R S G B

OCTOBER, 1957

BULLETIN

2/6 Monthly

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

VOL. 33, NO. 4

Alfred Padgett

40 MEADOW LANE · LEEDS 11

SPECIAL OFFER
Brand New in cases the following five sets:—Frequency Meter BC-906-D. Range Calibrator BC-949-A. Indicator BC-936A. Radio Receiver BC-1066-B. Signal Generator 1-996-B. All the lot for **£4/5/0.** Carr. 15/-.

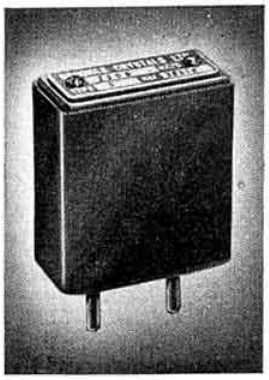
TUBE UNIT.—BC 929A complete with good 3BP1 3 in. tube. Less valves and motor, **£1/5/0** carr. 7/6.
1154 MODEL N.—Complete with Valves and Meters. Clean condition, **17/6.** Carr. 12/6.
RDFI SETS.—Less valves and power pack, **5/6.** Carr. 7/6.

SPECIAL OFFER
Red Spot Transistors, 7/6 each. Crystal Diodes, **10d.** each. Post 2½d. each.

MIXED B.A. NUTS AND BOLTS.—Half a pound box **1/6.** Post 1/6.
SELENIUM METAL RECTIFIERS.—250 volts. 100 mills., **5/-.** 120 volts, 60 mills., **2/-.** 150, **1/6.** All 12 months' guarantee. Post 1/6 each.
LARGE GARAGE BATTERY CHARGERS. 26 amps. at 24 volts. **£9.** Carr. £1/10/0. Good condition.
COAXIAL PLUGS AND SOCKETS.—**6d.** complete. Post 7d. 4/6 per doz., post free.
BOTTLES OF SWITCH CLEANER.—**9d.** Post 1/-.

RADIO VALVES
With 90 days' guarantee. Post 9d. per valve; doz. lots less 5% post free.
12SJ7M, 4/-; 12SG7M, 4/-; 12SH7M, 3/-; 12H6M, 1/3; 12SK7M, 4/-; 12C8M, 4/-; 12A6M, 4/6; 9003, 2/6; 9004, 6d.; 8D2, 1/-; 807 (Brit.), 4/-; VR150/30, 4/-; PEN46, 2/6; 954, 1/3; EF50, 3/-; VR136, 4/-; VR137, 1/3; EF36, 4/-; 6K7, 2/-; 6SH7, 2/6; 6G6, 3/6; 6H6G, 9d.; VR54, 9d.; 6D6, 3/-; 6C6, 3/-; 6J5M, 4/6; 6C4, 4/-; 6AG5, 4/-; 6B8, 2/-; VR92, 9d.; VR65, 1/6; VR66, 1/-; KT2, 3/6; QP220, 3/6; 210LF, 1/6; DLS10, 2/6; 5U4G, 6/6; CV63, 1/-; 2X2, 1/6; VU111, 1/6; VU133, 1/6; AC6/PEN, 2/6; 7193, 1/6; VS110, 1/6; EF80, 6/6; 6J6, 3/6; AR8, 3/6; ARP12, 3/6.

BROOKES *Crystals*



mean DEPENDABLE frequency control

Illustrated is a Type S Crystal unit from a range covering 100 kc/s to 15 Mc/s.

- *Black bakelite case.*
- *1 3/16" high × 1 9/16" wide × 3/4" thick.*
- *Two 1/8" dia. pins spaced 3/4" centres.*

ALL Brookes Crystals are made to exacting standards and close tolerances. They are available with a variety of bases and in a wide range of frequencies. There is a Brookes Crystal to suit your purpose—let us have your enquiry now.

BROOKES

Brookes Crystals Ltd.

Suppliers to Ministry of Supply, Home Office, B.B.C., etc.
181/3 TRAFALGAR ROAD, LONDON, S.E.10
Phone: GREenwich 1828 *Grams:* Xtals, Green, London

LUSTRAPHONE — THE MASTER MICROPHONE

MICROPHONES FOR ALL REQUIREMENTS

A NEW RIBBON-VELOCITY "PENCIL" MICROPHONE

MODEL **VR/64**
"Ribbonette"
LOW, LINE OR HIGH IMPEDANCE

Based primarily on the design of the high quality LUSTRAPHONE Studio Ribbon Microphone VR/53, this new model, the "Ribbonette" is of relatively miniature dimensions. Response substantially maintained to 14 kc/s. Full blast screens fitted. With new type improved swivel mounting. Silver-hammer finish.

Full details of the "Ribbonette" Microphone sent on application to the makers.

LUSTRAPHONE LTD.

ST. GEORGE'S WORKS
REGENT'S PARK ROAD, LONDON, N.W.1 *PRI. 8844*

H. WHITAKER G3SJ

COURT ROAD, NEWTON FERRERS, SOUTH DEVON

Precision Crystals of all Types

AMATEUR BANDS

We can give immediate delivery from stock of practically any frequency covering the entire amateur bands and model control band. 100 and 1000 kc/s for frequency standards from stock.

SPECIAL OFFER: 400 crystals in the range 7090 kc/s to 7150 kc/s, all frequencies available. Post-war production. Zero temp. BT cuts, gold plated electrodes, ½" pin space holders. Unrepeatable, **18/-** each, post free. This price applies only to the above range.

As above, 8050 kc/s to 8110 kc/s inclusive, same specification, **18/-** each post free. All frequencies available throughout the range.

H. WHITAKER G3SJ

Contractors to the War Office, Air Ministry, Post Office and Government Departments the world over.

A.R.B. Approved. Tel.: NEWTON FERRERS 320

HENRY'S
(RADIO LTD)

5 Harrow Road, Paddington, W.2

Opposite Edgware Road Station

PADdington 1008/9

OPEN MONDAY to SAT. 9—6. THURS. 1 o'clock

Send 3d. for 28-page Catalogue.

QUARTZ CRYSTALS

FT243—FUNDAMENTALS

80 Types 5706·667 Kc/s to 8340 Kc/s (in steps of 33·333 Kc/s).
120 Types 5675 Kc/s to 8650 Kc/s (In steps of 25 Kc/s).
(Excluding Types 7000/7300 and 8000/8300)

5/- EACH

7000 Kc/s to 7300 Kc/s, in steps of 25 Kc/s
8000 Kc/s to 8300 Kc/s, in steps of 25 Kc/s **7/6d. EACH**

Complete Sets of 80 Crystals **£6. 0. 0.** Complete Sets of 120 Crystals **£7. 10. 0.**

FT2 41A—54th HARMONIC

80 Types 20 Mc/s to 27·9 Mc/s. (In steps of 100 Kc/s).
(Excluding 27 Mc/s).

27 Mc/s, 10/- **5/- EACH** Complete Set of 80 Crystals **£6**

100 Kc/s.	Gold Plated D.T. Cut...	15/-
150 Kc/s.	Two Pin Round	12/6d.
160 Kc/s.	,, ,, 10X	12/6d.
200 Kc/s.	FT241A	10/-
500 Kc/s.	FT241A	10/-
500 Kc/s.	Brook's Special Holder	15/-
5000 Kc/s.	Piezo 2-Pin Holder	12/6d.

P.O. Type 4B Ceramic

100 Kc/s. 819·6 Kc/s ... 163·9 Kc/s. 1000 Kc/s. ... **15/- EACH**

CERAMIC 2-PIN BANANA PLUG

15,010 Kc/s, 16,135 Kc/s, 16,435 Kc/s, 18,025 Kc/s.
15,110 Kcs, 16,335 Kc/s, 16,700 Kc/s, 18,125 Kc/s. **10/- EACH**

TCS COLLINS TYPE 3-PIN. FT249.

