, Appleby Magna, Burton-on-Trent, Staffs.

G3AGP/A F. J. Barns, 40 Park Ridings, Hornsey, London, N.8.

G3AKZ R. T. Glynn, Oberon, Kayte Lane, nr. Cheltenham, Glos. (Tel.: *Cleeve Hill* 98).

G3CYC E. D. Ross, 28 Grassmere Avenue, Hounslow, Middlesex.

G3CYS J. B. Walker, 125 Tombridge Crescent, Kinsley, Pontefract, Yorkshire.

G3DMT C. Whitcutt, 180 Tynedale Road, Tyseley, Birmingham, 11.

GW3EMZ E. V. Arnold, 60 Stratford Road, Milford Haven, Pembrokeshire.

G3ERE J. W. Lucas, Magnolia Bay, Radstock Road, Midsomer Norton, nr. Bath, Somerset.

G3ERF C. W. Liversidge, School House, Condicote, Cheltenham, Glos.

G3EUZ A. Morris, The Anchorage, Queen Camel, Yeovil, Somerset. (Tel.: *Marston Magna* 298).

G3FUO C. Pearce, 17 Fairview Avenue, Earley, Reading, Berks.

G3GHH L. Osborn, 49 Nelson Road, Hornsey, London, N.8.

G3GNH F. Lamsley, 59 Canning Road, Wealdstone, Middlesex. (Tel.: *HARrow* 6046).

G3GWV J. L. Murray, 47 Windermere Street, Gateshead, 8., Co. Durham. (Tel.: *Gateshead* 72836).

G13GXU Portadown Amateur Transmitting Club, 13 Henry Street, Portadown.

G3GZV Sgt. L. J. Norris, No. 2 Married Quarters, R.A.F. Station, Honiley, nr. Kenilworth, Warks.

G3GZZ A. A. Bevan, 19 Talbot Avenue, Kingswood, Bristol. (Tel.: *Bristol* 73934).

G3HAP 83 Reserve Centre Amateur Radio Club (R.A.F.V.R.), Old Church Lane, Stanmore, Middlesex.

G3HCW A. E. Ashby, 40 Eastbourne Terrace, Baghill, Pontefract, Yorkshire.

G3HEB Dr. I. Brown, 58 Crescent Road, Sheffield, 7, Yorkshire.

GW3HEF D. M. Cole, Dolberthog, Llandrindod Wells, Radnorshire. (Tel.: *Llandrindod Wells* 2570).

G3HFB F. H. Barnes, 2 School House, Darley Abbey, Derby. (Tel.: *Derby* 58070).

G3HFI J. S. Wilkins, 86 Hampstead Road, Brislington, Bristol, 4. (Tel.: *Bristol* 78558).

G3HGY J. E. Francis, 66 Lincroft Crescent, Coventry, Warks.

G3HHC G. C. Eley, North End, Felsted, Chelmsford, Essex.

G3HHX East Brighton Short Wave Club, 27 Warren Avenue, Woodingdean, Brighton, Sussex. (Tel.: *Brighton* 25458).

G3HIB J. Nicholas, 76 Haig Road, Leek, Staffs.

G3HID F. W. Fox, Armadale, Manor Road, Burnham-on-Sea, Somerset. (Tel.: *Burnham-on-Sea* 511).

G3HIE R.E.M.E. Radio Club, Hazebrouck Barracks, Arborfield, Reading, Berks

G3HIF A. Reid, 17 Iolanthe Terrace, South Shields, Co. Durham.

G3HIH H. W. J. Ralls, 67 Meadow Lane, West Derby, Liverpool, 12.

G3HII C. J. Fox, 69 Feltwood Road, West Derby, Liverpool, 12.

G3HIK M. C. Frakes, 105 Mansfield Road, Warsop, nr. Mansfield, Notts.

G3HIU F. H. Dewick, Grad.I.E.E., 47 Gloucester Road, Wolverton, Bucks. (Tel.: *Wolverton* 3270).

G3HIW F. G. Jarvis, 60 Auckland Road, Ilford, Essex.

G3HIX C. A. Knight, 53 Belmont Road, Ilford, Essex.

G3HIZ L. F. Coles, 58 Bateman Road, New Parks, Leicester.

G13HJA P. J. Flanagan, P.T., Castleberg, Co. Tyrone.