1665·5 Kc/s, 1700 Kc/s, 2073·5 Kc/s,
1962·5 Kc/s, 2072·5 Kc/s, 2410 Kc/s **10/- EACH**

DC11A TWO-PIN

1740 Kc/s, 1780 Kc/s, 1764·5 Kc/s. **7/6d.**

CATHODE RAY TUBES

VCR139A	£1	15	0
VCR139A Mu-Metal Screen		5	6
VCR97. Full T.V. picture (carr. 2/-)	£2	0	0
VCR517C. Full T.V. picture	£1	15	0
MU-METAL SCREENS for VCR97 or 517 ...		10	0
VCR97. Slight-cut-off. Carr. 2/-		15	0
3PB1. Brand new	£1	10	0

TRANSISTOR PUSH-PULL AUDIO AMPLIFIER

(200 Milliwatts Output)

Build this Push-Pull Amplifier which is ideal for Crystal or Magnetic Pick-up Amplification, Baby Alarm, Microphone Amplifier, etc. Powered by 6-volt Dry Battery lasting for months. Complete Kit of Parts including 4 Transistors and all Components with Circuit (less Speaker) and plastic case, **£4/10/-.**

MARCONI S.T.C. 10X TYPE 2-PIN IN KILOCYCLES

10,166	10,501	10,755	11,501	11,851	1579	1835	2087.5
10,189	10,511	10,767	11,526	11,876	1588.68	1930	2089
10,233	10,534	10,823	11,587	12,685	1613.25	1981	2090
10,245	10,545	10,856	11,751	12,600	1650	2012	2196
10,300	10,557	10,878	11,788	1544.4	1761	2118.25	2295
10,433	10,567	11,437	11,814	1566.5	1775	2065.75	2315
10,445	10 622	11,463			1780	2067.5	2430

7/6 each

TRANSISTORS

JUNCTION TYPE P-N-P (British Manufacture)

RED-SPOT 800 kc/s Audio Frequency	10/-
BLUE-SPOT 1·6 Mc/s and Frequency Changer...	15/-
WHITE-SPOT 2·5 Mc/s R.F. and I.F. Amp	20/-

All Transistors are Tested and Guaranteed
N.B. The Red Spot is similar to Mullard OC71

"EAVESDROPPER"

THREE-TRANSISTOR POCKET RADIO

(No Aerial or Earth required)

Pre-selected to receive the Light and Home Stations. Total cost, as specified, including Transistors, Transformers, Coils, Condensers and Battery, etc., with circuit and plastic case. **77/6** POST FREE

All items sold separately.
With single 'phone, **82/6** With Acos Mike, **90/-** With Min. Hearing Aid, **92/6**

The New "TRANSISTOR—8"

Push-Pull Portable Superhet

CAN BE BUILT FOR £11 - 10 - 0

This Portable 8 Transistor Superhet is tunable for both Medium and Long Waves and is comparable in performance to any equivalent Commercial Transistor Set. Simplified construction enables this set to be built easily and quickly into an attractive lightweight cabinet supplied.

TEN STAR FEATURES

- ★ 8 Specially Selected Transistors
- ★ 250 Milliwatts Output Push-Pull
- ★ Medium and Long Waves
- ★ Internal Ferrite Rod Aerial
- ★ 7 × 4 Elliptical High Resistance Speaker
- ★ Drilled Plastic Chassis 8½ × 2½ in.
- ★ Point to Point wiring and practical layout
- ★ Economical. Powered by 7½V battery
- ★ Highly sensitive
- ★ Attractive lightweight contemporary case

We can supply all these items including Cabinet for **£11 . 10 . 0**
All parts sold separately

Send for circuit diagrams, assembly data, illustrations and instructions, and full shopping list **1/6**

Pair XC101's supplied 40/- extra. Call and hear demonstration model.

MINI-TWO 2-TRANSISTOR MINIATURE POCKET RADIO

The smallest transistor set offered on the market. Variable tuning. Drilled chassis, plastic case size 3" x 2" x ¾", miniature hearing aid, 2 transistors and all components including 1½ volt battery, circuits and full practical layout diagrams.
Total cost **49/6-** complete

TRANSMITTER RECEIVER

Army Type 17 Mk. II

Complete with Valves, High Resistance Headphones. Hand-mike and Instruction Book and circuit.

- Frequency Range 44·0 to 61 Mc/s.
- Range Approximately 3 to 8 miles.
- Power requirements: Standard 120V H.T. and 2V L.T.

Ideal for Civil Defence and communications.

BRAND NEW **59/6**

Calibrated Wavemeter for same, 10/- extra.

TRANSISTOR SIGNAL TRACER

Complete Kit with 2 Transistors, Components, Phones with Circuit, and Plastic Case, **42/6.**

TRANSISTOR SQUARE WAVE GENERATOR

Complete Kit with 2 Transistors, Components, Circuit and Plastic Case. **25/-.**

DIODES

B.T.H. GERMANIUM ...	1/6
MULLARD OA74	2/6
IN21	3/6
IN22, IN23, IN21A	5/-

COLLARO RC/3/554

3-speed single player with crystal turnover pick-up type "T." **£6. 19. 6.** carr. 3/6. Brand new in original carton.

"HOMELIGHT"

2 Transistor Personal Portable

No Aerial or Earth Required.
Variable tuning.

We can supply all components including 2 Transistors, Diode, Resistors, Condensers and Miniature Hearing Aid and Plastic Case size 4½ × 2⅞ × 1⅝ and 1½V Battery. FOR **52/6.**
All items sold separately.

TRANSMITTER/RECEIVER SCR 522

Comprising the well-known BC625 and BC624A units. The complete unit is in very good condition having very useful parts including Relays, Transformers, Condensers, etc. Less valves **45/-**, carr. 5/-.

MODEL-MAKERS' MOTORS

Two types available 12 or 24 v. with ¼" spindle ... ... **10/-** each

6 v. VIBRATOR PACKS

Output 120 v. 30 mA., **12/6.** Brand new.

COLLARO RC456

4-speed auto-changer. Latest type with crystal turnover pick-up. **£9/15/-.**

R.F.24, **10/-.** R.F. 25, **12/6.** R.F. 26, **25/-.**
Brand new with valves, carr. 2/6.

R.S.G.B. BULLETIN

Devoted to the Science and Advancement of Amateur Radio

Vol. 33 No. 4 OCTOBER 1957

CONTENTS

	Page
Current Comment (Editorial)	167
More about the Minibeam. By G. A. Bird (G4ZU)	168
Simple Transmitter for the Beginner. By C. H. L. Edwards (G8TL)	173
June in Jersey. By J. Douglas Kay (G3AAE)	176
Simple Transistor Transmitter for 1·8 Mc/s. By N. Waite (G3KOX)	177
Month on the Air. By S. A. Herbert (G3ATU)	178
Frequency Predictions. By J. Douglas Kay (G3AAE)	179
Mobile Column visits the Harlow and Tunbridge Wells Mobile Rallies. By John A. Rouse (G2AHL)	182
Radio Hobbies Exhibition	184–5
Four Metres and Down. By F. G. Lambeth (G2AIW)	186
A Lucky Amateur looks at Hi-fi. By Philip G. Tandy (G2DU)	189
Amateur Television. By L. Alwyn Stockley (G3EKE/T)	189
Radio Amateur Emergency Network. By C. L. Fenton (G3ABB)	190
Society News	191
Council Proceedings	193
Regional Meetings	194
Tests and Contests	195
Letters to the Editor	196
Regional and Club News	198
New Members	199
Forthcoming Events	200
Trade Winds	201
New Books	201

Editor: JOHN CLARRICOATS, O.B.E., G6CL *Assistant Editor:* JOHN A. ROUSE, G2AHL

Advertisement Manager: HORACE FREEMAN

Editorial Office:
RADIO SOCIETY OF GREAT BRITAIN
28 LITTLE RUSSELL STREET, LONDON, W.C.1
Tel.: HOLborn 7373

Advertising Office:
NATIONAL PUBLICITY CO. LTD.
36-37 UPPER THAMES STREET, LONDON, E.C.4
Tel. CENtral 0473-6

Published on or about the 15th of each month as its official journal by the Radio Society of Great Britain and issued free to members. *Closing date for copy is the 22nd of the month preceding publication.*

There is always a fine selection of equipment at

The Walk-around Shop

The TSI84 A-AP

Real 70cm Test Gear

brand new in carrying case

£5.10.0

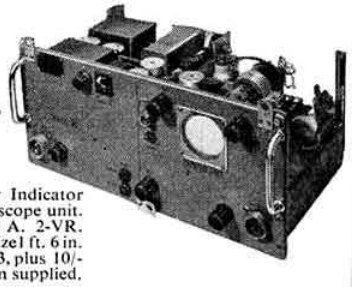
plus packing & carriage

Portable precision for mobile hams, amateur T.V. telearchics, (with acknowledgements to Free Grid) and those Monitoring the latest U.H.F. allocations. Resonant Cavity Wavemeter, calibrated 400-430 Mc/s. Tuning stops adjustable to any 30 Mc/s band within 400-470 Mc/s coverage. Calibrated scale rack and pinion drive piston input attenuator—and alternative fixed coupling loop input provide facilities for use as signal generator. Plug-in " Telescopic Probe Antenna " 6J6 detector and monitor amplifier, 2-600 ohm 'phone jacks for modulated signals. Panel output terminals or metering 6J6 output current. Power required: 6V at 300mA and 30V at ½mA.

Comprehensive circuit description, diagrams and suggested modifications supplied with each unit.

OSCILLOSCOPE UNIT

With internal 12v. Vibrator Power Pack



Suitable for Modulator Indicator or conversion to Oscilloscope unit. Containing V.C.R. 139 A. 2-VR. 56, 1-VR.54, 2-EF.50. Size 1 ft. 6 in. × 9½ in. × 8 in. Price £3, plus 10/- carriage. Circuit diagram supplied.

ELECTROLYTIC CONDENSERS

8 Mfd. 450V wkg. 525 surge	1/9
16 Mfd. 450V wkg. 525 surge	2/9
8 + 8 Mfd. 450V wkg. 525 surge	3/3
16+16 Mfd. 450V wkg. 525 surge	4/-
32+32 Mfd. 450V wkg. 525 surge	4/3
25 Mfd 25V wkg.	1/9

All post paid.

SIGNAL GENERATOR AND WAVEMETER

Type W.1649. Frequency of signal generator: 140 to 240 Mc/s. Accuracy ±0·5 Mc/s. Frequency of Heterodyne Wavemeter: 155 to 255 Mc/s. Accuracy ±0·2 Mc/s. Containing VR.135 and 4-VR.91. 5 meg. crystal. Retractable aerial. Power requirements: 6·3 volts and 120 volts. Unit housed in copper lined wooden case. Size: 15½ in. × 13 in. × 14½ in. In good used condition. £2/10/-, plus 10/- packing and carriage.

T.S.92. AMPLIFIER ALIGNMENT UNIT

0·5 to 7 Mc/s. Brand New. £5. 0. 0., plus 10/- p. & p.

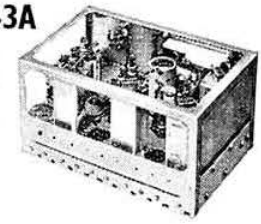
TEST SET TYPE 205

3cm. Signal Generator. Brand New. £15. 0. 0. Carriage Paid.

12 VOLT DYNAMOTORS

(U.S.A. Man) Output 225 volts at 100 mA. 30/- plus 3/- p. & p.

RECEIVER UNIT Ex 1143A



10·72 Mc/s I.F.s. Frequency 100-120 Mc/s, suitable for conversion to 2 metres and Wrotham.

Owing to a large purchase we can offer these units fully valved, with circuit diagram at 25/- each, plus 3/- post/packing. Valve line-up: (4) EF50, (1) EL32, (2) EF39, (1) EBC33, (1) EA50.

DESYNN TYPE ANTENNA

or Beam position indication system

This comprises a transmitter unit and Indicator which will operate on 12 or 24 volts D.C. and will indicate with instantaneous and smooth pointer movement. The Transmitter is a specially designed potentiometer and will operate the receiver on a simple three-wire system and the receiver in this instance is calibrated in gallons but dial could be easily altered to indicate a 360 deg. sweep. Transmitter and receiver with full instructions. Price 12/6, plus 2/- p.p.

R.1155 RECEIVERS

Fully valved and air tested, in good used condition. £6. 5. 0. plus 10/- p. & p.

No. 19 SET TRANSMITTER/RECEIVER

Covering 2 to 8 Mc/s. Fully valved and in As New condition. £3. 5. 0. plus 10/- p. & p.

MAGSLIP TRANSMITTERS

3 inch, 50 volt, 50 cycle. Brand New. £1 each, plus 3/- p. & p.

VALVES

VU111 ..	2/-	6SH7 ..	3/3	12SC7 ..	6/-
VR54 ..	2/-	VR91 ..	4/-	3Q5	6/6
6H6 ..	2/-	APT4 ..	3/6	6SL7 ..	6/6
12H6 ..	2/-	1625 ..	5/-	6SN7 ..	6/6
VT501 ..	2/6	12A6 ..	5/-	2D21 ..	7/6
VT52 ..	2/6	OZ4	5/-	6V6 m. ..	6/6
12SH7 ..	2/9	6L7	5/6	VR53 ..	5/-
6K7G ..	3/-	6CQ6 ..	6/-		

BALANCED ARMATURE EARPHONES

High Resistance Earphones, Type DHR. Brand New and Boxed. 15/- each, plus 3/- p. & p.

AN/APN.1 TRANSDUCER

This unit consists of Magnet and Coil which is attached to an aluminium diaphragm suspended freely and perforated to prevent air damping. Mounted on a Ceramic cover which sits over the diaphragm in a form of 2-gang capacitor which has a swing from 10-50 pF.

The above unit is used as part of Wobbulator described on page 252 of the June, 1956, *Wireless World*. Price 7/6, p.p.

NOTE: Carriage prices quoted apply only to England and Wales.

Mail Order Enquiries, Telephone: ***EUSton 8812***

PROOPS

BROS. LTD.,

DEPT. 'B', 52 TOTTENHAM COURT ROAD, LONDON, W.1

Shop and Head Office, Telephone: ***LANgham 0141***

Shop hours 9 a.m. to 6 p.m.—Thurs: 9 a.m. to 1 p.m. **OPEN ALL DAY SATURDAY**

Current Comment

Something New in Exhibitions

ELSEWHERE in this issue of the BULLETIN appear details of the first Radio Hobbies Exhibition which opens in a few days' time. A *Comment* about the background to this unique event is appropriate.

There have been for years National Radio Exhibitions of the type that appeal mainly to the interest of the general public in broadcast entertainment and in equipment for reproducing it. And since the war there has been the very successful series of Amateur Radio Exhibitions sponsored by the Radio Society of Great Britain and directed towards those who are interested in the communication side of the hobby.

Neither exhibition wholly satisfied the need of the large number of people—they must run into hundreds of thousands—who are interested in the various other branches of the electronic art which are open to the enthusiast today, of which such things as high fidelity, model control by radio, and tape recording are but three that come immediately to mind.

The purpose of the Radio Hobbies Exhibition, self-evident from its title, is to extend the scope of the former Amateur Radio Exhibitions beyond the specialized field of communication and to endeavour to embrace several instead of one of the " Do-It-Yourself " aspects of electronics.

In this way this " new style in exhibitions " is quite a sizeable affair, and in the commodious hall that houses it there is plenty of room to move around and to examine exhibits in close detail. When we do this we cannot help reflecting upon the enormous changes which have taken place in the hobby of radio since that time, almost forty years ago, when it was called " wireless " and there was so little to hear on the air that the Radio Society of Great Britain asked Authority to make some telephony broadcasts regularly available for its members to hear. In that pioneering period, when speech and music went out for only a few hours a week, was born the British Broadcasting Company, later to become " The Corporation." The amateur hobbyist's needs were simple then. Just how complex they have since become is vividly shown in this newest and latest of exhibitions.

And now, in wishing it every success, I should like to make recognition of the immense amount of work which has been put into it by Mr. Phil Thorogood, G4KD. He it is who has organized the Exhibition and made it possible. May it be the first of many!—D. A. F.

No " Reduced Council "

"LET there be plenty of discussion about Society affairs at meetings and in the BULLETIN ": the suggestion was made in Mr. Findlay's Presidential address last January. And there has certainly been a deal of discussion on the subject of whether full Council meetings should be held less frequently than once a month. Aided by the viewpoints put forward, the Council was enabled quickly to come to a decision on the point at its September meeting and to resolve to adhere to the *status quo*.

* * *

Sometimes when the dozen and a half radio amateurs who are the Council gather round their table at Headquarters they produce on this or that topic a dozen and a half different opinions (anyway, that is how it sometimes seems) simply because the voice of the membership, which is the public opinion of Amateur Radio, has not made itself heard with sufficient emphasis.

As has been remarked on earlier occasions, there are several ways by which a member can make his opinion known. Proposing a resolution at his local Group meeting is one. Writing down his opinions in a letter to his Representative or direct to Headquarters is another.

Fulminating over the air is not to be recommended. Occasionally some ill-balanced—and it might be added ill-bred—comments are heard that do no good simply because they are sent to the wrong address. Canalized through the proper channels to Headquarters they can be heeded and acted upon if action be needed.

Due Date is Nine Days Hence

STILL on Council matters, let note now be taken that members have only nine days left in which to put forward their nominees for next year!

As was prominently announced in the last BULLETIN, the names of those whom the membership would like to see serving on the 1958 Council must be made known to Headquarters by October 24, which is Thursday week. The procedure to be followed in making nominations was fully described on page 138 last month.

On the same page details were also given for nominating Zonal Representatives. Four new Z.R.s are required for the 1958 Council (those for Zones A and B stay in office under the Three Year Rule).