G3HJD D. H. Careless, 5 Clifton Mansions, Walliscote Road, Weston-super-Mare, Somerset.

G3HJF L. J. Smith, 120 Crest Drive, Enfield, Middlesex.

G3HJG D. Whittling, 23 Link Avenue, Urmston, Manchester.

G3HJK B. J. Mitchell, 34 Swayfield Avenue, Dickenson Road, Longsight, Manchester, 13. (Tel.: *RUS.* 3987).

G3HJS R. V. Woodford, Osney Hill Farm, Witney, Oxon.

G3HMS A. T. Appleby, 69 Matilda Street, Islington, London, N.1.

G3HPM P. J. Mullock, Poulton Hall, nr. Wrexham, Denbs. (Tel.: *Rossett* 82).

G3HYL Mrs. M. E. Allen, High Acre, Stonehouse Lane, Combe Down, Bath, Somerset.

G3IOW H. Childs, 8 Huish Terrace, Mitchell Avenue, Ventnor, Isle of Wight.

G4HS S. J. Hopper, 3 Kimberley Road, Brighton, 7, Sussex.

GM4RF A. Maxwell (*ex-VS1AI/G2RQ*), The Lodge, Newhailes, Musselburgh, Midlothian.

CHANGE OF ADDRESS

G2AUB N. I. Neame, 3 Rudyard Road, Brighton 7, Sussex.

G2CL M. F. Long, 46 Headley Way, Headington, Oxford.

G2HKT L. R. Hawkesford, 28 Woodfield Road, Kings Heath, Birmingham, 14.

G2HNO L. J. J. Morgan, 25a Wentworth Avenue, West Southbourne, Bournemouth.

G3AGN S/Ldr. C. J. Curtis (*ex-ZB1BD*), 58 Queens Road, Felixstowe, Suffolk. (Tel.: *Felixstowe* 848).

G3AHO C. Finch, 2 Settle Road, Harold Hill, Essex.

G3CHN R. V. Thorn, Staplewynds, Buckland St. Mary, nr. Chard, Somerset.

G3CMY R. W. Rowsell, 18 Oakford Avenue, Weston-super-Mare, Somerset.

G3DQQ D. Winterburn, 82 Moysse Avenue, Walshaw, nr. Bury, Lancs.

G3DRS N. H. Brown, Meadow Bank, Green Lane, Hollingworth, nr. Manchester.

G3ENI Lt. Cdr. A. J. R. Pegler, R.N., 4 Broomfield Road, Kew Gardens, London.

G3FKR T. R. Acock, 4 Stanley Grove, Weston-super-Mare, Somerset.

G3GCX M. G. Lintoot, 27a Carr Lane, Acomb, York. (Tel.: *York* 78385).

G3GES E. T. Smith, 102 Wrekin Drive, New Donnington, Wellington, Salop.

G3GKZ M. D. Fowler, 25 Crossway Lane, Perry Barr, Birmingham, 22.B.

G3GUF A. E. Buckmaster, 117 Erith Road, Belvedere, Kent.

G3GUG J. P. Bainbridge, Westcombe, Whalley Road, Wilpshire, Blackburn, Lancs.

G3DU A. E. Hyde, 253 Vernon Road, Old Basford, Nottingham.

The Month with the Clubs

FROM REPORTS RECEIVED

This month we publish reports from 25 Clubs, most of whom have their eyes on the weather with a view to starting portable and outdoor activity for the season. So far they have not received much encouragement!

We also wish to acknowledge receipt of the following Club Circulars and broadsheets: *Midland News Letter*, *Rag-Chew* (Worthing), *South Manchester Monthly Magazine*, and *Brighton Link*.

Will Secretaries please keep in mind our standing offer to publish good photographs of Club meetings and activities? We are always glad to receive them, for illustrating this feature—and payment is made for all photographs used, by way of a donation to Club funds.

Deadline for next month's reports will be first post on **Wednesday, May 16**, and **June 13** for the July issue. Address your reports to Club Secretary, *Short Wave Magazine*, 53 Victoria Street, London, S.W.1.

Wrekin Amateur Radio Society.—This Club meets every Monday, 8 p.m. at the YMCA Canteen, Wellington. A local net also operates on Sundays at 11.30 a.m. and on Mondays and Fridays at 7 p.m. Most local stations take part, on 1820 kc. Local interest is divided between SSB and 420 mc operation.