It is a regrettable fact that a full complement of six Zonal Representatives has never served on the Council since the Z.R. conception was introduced three years ago. There is only one reason for this: *nominations have not been made*. The idea of having Zonal Representatives was to ensure that there would be a guaranteed provincial content on the Council. An onlooker could be excused for concluding that after all provincial representation cannot really be of such importance to the membership when they cannot be bothered to nominate the people who will ensure it.

(*Continued on page 192*)

More about the Minibeam

Further information on the construction and use of a highly popular array

By G. A. BIRD (G4ZU)*

READERS will recollect that details of the Three Band Minibeam first appeared in the February 1956 issue of the R.S.G.B. BULLETIN. At that time, a beam of this type had been in use at the writer's home station for 18 months, and had given such satisfactory results that it was felt other amateurs might be interested in the theoretical principles upon which the design was based. No precise constructional details were given as it was assumed that a somewhat complicated structure of this type would only be attempted by those with a good technical background, and previous experience with the design and adjustment of single band beams. It was little realized that the Minibeam would become a subject of world wide interest in amateur circles, or that enthusiasts in far away places like Fiji, Hawaii, and North Borneo would wish to make use of the somewhat limited information given in this first article.

As news of the Minibeam spread, letters started pouring in from all parts of the world (even some from behind the Iron Curtain), and the writer found himself faced with the problem of answering sometimes as many as 20 or 30 letters in a single day. It was apparent that many of those who wished to build the Minibeam lacked either the knowledge or the measuring equipment which is essential for a project of this nature. Some overseas amateurs found that dural tubing was completely unobtainable in their locality; a number of others could not find time to scour the surplus yards looking for bits and pieces, but were nevertheless most eager to taste the pleasures of a three band beam.

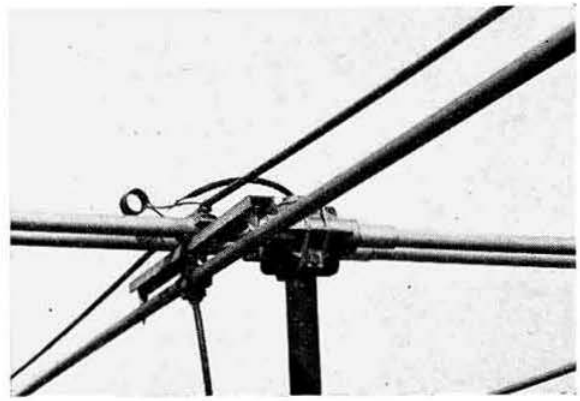
At about that time arrangements were made with Panda Radio Co. Ltd. to market the Minibeam in kit form. By mid-1956 amateurs in many different countries could be heard using the commercial version of the Minibeam, side by side with a number of others who had constructed their own versions from the information given in the BULLETIN.

The original coil loaded version was not well suited to quantity production, and the writer therefore developed an improved form of construction (Fig. 1) in which the tuning adjustments were considerably simplified. It will be seen that the loading coils of the original design have been eliminated, and replaced by the inductance of a twin boom structure.

Once the elements have been set to the correct lengths, the final tuning is accomplished by sliding two shorting bars along the boom to predetermined positions. The 10 and 15m shorting stubs are connected across the centre of the director and reflector, the two stubs being concealed, one in each leg of the boom. The setting of the shorting bars A and B control the resonant frequency of the director on 15m and the reflector on 20m. Adjustment of the shorting bars has no effect upon the director resonance on 10m or the reflector resonance on 15m as the ends of the twin boom are effectively short circuited on these bands due to the action of the quarter-wave shorting stubs. The tuning adjustments on the various bands are therefore quite independent and no compromise is involved.

The twin boom design, in spite of its many advantages, is not, of course, well suited to home construction, as few amateurs have facilities for fabricating the castings which are an essential part of the boom structure. On the other hand, even the coil loaded version can produce plenty of headaches if the measuring equipment available is inaccurate or inadequate, or where the constructor has only a very hazy idea of how a parasitic type beam operates.

* *94 Shirley Way, Croydon, Surrey.*



General view of the coax-fed Minibeam used by G5FI.
(Photo by courtesy of International Aeradio.)

It is proposed therefore, in this article, to deal with some of the difficulties which may be encountered in practice, and to describe a simplified version of the Minibeam which should appeal in particular to the beginner. Brief details will also be given of a "Super Minibeam" at present under development, which employs direct coaxial feed to the driven element, and operates as a three-element beam on 20m, four elements on 15m and seven elements on 10m! It is doubtful whether this will be of much interest, other than to the most ardent DX workers, as it is considered that the standard Minibeam provides all that the average amateur could desire in the way of a good directional aerial, with the attendant advantages of reasonable compactness, neat appearance, and three band coverage.

Improving the performance on 20m

A short period spent listening on any of the DX bands will reveal that a surprisingly large number of amateurs have successfully constructed Minibeams, and the majority of them seem very well satisfied with the results obtained, apart from a few isolated cases where the 20m performance does not come up to expectation.

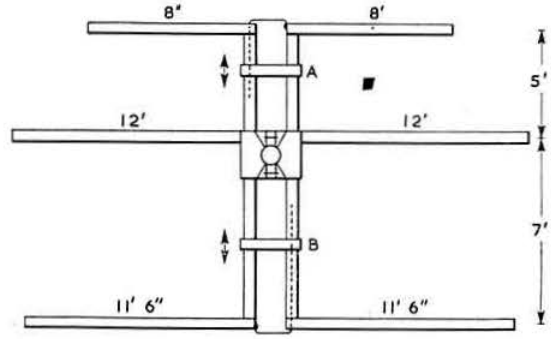


Fig. 1. Twin boom version of the three-band Minibeam. To protect this design against commercial exploitation, the author has filed patent applications in principal countries. This does not of course debar bona fide amateurs building the beam for their own use.

It should be remembered that on 10 and 15m, the high gain of the Minibeam puts the operator in an advantageous position. On 20m however, the Minibeam is only a two-element array, so that the radiated signal tends to be a little less potent than on the two higher frequency bands. This lack of balance between the performance on 20m and on the other two bands can be cured in one of two ways: either by degrading the 15 and 10m performance till the same gain is obtained on all three bands, e.g. two elements on each band, or by increasing the boom length to permit the use of three elements on 20m. It would be necessary to extend the boom to a length of at least 22 ft. to get any worthwhile increase of gain on 20m, and this would be too cumbersome for the average installation. Very few amateurs can find space for a full size 20m beam in a suburban back garden anyway!

This is not intended to imply that the Minibeam is useless on 20m. It does in fact give a very useful gain over a dipole, plus a worthwhile discrimination against QRM, and the writer, along with many other Minibeam enthusiasts has successfully completed contacts on 20m with a good share of rare DX stations. It is just that on 20m you have to work that wee bit harder. As a matter of interest the country score at G4ZU runs this way: 20m—235 C; 15m—165 C; 10m—135 C.

If therefore the 20m performance is poor, it is fairly certain that something is wrong with the assembly or the tuning. A reflector which is off tune will of course result in a performance which is no better than a rotary dipole! Likewise, a poor quality, low Q loading coil on the reflector can waste quite a lot of valuable energy. This is where the twin boom design has advantages, as resistive losses are naturally much lower than with even the best loading coil.

For convenience, the possible difficulties on 20m have been divided into four categories.

(1) *Reflector not correctly tuned.*

This is the most usual trouble. It does not seem to be generally realized that if any beam is tuned up 4 or 5 ft. off the ground, it is almost certain that the resonant frequency of the elements will shift appreciably in a high frequency direction when the beam is raised to its final working position. It can easily happen that an element resonated as a reflector at ground level can become a director at a height of 30 ft. or so! The moral is obvious. Tune up any beam as high above the ground as possible, preferably when it is on top of the pole. With the twin boom design the shorting bars can be reached fairly easily from a ladder leaned against the mast or tower. With the coil loaded version, things are a little more difficult.

At the writer's home it was not possible to reach the coils from the roof of the house, and no ladder was available, so the only course was to deliberately stagger the reflector tuning l.f. and find by experiment just what change took place with increasing height. During the course of this investigation, very valuable assistance was given by Art Smith (G3DPJ) who, without a word of complaint, raised and lowered the beam and mast at least six times in one afternoon while the writer made successive adjustments to the reflector tuning. It was found that the change in frequency was approximately 250 kc/s. If a beam is mounted over a corrugated iron roof, or close to metal guttering, power or telephone wires, or a water tank, it will obviously be detuned to a greater or lesser extent and this may vary with rotation, so such positions should be avoided if at all possible.

This difficulty only applies to 20m. On the other bands, 10 and 15, the bandwidth is such that no critical adjustments are called for, and even if the beam is thrown together it will probably work reasonably well, although the front-to-back ratio may be somewhat below the maximum attainable.

(2) *Reflector correctly tuned, good front-to-back ratio indicated on a field strength meter locally, but no apparent front-to-back ratio on 20m signals from Europe, and signal reports little better than a half-wave dipole.*

Those familiar with wave propagation will spot the answer to this one without difficulty. Short skip from the continent generally arrives at a very steep angle, sometimes almost vertically, and it is unlikely that any type of horizontally polarized beam will show much directivity on such signals. The function of a beam in concentrating the radiation at low angles should have the effect of making the signal transmitted and received over such short distances noticeably *weaker* than with a dipole. This is one of the main advantages of a beam as low angle DX signals are less covered up with European QRM. Interference to European amateurs is reduced in the same ratio. It is unfortunate of course, that during the last couple of years, 20m seems to have settled down to a condition of almost interminable short skip. It probably will not be until several years after the peak of the sunspot cycle that 20m DX working will become enjoyable.

(3) *When tuned for maximum gain on 20m the front-to-back ratio is poor compared with that obtainable on 10 and 15. When carefully adjusted for maximum front-to-back ratio on 20m, the gain seems to fall off to some extent.*

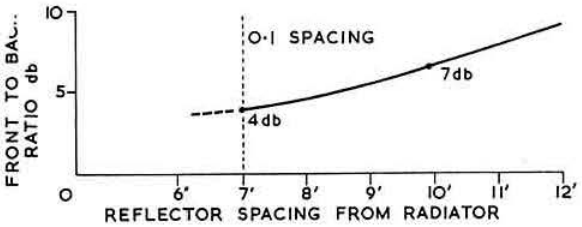


Fig. 2. Maximum front-to-back ratio of a full sized 20 metre two-element beam when tuned for highest possible gain. (Based on figures in the *Radio Handbook*, 14th Edition, page 422, published by Editors and Engineers Ltd., U.S.A.)

This is a characteristic of all two-element beams. The graph in Fig. 2 shows the behaviour of a full sized two-element beam when tuned for maximum gain. It will be observed that with a reflector at 0·1 wavelength spacing a front-to-back ratio of only 4db is obtained. With the Minibeam the position is slightly more favourable because, with shortened elements, the coupling is reduced and the effective spacing is increased. A good compromise figure to settle for is between 12 and 14db. Considerably higher figures are obtainable but only at the expense of forward gain.

(4) *General lack of faith in shortened elements, and a suspicion that they must involve a serious loss of gain.*

This is a common fallacy, and it may be some comfort to know that the effective area of a dipole, even when shortened to half its normal length can be as high as 95 per cent taking the figure for a full size dipole as 100 per cent. Effective area is the measure of the radiating and receiving efficiency of an aerial, and is not a direct function of physical size.

For example, a 132 ft. long wire, although occupying much more space than a Minibeam, is likely to have a smaller effective area due to adjacent half-waves being out of phase, and transmitted and received signals will therefore be noticeably weaker.

Comparison with other popular arrays

Table I gives the effective area of several well known types of aerial on 10, 15 and 20m. It will be observed that a two-element parasitic array, a G8PO or a ZL Special, are all capable of precisely the same gain. It does not really matter in the least whether the reflector is driven or parasitically excited. The radiated signal will be substantially the same. Driven arrays may of course exhibit certain advantages on

the score of bandwidth or back-to-front ratio but this is outside the scope of the present discussion.

With some hesitation, figures are given for gain in db relative to an isotropic radiator, which is the standard basis for comparison in scientific measurement. To find the gain relative to a half-wave dipole it is necessary to subtract 2·2db from the quoted figures. This will provide a gain figure which is probably more useful for amateur purposes, although it certainly does not look so impressive! This accounts for the fact that arrays like the cubical quad and ZL Special are often quoted as having gains of 8 or 9db while mathematicians continue to prove that a two-element array cannot possibly have a gain of more than 6db over a dipole. Gain figures which do not quote the standard of comparison should always be viewed with suspicion.

TABLE I

Type	10m		15m		20m	
	Effective Area sq.m.	Gain db.	Effective Area sq.m.	Gain db.	Effective Area sq.m.	Gain db.
Short dipole	12	1·8	24	1·8	48	1·8
Half-wave dipole	12½	2·2	25	2·2	50	2·2
Bi-square	25-30	5·2-6	50-60	5·2-6	100-120	5·2-6
Two-element beam, ZL Special, G8PO, etc.	40	7·5-8	80	7·5-8	160	7·5-8
Cubical quad	60	8-9	120	8-9	240	8-9
Three-element beam	50-100	8-11	100-200	8-11	200-400	8-11
Minibeam	120-150	10-12	150-180	9-10	120-150	5·5-7

It will be observed that the effective area of the Minibeam remains substantially the same on each band, while the effective area of conventional aerials increases more or less in proportion to their much greater physical dimensions as the frequency is lowered.

The shortening of the elements on 20m does not entail a serious loss of gain, but it does restrict the operational bandwidth to about 250-300 kc/s. Each operator should therefore centre the beam on the phone or c.w. portion of the 20m band according to individual preference.

On the two higher frequency bands very little difficulty seems to be experienced in tuning the array and obtaining acceptable gain and front-to-back ratio apart from one rather amusing exception. A sizeable batch of letters arrived from amateurs in Germany, and in each case the complaint was that very little gain or front-to-back ratio could be obtained with the Minibeam on *any* band. At the invitation of a German amateur, DJ3JZ, the writer made a short visit to Germany in the hope of discovering the cause of the trouble. It was found that a German manufacturer had been enterprising enough to put a so-called Minibeam kit on the market without authority. It was clear that this manufacturer had little understanding of how the Minibeam was intended to operate, as the shorting stubs were cut for entirely incorrect frequencies.

There was no possibility of visiting all the amateurs who were in trouble, but the writer had the satisfaction of demonstrating to a German group that after suitable modifications the Minibeam at DJ3JZ could be made to function in a correct manner. A lecture was also given to the Wernau Radio Society, and so much interest was shown that question time ran on till 2 a.m. the following morning! The information given at this lecture was later translated into German and published in *Funk-Technik* by DJ1ZG.

Minibeam for 10 and 15 metres

A number of letters have been received asking whether it would be possible to make the Minibeam even smaller if it were redesigned for 10 and 15m only. Experiments have been conducted along these lines, and it has been found that the boom can be made somewhat shorter and the whole structure simplified to such an extent that even the beginner should be able to build the array without running into any difficulties. A typical example is shown in Fig. 3. It will be observed that neither loading coils nor stubs are required, and it is permissable to shorten the boom to 8 to 9 ft. *No tuning adjustments are called for.* The elements have merely to be cut to the lengths indicated, and assembled on the boom. The parasitic elements require no insulators and can be mounted on the boom with conduit T junctions. The driven element is fed at the centre and must therefore be mounted on a short piece of channel with insulators.

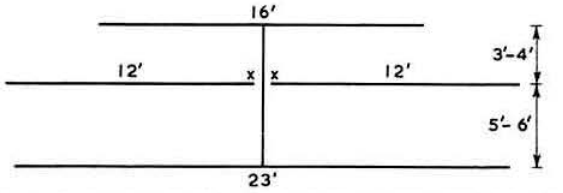


Fig. 3. A two-band Minibeam for 10 and 15 metres which requires neither coils nor shorting stubs.

On 10m, the gain compares favourably with that of a four-element beam. As in the original Minibeam, the driven element operates as two half-waves in phase with a common director. This on its own provides a gain of about 7db over a dipole (see original article). It would appear at first sight that the reflector was more or less a passenger on this band, but such is not the case. Although the reflector is considerably longer than a half-wave, it continues to provide additional gain and front-to-back ratio as shown in the graph of Fig. 4, thus bringing the total gain on 10m to about 8½db.

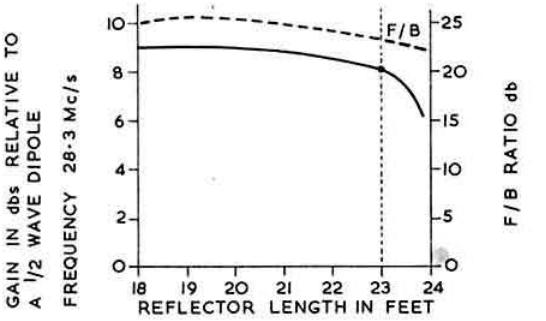


Fig. 4. Variation in gain and front-to-back ratio of the beam shown in Fig. 3 as the reflector length is varied.