Aberdeen Amateur Radio Society.—The first exhibition of its kind in Aberdeen will open on May 24, when a display of Amateur Radio equipment will be on display in the Music Hall for three days. It will show a panorama of the various stages in the career of an amateur—from SWL to 150-watt Phone station. GM3ALZ is chief organiser, and the live station will be that of GM2FHH, working under the Club call GM3BSQ. The war-surplus section of the exhibit will be run by GM3ALB. It is hoped that the public will turn up in large numbers and learn more of the story behind Amateur Radio.

Watford & District Radio & Television Society.—Forthcoming events include an exhibition of home-built gear (May 15) and a talk and demonstration on Test Gear by G6GR (June 5). Meetings start at 7.30 p.m. with a half-hour discussion period—at "Cookery Nook," The Parade, Watford.

Slade Radio Society.—Future events are as follows: May 6, Harcourt Trophy D-F Test; May 11, Lecture-Demonstration on Tape Recording; May 25, Exhibition of Members' Gear; June 8, Discussion evening.

Birmingham & District Short Wave Society.—Meetings are held at 7.45 p.m. on the second Monday, and visitors are always welcome. The May meeting will comprise a Mock Auction, not the talk mentioned last month, which is deferred until June 11.

West Kent Radio Society.—The Annual Dinner took place recently, some 40 members and guests being present. Other meetings have included a discussion on Field Day and a lecture by G4IB on Symbols Used in Radio. The AGM is on April 11.

Brighton & District Radio Club.—This Club hopes to form a section for members interested in TV, to deal with both constructional and theoretical sides of television receivers. On May 15 and June 12 there will be further Mullard film-strip lectures, and on May 22 a general discussion.

Manchester & District Radio Society.—Monthly meetings are held at the Reynolds Hall, College of Technology, Manchester, at 7.30 p.m. on the first Monday of the month, and a cordial invitation is extended to all. The committee is organising a series of lectures for the next twelve months. On May 7 G2HW will talk on Power Packs, and on June 4 G2ALN will discuss HF Beams.

Midland Amateur Radio Society.—At the last meeting Dr. John Simmonds (Physical Research Dept., Birmingham University) gave a most interesting lecture on the new Synchrotron in

course of construction at the University. With the aid of lantern slides this machine and its principles were explained to even the less advanced members. Meetings are held on the third Tuesday, 6.45 p.m. at the Imperial Hotel, Birmingham.

Ravensbourne Amateur Radio Club.—The club Tx, G8HEV, is nearing completion, and a portable QRP Tx for field day purposes is also being built by a member. Meetings are on Wednesdays, 7.30 p.m. at Childeric Road School, S.E.14, and membership is now widespread over South London and North West Kent.

Isle of Man Amateur Radio Society.—The AGM and Dinner is to be held on May 9; tickets, of which the numbers are limited, may be obtained from the Hon. Sec. During April a visit was paid to Ronaldsway Airport, where the radio and radar gear was inspected.

Brentwood & District Radio Society.—Mr. J. F. Moseley, G2CIW, secretary of this Club for a long time, is resigning and moving abroad. Please note new secretary's name and address, in paper.

East Surrey Radio Club.—Recent meetings have included a technical discussion, a film show and a talk on BCI and TVI by Mr. Bird of the GPO. The next meeting will be on May 17, 7.45 p.m. at the Barn Room, 8 Lesbourne Road, Reigate. In a recent report the "G5LJ Trophy" was erroneously described as the "G5LK Trophy." We regret this error.

Reading Radio Society.—At the AGM, recently held, Mr. J. Budd was appointed as Scribe in place of the previous official, Mr. Mercer. The Hon. Sec. continues in office.

The Bedford Club (W.F.S.R.A.).—This club makes steady progress and has now opened a fund; contributions will be gratefully accepted by the Hon. Sec. A correspondence section has also been formed, and club activities are publicised in *Skywire*, obtainable from G3AAU at 3d. per copy, plus postage.

Bradford Amateur Radio Society.—Members have benefited by the series of elementary technical lectures, and several candidates were taking the Radio Amateur Examination just held. Meetings will continue throughout the summer, the next

being on May 22, 7.30 p.m. at Cambridge House, 66 Little Horton Lane.