On 15m the beam functions as a two-element array (driven element plus reflector). Due to the use of a lengthened driven element, the gain is somewhat higher than a normal two-element beam and is estimated to be approximately 6db. If the additional complication is thought worth while, the gain on 15m can be increased to around 7½db over a dipole by using a two band director, with coil loading and shorting stub (Fig. 5) as in the original Minibeam. This will not

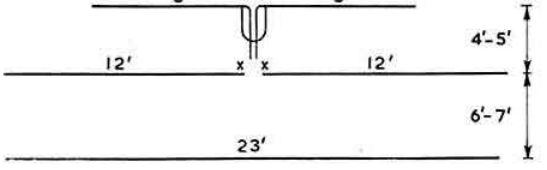


Fig. 5. Two-band Minibeam for 10 and 15 metres with two-band director using a loading inductance with a 29·5 Mc/s shorting stub. A beam of this type has been in use at G2PL for some time and has given excellent results. The gain over a dipole is 8½ db on 10 metres and 7½ db on 15 metres.

degrade the 10m performance in any way. It would however be desirable in this case to increase the boom length to about 10-12 ft. to maintain full efficiency.

No attempt has been made to resonate the reflector on 20m as it is felt that the adjustment of a close spaced shortened reflector is too complicated for the beginner. Therefore, if it is desired to use the beam on 20m, the performance will be similar to a rotary dipole, and no front-to-back ratio will be observed, although a useful minima will be obtained off the sides which may prove helpful in combating QRM on reception. A rotary dipole is not by any means an aerial to be despised, and the advantages over a fixed dipole for low angle signals are shown in Fig. 6.

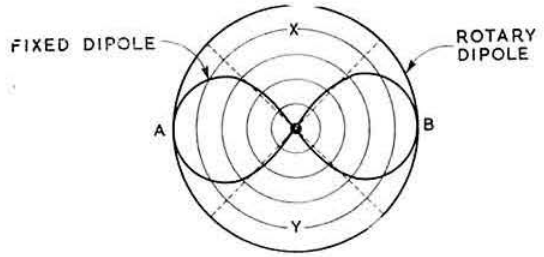


Fig. 6. Rotary dipole versus fixed dipole. It will be observed that a rotary dipole will surpass a fixed one in practically all directions except points A and B where the performance will be identical. In the areas X and Y, a rotary dipole may well show a power superiority of 100 times.

Feeding the Two Band Minibeam

The writer is still convinced that the most efficient method of feeding any beam is with 300-450 ohm open wire feeder because the losses are about one fiftieth of those with coaxial cable, and there are suggestions that open wire feeder has definite advantages over coax when it comes to TVI problems (*CQ Magazine*, page 56, July 1957). If the transmitter is of the bandswitched type with pi-network output, the reader is strongly recommended to use the automatic matching unit developed for the Three Band Minibeam. The optimum feeder length in such a case will be 38 ft. or 106 ft. If 300 ohm ribbon is considered to be more convenient, the correct lengths will be 34 ft., 85 ft., 136 ft. and so on due to the lower velocity factor. The beam can, if desired, be fed with a conventional aerial tuning unit, in which case any convenient feeder length can be used, but it will then be necessary to retune, and possibly change coils, when switching from band to band.

In spite of what has been said above, there will undoubtedly be many amateurs who, for various reasons, would prefer to feed the Two Band Minibeam with coaxial cable or 75 ohm twin feeder. For their benefit a further modification is shown in Fig 7. This works on the same principal as the radiator of the V.H.F. Minibeam described in the December 1956 issue of the BULLETIN. On 15m the radiator is a loaded folded dipole. On 10m, the loading coil is rendered ineffective by means of a quarter-wave stub made of 300 ohm ribbon and resonated at 28·5 Mc/s. This can conveniently be protected with a piece of rubber hose and passed down inside the tubular supporting mast. With the feed point short-circuited, the loading coil should be adjusted with the aid of a g.d.o. until resonance occurs in the centre of the 15m band.

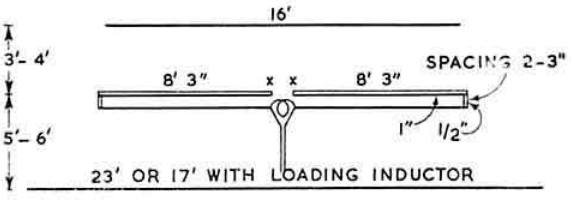


Fig. 7. A two-band Minibeam which can be fed direct with co-axial cable or 75 ohm twin feeder. A number of variations are possible with this design. The reflector can be inductively loaded to reduce the total span to 17 ft. while a two band director can be fitted to increase the gain on 15 metres. The twin-boom principal can be employed if desired, and the impedance adjusted to suit either 50 or 70 ohm co-ax. The design is equally applicable to a beam for 15 and 20 metres provided the physical lengths of the elements are suitably adjusted. Additional directors can be added to make four-, five- or six-element beams providing the boom is made sufficiently long. Alternatively, two identical arrays can be stacked in phase.

If the upper conductor of the folded dipole is made of a smaller diameter than the lower, it is possible to adjust the impedance and secure a low s.w.r. by varying the spacing. Should further adjustment be required to obtain a perfect match on each band, this can be provided by varying the relative spacing and tuning of the parasitic elements.

Unless carefully adjusted for low s.w.r., this arrangement is likely to be less efficient than the arrangements in Figs. 3 or 5, and should not be attempted by the beginner. The coax. fed design is not suitable for use on 20m as the s.w.r. would be excessive.

Where local conditions impose a limit on element length, the reflector can be inductively loaded to reduce the total span of the beam to 17 ft., but this should only be attempted as a last resort as it calls for careful adjustment with accurate measuring instruments.

Results

G8TH (Wandsworth) has been using a two band Minibeam of the type shown in Fig. 3 for some months at a location which he aptly describes as "a hole in the ground some feet below river level!" Since putting up this beam, he has found he can compete effectively with the leading stations on 10 and 15m. Many successful contacts have been made on 20m, and by tuning the feeders, the Minibeam can be resonated on 40m quite successfully.

Early in 1956, G2PL (Wallington) was persuaded to put up a Minibeam to the design shown in Fig. 5. He reports most favourably on the results obtained, and he is not a man to be easily satisfied. It need hardly be mentioned that his country score on the DX bands is probably higher than that of any other amateur in Europe.

The first model of the coax fed version, Fig. 7, was developed to meet the needs of G5FI who lives in the heart of a large block of flats in central London 200 ft. from the roof of the building. This was a case where open wire feeder was out of the question, and he was very happy indeed that this solution could be found to his problem.

G3HLS of Farnborough Park has modified a commercial version of the Minibeam for coax feed. It is mounted on top of a telescopic tower which enables him to run his beam from 18 up to nearly 100 ft.! This again was a case where open wire feeder would have involved almost insuperable mechanical difficulties. A recent check on the s.w.r. at G3HLS indicated that it was less than 1·3 to 1 over the whole of the 10 and 15m bands.

Judging from the results obtained by these stations, and by numerous others who have been kind enough to write about the performance of the Three Band Minibeam, it is evident that the techniques employed for obtaining multiple resonance are not compromise solutions, but result in an overall efficiency which is undoubtedly superior to a varied assortment of single band beams. Even when separate beams are mounted a considerable distance apart, there is still serious interaction and distortion of field pattern, and the structural work involved in providing three separate towers and rotation systems is likely, in any case, to make such an arrangement prohibitive. With the Minibeam, these problems do not arise.

Future Developments

The writer is often asked whether there are any " secret plans " afoot at G4ZU for something to surpass the Minibeam. This is a question which has two answers: yes and no! It is very doubtful whether any significant increase in gain could be obtained without going to a structure of considerably increased size.

On the other hand, minor improvements will undoubtedly occur from time to time in respect of the electrical and mechanical details. The twin boom design, without loading coils, is a typical example. Useful progress has also been made with a coax fed driven element which requires no stubs or loading coils, but it is regretted that details cannot be released for the time being as it would invalidate any subsequent patent applications.

If no restrictions are placed on physical size, it is a fairly simple matter to achieve more gain, but this tends to follow the law of diminishing returns. Adding two additional directors to a five-element beam, to make seven elements in all, provides a gain increase of 1 to 1½db at the most.

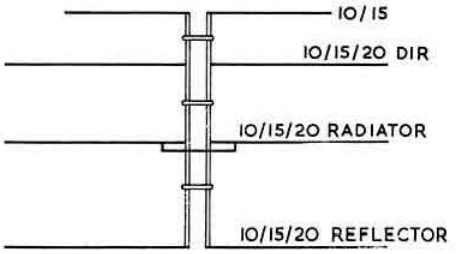


Fig. 8. The Shape of Things to Come—a Super Minibeam for 10, 15 and 20 metres with co-ax feed. Effectively, there are three elements on 20, four on 15 metres and seven on 10 metres.

The biggest improvement occurs in practice when changing from two elements to three, and, as mentioned earlier, work is proceeding on a " Super Minibeam," which will have three elements on 20m, four elements on 15m and seven elements on 10m. The gain figures for the two latter bands are expected to be around 9db and 11db respectively over a dipole. (11db and 13db over an isotropic radiator if you prefer!)

One possible arrangement is shown in Fig. 8. No precise dimensions are given as it will be some months before the optimum element spacings are finalized, but the boom will obviously have to be at least 24-25 ft. long. Due to the use of a twin boom structure, no loading coils will be required, and all elements can be earthed to the boom. Although details can not yet be given of the special coax fed driven element readers may be interested in some of the methods which have been tried and discarded. Most of these work reasonably well, but all suffer from defects such as detuning in wet weather, limited bandwidth, or untidy appearance; they are depicted in Fig. 9.

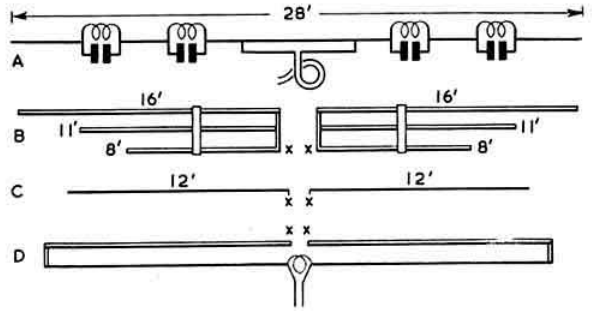


Fig. 9. Various types of three-band radiators. A is the W3DZZ type using tuned traps; B comprises three dipoles for the bands concerned connected in parallel to a common feeder; C is an open wire fed with an auto match unit; and D, the G4ZU Mark II which is three-quarters of a wavelength long on 10 metres. On 15 metres it acts as a folded dipole and on 20 metres it is a loaded dipole.

* * *

It is probable that some overseas readers may wish to refer to the original article on the Minibeam. Unfortunately, this issue is out of print, but the information has been repeated in a number of overseas journals, and these are listed for reference.

References

Articles in English.

" The G4ZU 20m Minibeam." Details of an earlier version used at G4LS, *Radio Amateur*, August, 1953.

" The G4ZU Three Band Minibeam," R.S.G.B. BULLETIN, February, 1956. (Reprinted in *Amateur Radio*, journal of the Wireless Institute of Australia, September, 1956; New Zealand *Break-In*, August, 1956; *The Malayan Radio Amateur*, March/April, 1956 with additional notes in May/June issue, and detailed procedure for tuning the Minibeam in the September/October issue.)

" A Three Band V.H.F. Minibeam." R.S.G.B. BULLETIN, December, 1956.

" The Story of the Three Band Minibeam." *CQ Magazine*, March, 1957. (This article includes a technical appendix covering optimum stub impedances, tuning adjustments, bandwidth and radiation resistance of shortened aerials etc.)

In French.

" The G4ZU Minibeam." *Radio R.E.F.*, March and May, 1957.

In German.

" Multiband-Antennen," *Funk-Technik*, April, 1957.

In Spanish.

Revista Telegrafica, May, 1957.

In Finnish.

" The G4ZU 20m Minibeam," *Radio Amatoori*, 1952.

" The G4ZU Minibeam," *Radio Amatoori*, No. 5, 1956.

It is understood that some of the above articles have also been reprinted in Swedish, Russian, Czech, Dutch, Portugese and Norwegian.

Can You Help?

● L. Arrowsmith (B.R.S. 19480), 51 Alverstone Avenue, West Hartlepool, Co. Durham, who requires the circuit and other details of the A.A. Predictor Mk. I, Oscilloscope No. 1?

● J. I. Boyle (G3EXU), 2 Bournewood Road, Plumstead, London, S.E. 18, who wishes to borrow the manual for the Receiver DST100 MK. III?

● A. S. Bragg (B.R.S. 11262), 118 Wallace Road, Ipswich, Suffolk, who wishes to obtain the manual for the B.T.H. P.58 U.h.f. Receiver covering 280 to 680 Mc/s?

London Lecture Meeting
Friday, November 1, 1957

" Microwave Link Equipment "
by S. Korytko (Transmission Division, Standard Telephones and Cables Ltd.)

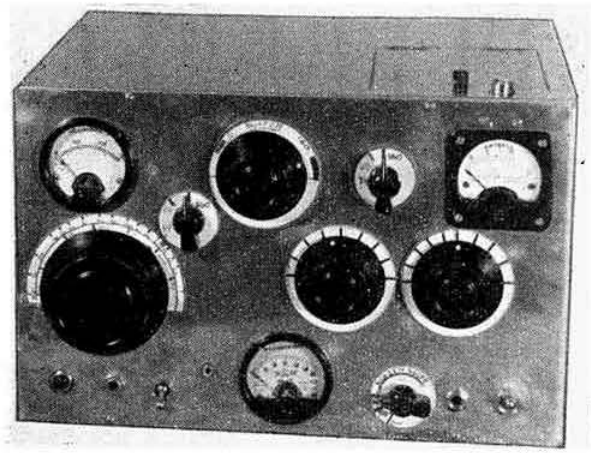
at the

Institution of Electrical Engineers
Savoy Place, Victoria Embankment

Buffet Tea 6 p.m. **Lecture 6.30 p.m.**

A Simple Transmitter for the Beginner

By C. H. L. EDWARDS (G8TL)*



THE transmitter to be described in this article is easy to build and simple to operate, and should, therefore, appeal to those amateurs whose experience and financial resources are limited. It is complementary to the simple receiver described in the December 1956 BULLETIN and the writer has endeavoured to use valves and components which are cheap and easily procurable on the surplus market and to arrange the circuit so that both phone and c.w. can be used without the expense of a separate modulator.

The transmitter is designed to operate on two amateur bands, 160 metres and 80 metres. On 160 metres the power input is necessarily restricted to 10 watts by the conditions of the G.P.O. licence, but on 80 metres it can be raised to 35 watts on c.w. or 20 watts on phone. The modulation system adopted is one of the simplest arrangements possible and while not equal in efficiency to some of the more popular methods, it is a reasonably good compromise between economy and performance. The output valve in the transmitter is a beam tetrode (type 807) and the modulation is applied only to the screen grid. It is therefore an " efficiency-modulating " system, the r.f. efficiency rising to a maximum from positive modulation peaks and falling to a minimum on negative modulation peaks: with no modulation, the carrier power is relatively low. The minimum anode voltage applied should be around 500 volts although better results can be obtained if voltages up to 750 are available. The peak audio voltage required to fully modulate the valve is slightly more than the operating value of the d.c. screen voltage, which is approximately between one half and one third of the rated screen voltage (280 volts) for c.w. operation. The linearity with this method is invariably good with beam tetrodes and distortionless modulation can be achieved up to 80 per cent.

For telegraphy operation the working voltages in the circuit are altered so that the output valve functions at its maximum efficiency; thus on 80 metres for instance, the c.w. input is 35 watts, but when switched to phone operation, the power input is reduced to 20 watts.

The power required for this transmitter can be obtained from any power pack capable of supplying 150 mA at 500 volts and 100 mA at 300 volts: in addition, of course, there should be a supply for the valve heaters which require 3 amps at 6·3 volts. Since the design features of a power supply system are quite orthodox, no detailed description is given here.

The Circuit

The set comprises three valves in all, a 6SN7, 807 and 6V6. Fig. 1 shows a block diagram of the circuit arrangement. The variable frequency oscillator (v.f.o.) uses a conventional