Chester & District Amateur Radio Society.—Well-attended meetings have coped with Clamp Modulation, Mullard film strips, notes on Sound Recording, demonstrations and so on. Future meetings are May 8 (subject to be fixed), May 22 (Workshop Practice), May 29 (Final arrangements for a field day). The Clubroom is now open on Fridays at 8 p.m., when G3GIZ is "aired."

Clifton Amateur Radio Society.—Recent meetings were well attended, and the "Build an O-V-O in One Hour" contest resulted in all competitors making successful receivers. G3GYZ lectured on D-F work, and members are looking forward to D-F Contests. Forthcoming events—Film Strip lectures, Projection Television, Instrument Calibration. Attendances are higher than ever.

Coventry Amateur Radio Society.—Mr. T. R. Theakston, B.Sc., gave his talk on "Mathematics—Why?" in April, and opened new vistas on what many members had previously considered a dull subject. The portable rig for field day use is to be undertaken by members studying for their licences, although the

operation will of course be carried out by licensed members. Next meetings, May 7 and 21, 7.30 p.m. at BTH Social Centre, Holyhead Road.

Gillingham Telecommunications Society.—A new Tx is being built for use at the Club station, G3GTS, and plans for a field day are well under way. New members will always be welcome at the Medway Technical College, Gardiner Street, Gillingham, at 7.30 p.m. on alternate Tuesdays.

Grafton Radio Society.—Clubs organising parties to visit the Festival of Britain (particularly those from the provinces) are cordially invited to arrange a visit to Grafton, where meetings are held every Monday, Wednesday and Friday. Please advise the Hon. Sec. in advance to facilitate catering arrangements.

Stoke-on-Trent Radio Society.—This Club held its AGM recently, and indications are that it is developing satisfactorily. The financial position is sound and the membership is increasing. The transmitter (G3GBU) is active on the 3.5 mc band. Further demonstrations of sound, transmitting and television equipment will be given shortly—all local enthusiasts welcome.

Gravesend Amateur Radio Society.—This club has now acquired a shack, thanks to the generosity of G6VC, and it is hoped to get a transmitter on the air quite soon. Preparations for field day work are in hand, even to the extent of carrying out a dummy run on May 6. Recent programmes have included a debate on Receivers and a talk on Modulation Methods by G6BQ.

Chesterfield Model Engineering and Radio Society.—This club now meets in the Hartington Room, Bradbury Hall, 7.30 p.m. on alternate Tuesdays. Recent talks have concerned TV and Radio Control of Models. Morse classes are being arranged and will be held in the Club Workshop. Two forthcoming local exhibitions will see the society on show. Next meetings: May 8 and 22.

Sheffield & District Radio Society.—The Club Tx, G3FJE, is now on the Top Band, and is making progress towards 144 mc and 420 mc as well. Recent meetings have heard a talk by G2DPQ on Aerial Coupling and seen a demonstration by G2DUS of his 2-metre rig. Talks on Radar and Centimetre Technique and also in progress. The 13-cm band is being explored by three members, who have "Heath Robinson" rigs under construction after successful trials.

NAMES AND ADDRESSES OF CLUB SECRETARIES REPORTING IN THIS ISSUE:

ABERDEEN: G. M. Jamieson, 66 Elmfield Avenue, Aberdeen.
BIRMINGHAM: W. V. Shepard, 174 Gristhorpe Road, Selly Oak, Birmingham 29.
BRADFORD: V. W. Soven, G2BYC, Rushwood, Grange Park Drive, Cottingley, Bingley.
BRENTWOOD: J. F. Moseley, G2C1W, 45 Geoffrey Avenue, Harold Park, Romford.
BRIGHTON: R. T. Parsons, 14 Carlyle Avenue, Brighton 7.
CHESTER: W. Lloyd, 124 Tarvin Road, Chester.
CHESTERFIELD: K. Robinson, G3BHQ, 51 Hill Top Road, Old Whittington, Chesterfield.
CLIFTON: W. A. Martin, G3FVG, 21 Brixton Hill, London, S.W.2.
COVENTRY: K. Lines, G3FOH, 142 Shorncliffe Road, Coventry.
EAST SURREY: L. Knight, G5LK, Radiohme, Madeira Walk, Reigate.
GILLINGHAM: C. E. Pellatt, G2FAQ, 101 Boundary Road, Chatham.
GRAFTON: W. H. C. Jennings, G2AHB, Grafton LCC School, Eburne Road, London, N.7.
GRAVESEND: R. Appleton, 23 Laurel Avenue, Gravesend.
ISLE OF MAN: H. Grist, G3FB5, Broadway House, Douglas, I.O.M.
MANCHESTER: H. Marshall, G4ND, 14 Greenway Close, Sale.
MIDLAND: H. B. Blich, 52 Norman Road, Birmingham 31.
RAVENSBOURNE: J. Wilshaw, 4 Station Road, Bromley, Kent.
READING: L. Hensford, G2BHS, 30 Boston Avenue, Reading.
SHEFFORD: N. A. Eaton, 25 Stanford Road, Shefford, Beds.
SLADE: C. N. Smart, 110 Woolmore Road, Birmingham 23.
STOKE-ON-TRENT: K. H. Parkes, G3EHM, 159 Belgrave Road, Longton, Stoke-on-Trent.
WATFORD: R. W. Bailey, G2QB, 23 Cassiobury Drive, Watford.
WEST KENT: L. King, G4IB, Glenisla, Maidstone Road, Lower Green, Pembury, Kent.
W.F.S.R.A. (Bedfast Club): J. Woodward, G3GYR, 6 Council Houses, Rode Heath, Stoke-on-Trent.
WREKIN: J. C. Tranter, G3BQQ, 78 New Street, Wellington, Salop.

THE 1951 R.A.E.

The Radio Amateurs' Examination for this year was held on May 2, at examination centres all over the country (and at many places abroad), but the results

will not be out for some months yet, nor have we at this moment any information as to the numbers sitting or the paper which was set.

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350-0-350v 90ma., 6.3v 3a., 5v 2a. 19/9

350-0-350v 100ma., 6.3v 3a., 5v 3a. 21/9

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H.B.40	Windings as above, 4v 4 amps, 4v 2 amps		18/6
H.B.2.	Input 200/250v. Output 250/0/250v. 80 m/a		21/-
H.B.30.	Input 200/250v. Output 300/0/300v. 80 m/a		21/-
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H.B.2X.	Input 200/250v. Output 250/0/250v. 100 m/a		23/-
H.B.30X.	Input 200/250v. Output 300/0/300v. 100 m/a		23/-
H.B.3X.	Input 200/250v. Output 350/0/350v. 100 m/a		23/-
Fully Shrouded—			
F.S.2.	Input 200/250v. Output 250/0/250v. 80 m/a		23/-
F.S.30.	Input 200/250v. Output 300/0/300v. 80 m/a		23/-
F.S.3.	Input 200/250v. Output 350/0/350v. 80 m/a		23/-
F.S.2X.	Input 200/250v. Output 250/0/250v. 100 m/a		25/6
F.S.30X.	Input 200/250v. Output 300/0/300v. 100 m/a		25/6
F.S.3X.	Input 200/250v. Output 350/0/350v. 100 m/a		25/6
All above have 6-3-4-0v at 4 amps, 5-4-0v at 2 amps.			
F.S.45.	Input 200/250v. Output 425/0/425v. 200 m/a	6-3v 4 amps O.T. 6-3v 4 amps O.T. 5v 3amps	51/-
H.B.6.	Input 200/250v. Output 250/0/250v. 80 m/a	6-3v 6 amps O.T. 5v 3amps. Half-shrouded For Receiver R1355	20/6

Framed, Flying Leads—			
F.30X.	Input 200/250v. Output 300/0/300v. 80 m/a,	6-3v 7 amps, 5v 2 amps	31/6
H.B.150.	Input 200/250v. Output 350/0/350v. 150 m/a	6-3v 3 amps O.T. 5v 3amps. Half-shrouded	30/6
F.S.120.	Input 200/250v. Output 350/0/350v. 120 m/a	6-3v 2 amps O.T. 6-3v 2 amps O.T. 5v 3amps Fully shrouded	33/-
F.S.150.	Input 200/250v. Output 350/0/350v. 150 m/a,	6-3v 2 amps O.T. 6-3v 2 amps O.T. 5v 3amps Fully shrouded	34/6
FLAMEWAVE TRANSFORMERS			
F.8.	Input 200/250v. 6-3v at 10 amp, 5v at 10 amp, 10v at 5 amp, 12v at 5 amp.	Framed Flying Leads	37/6
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F.59.	Input 200/250v. 0-2-4-5-6-3v at 4 amps		30/6
F.6.	Input 200/250v. 6-3v 2 amps		9/-
F.12.	Input 200/250v. 12-6v. Tapped at 6-3v 3amps		12/6
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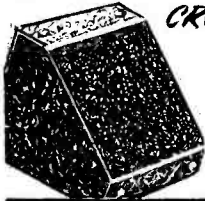
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SMALL ADVERTISEMENTS READERS'—continued

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BC221D £13 Eddystone 640, £18 10. 6 volt Vibra-pack, 12/6. RF26, 35/-. All first-class condition and carriage paid. Box : 920.

BC348M for sale. Excellent conditlon. Internal mains p/p. Fitted N/L. Recently professionally realigned £13. O.N.O. Halket, St. John's College, Cambridge.

SALE. BC348 as new, internal pack, £14 10. Radar receiver S4/APR4/TN16 35—95 mc, new auto-trans (spare 12 tubes £1 5.) £9 5. 1132 new, 55/- . 8 6SH7, new, 2/- each. 20 yds. 30-ohm coax, 7/6. Jeakings, c/o 7 Waller Street, Luton, Beds.

R1155 modified, built-in power pack, in good condition, £9. 3½ in. oscilloscope, complete in case - would exchange for unused 813 valves - what offers? . 6 Exeter Gardens, Ilford.

COMPLETE 40 watt all band CW transmitter, in fine black crackle table top cabinet. As new £15. GW3ENN, 4 Graving Dock St. Barry, Glam.

WANTED. T1154 type 45 mains transformer, G81X, 17 Nelson Road, Hanley, Stoke-on-Trent.

G3HCR going DX offers sell AR88D mint condition. S-meter, 8 in. Hyflux cabinet, RCA 20000 ohm phones, manual, complete £42 10. Also Hallcraftaer freq. standard atal. 1000/100/10 kc, AC operated, new, £7 10. Inspection appointment, Jones, 75 Denbigh Street, London, S.W.1. (Phone VIC. 0692 after 7 p.m.).

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EDDYSTONE 504 receiver. Two RF bandpass, Lxtral filter, S-meter, etc. Just completely overhauled and re-aligned, including fitting new wavechange switch. £35 or offer. G2AHT, 73 Pinewood Drive, Bletchley, Bucks.

RECEIVER wanted by ham who is re-equipping, R1155 type or similar, would collect in London area, G5NZ, 72 Highland Road, Northwood, Middlesex.

WANTED HRO bandspread coil 7 mc. Sale BC348, AC mains, S-meter, fitted 1851 RF, guaranteed perfect, top line performance. Offers to G2PU, Windsor Road, Cambridge.

SALE, Taylor model 85A/P meter unused, as new, approximately one month old, fully guaranteed. Offers? Yaxley, 61 Anchor Street, Norwich.

Short Wave Magazine, May 1951

SMALL ADVERTISEMENTS

READERS'—continued

SALE 813 with base 25/-; filament trans. 10v 100a, twice, C.T., 12/6; 680-0-680 225 MA, 26/- Wireless World 1949/1950 complete, Practical Wireless May 1947 to date (8 missing); Short Wave Listener September 1947 - September 1949, 3 missing. Offers? Wanted HK257B, Labgear couplers 1000-0-1000 volt trans, Hughes, 101 Grove Street, Glasgow.

R103A, NL, £6/10. Class D wavemeter, £4/10. 1934, Type 24, tuneable 10 metres, 30/- G3EGS, 47 Lindsworth Road, King's Norton, Birmingham 30.

RECEIVERS SX28, £35; S27, £20; Eddystone 358, P/P 13 coils, £15. BC348, p/p, £15. TCS13, £5. Wavemeter W1119, £7, and others: all letters answered. G3EJO, 39 Kingsbury Road, Erdington, Birmingham 24.

QST - bound six-monthly volumes complete 1934 to 1943, and loose copies later issues. Offers. Leftwich, 27 Walpole Street, S.W.3.

NEW, Marconi marine key type 365A, with spares 30/- New, Hytron TZ40's boxed, 25/- G3FXT, 11 Cecil Street, Huddersfield.

B2 minor Tx Rx, AC P/P, £8 10. or offer. Q5'er, £3. Xtals, valves and components. S.A.E. Armstrong, c/o 20 Thornton Gate, Cleveleys, Lancs.

BC342H. Beautiful condition. Internal 230v, noise limiter, provision external S-meter. £17 10. plus carriage. RF26 unused, new, 37/6. Heaps, Toll Gavel, Beverley, Yorks. (Phone BEVERLEY 160).

WANTED. MCRI or Hallicrafters S29 battery portable. Cheap and in good condition. Write. Dolby, Male Ward, Ransom Sanatorium, Rainworth, Notts.

HALLICRAFTER S40 with S-meter, realigned, H perfect, £25 or nearest offer. Write Browns Wireless, 45 George IV Bridge, Edinburgh.

RADIOVISION Preselector, as new, £12 or nearest offer. Write. Browns Wireless, 45 George IV Bridge, Edinburgh.

UNIVERSAL Avomiron, perfect, £7. 5 in. energised speaker, trans, 9/6. Hand generator, 7/6. Motor generator, 9/6. Pick-up 10/- 6C5, 6N7, 6J5, 6.3v, tuning indicator, 5/- each. Junk box £1. Radio library, cheap, list on request. Wood, 118 Moscow Drive, Liverpool 13.

WANTED aerial mast. Tapped modulation transformer. 70 centimetre converter. Dural tubing. HRO receiver. For sale. 640. 8 Grainger Avenue, Prenton, Birkenhead.

AR88LF manual and matched speaker, new condition, perfect order, £45. BC221 with power pack, £13. Bendix TA12, with modification details, £6. Type 9 power supplies, £4. Kit of AR77 spares complete, £15. Buyer collects. 123 Hamil Road, Burslem, Staffs.

WANTED to purchase, working instructions Parts I and II of DST100, and manual of BC1147. GM3CCK, Herald, Kirkwall.

Short Wave Magazine, Volume IX

G4GZ's BARGAINS.

NEW VALVES: 6SQ7M, 6SG7M, 6J7M, 6J7G, 6N7M, 6N7GT, 6AG5, 5Z4M, AC6Pen, 1T4, 1R5, 6F8G, 8/- each. VR150/30, 8012, 1S5, 6F7, 6L7M, KT66, 9/- each. 2A3, 1622, 10/6 each. 6C5GT, 6/6, 6J5M, 6/-, 5CP1, 25/- 801A, 17/6, 12SQ7, 12/6, 811, 37/6, 832, 45/-, 832A, 55/-, 3E29 65/-.

ALUMINIUM COIL GANS: 2 1/2 ins. x 7 in. sq. 4/6 doz. **MAINS TRANS:** 230v. input, 5v. 5ramps, 16v. 1amp, 220, 260, 300v. 80m/a (HW) O/p. 11/6 each. Few ditto less 16v. winding 9/6 each. Cer. 807 V/hdrs. 6 for 5/6, 10/- dozen. **LAST FEW:** Eddystone Power Packs, 200-250v. input, 175v. 60m/a double smoothed O/p and 12.6v. 3 amps with 5Z4 rect. 38/6 carriage paid. N.P. Croc clips 3/6 doz. Large glazed feed thru's, 1 1/4 in. x 1 1/4 in. 2 for 3/9 or 19/- doz. 500 ohm 5 watt w/w res. 1/- each. 9/- doz. All post paid by return of post.

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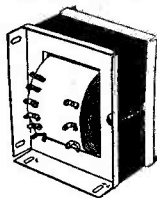
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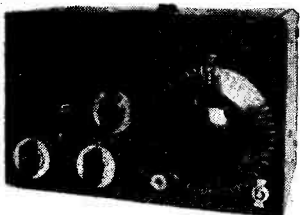
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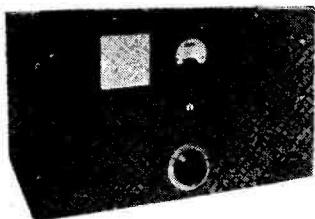
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