* *28 Morgans Crescent, Theydon Bois, Essex.*

COMPONENT INFORMATION

C1, 100pF variable condenser (Jackson Bros. type C.804).
C2, 75pF pre-set air spaced condenser (Jackson Bros.).
C3, 9, 100pF silvered mica condenser (Dubilier).
C4, 5, 0·001μF silvered mica condenser (Dubilier).
C6, 7, 8, 11, 15, 16, 19, 23, 27, 28, 0·01μF mica condenser (Dubilier).
C10, 350pF air spaced variable condenser (Jackson Bros.).
C12, 24, 25, 50pF pre-set air spaced condenser (Jackson Bros. type C.801).
C13, 17, 10pF silvered mica condenser (Dubilier).
C14, 26, 200pF air spaced variable condenser (Jackson Bros.).
C18, 0·002μF silvered mica condenser (Dubilier).
C20, 0·1μF 500V (working) mica condenser (Dubilier).
C21, 25μF 25V electrolytic condenser (Dubilier).
C22, 50μF 25V electrolytic condenser (Dubilier).
C29, 8μF 500V (working) electrolytic condenser (Dubilier).
L1 (v.f.o. coil)—160m: 42 turns 20 s.w.g. enamelled wire.
80m: 14 turns 20 s.w.g. enamelled wire.
L2 (buffer anode coil)—2, 26 turns 20 s.w.g.
L3 (p.a. coil)—160m: 65 turns 24 s.w.g. enamelled wire.
80m: 40 turns 20 s.w.g. enamelled wire.
L4 (aerial loading coil)—160m: 85 turns 28 s.w.g. enamelled wire tapped every five turns to centre of coil.
80m: 40 turns 22 s.w.g. enamelled wire tapped every three turns to centre of coil.
All coils wound on 1½ in. diameter bakelite. Denco (Clacton) Ltd.
M1, 0-5mA m.c. meter (Pullin).
M2, 0-100 mA m.c. meter (Pullin).
M3, 0-1A r.f. meter (Pullin).
RFC1, 2, r.f. chokes (Bulgin type SW68).
S1a, b, 2 pole 2 way wafer switch, ceramic or paxolin.
S2a, b, c, d, 3 wafer 2 way 2 pole ceramic switch.
S3, single pole 3 way wafer switch.
S4, change-over switch (Bulgin type S273).
R1, 25K ohms ½ watt resistor (Dubilier).
R2, 500 ohms 1 watt resistor (Dubilier).
R3, 3K ohms 1 watt resistor (Dubilier).
R4, 4K ohms 1 watt resistor (Dubilier).
R5, 50K ohms ½ watt resistor (Dubilier).
R6, 50 ohms ½ watt resistor (Dubilier).
R7, 50K ohms potentiometer (Dubilier).
R8, 300 ohms 5 watt resistor (Dubilier).
R9, 100 ohms ½ watt resistor wound with 8 turns of 22 s.w.g. enamelled wire.
R10, 25K ohms 2 watt resistor (Dubilier).
R11, 200K ohms potentiometer (Dubilier).
R12, 100K ohms potentiometer (Dubilier).
R13, 300 ohms 3 watt resistor (Dubilier).
R14, 100 ohms 1 watt resistor (Dubilier).
R15, 17, 220K ohms ½ watt resistor (Dubilier).
R16, 100 ohms ½ watt resistor (Dubilier).

Miscellaneous Components

2 Octal valveholders for V1 and V3 (Bulgin type VH85).
1 Five pin UX ceramic valveholder for V2 (Bulgin).
1 Indicator lamp assembly (Bulgin type D.170).
1 Jack socket for microphone (Bulgin type J2).
1 Closed circuit jack socket for Morse key (Bulgin type J6).
1 Large knob for v.f.o. tuning (Bulgin type K362).
3 Medium knobs for buffer, p.a. and aerial tuning condensers (Bulgin type K361).
3 Pointer knobs (Bulgin type K107).
1 Epicyclic drive for v.f.o. tuning condenser (Jackson Bros.).
2 Flexible couplers for v.f.o. tuning (Bulgin type EH16).
1 Chassis, front panel and cabinet.

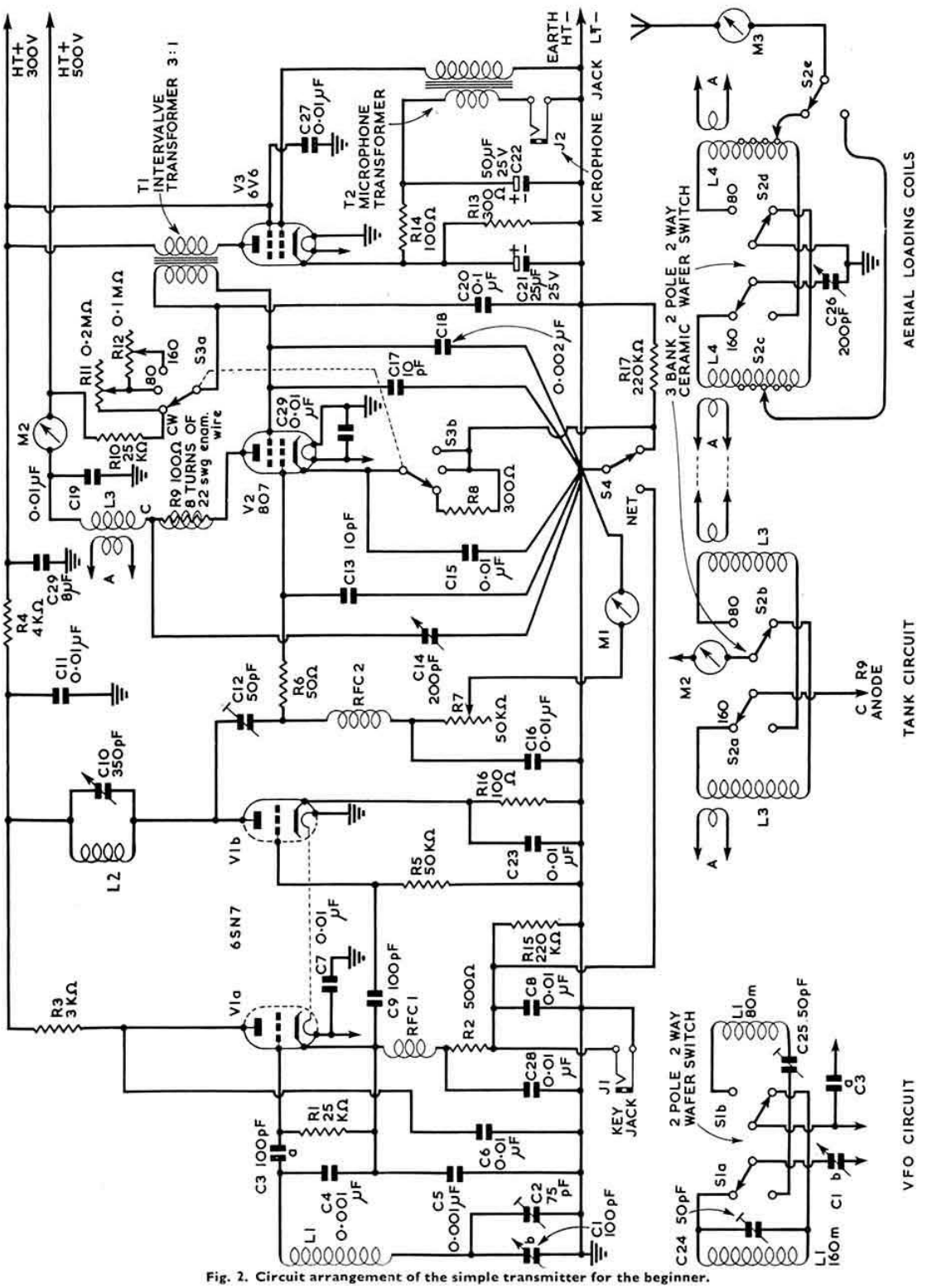


Fig. 2. Circuit arrangement of the simple transmitter for the beginner.

Clapp circuit which is renowned for its excellent frequency stability. This drives the second half of the 6SN7 (V1b) as a buffer amplifier which amplifies the drive supplied to the output stage, and also reduces any tendency for the adjustment of the output stage to influence the frequency generated by the v.f.o. As previously explained, the output stage V2 uses a beam tetrode (807). The modulating voltage applied only to the screen grid is provided by a 6V6 (V3) audio frequency amplifier. This simple amplifier is quite adequate since relatively little power is required for screen modulation

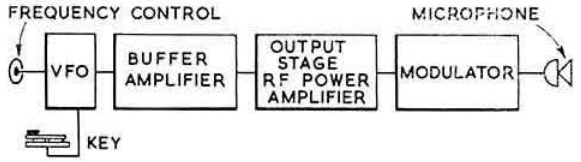


Fig. 1. Block diagram of the simple transmitter.

as compared with the more usual anode and screen modulation. An ordinary carbon microphone is used, the energizing current for it being derived from the voltage drop across the bias resistor of the 6V6 cathode circuit. Keying is effective by breaking the cathode circuit of the oscillator. Usually it is considered bad practice to key a frequency determining oscillator, since it so easily results in a chirping note or violent key clicks. However, if the tuning controls and the drive to the power amplifier and the aerial loading are carefully adjusted, reasonably satisfactory keying can be achieved. To protect the 807 in key up conditions, a bias network is switched into the cathode circuit which limits the anode current to 50 mA. This is removed when the valve is modulated and grid bias is provided by the resistor R7 in the grid circuit. This is shown as a variable resistor, but if preferred, a fixed value of 25K ohms can replace it, the grid drive to the 807 being varied by the condenser C12. The screen of V2 (the p.a. valve) has a fixed resistor R10 in the c.w. position, which allows the valve to operate in class C at its normal rated output.

To limit the 807 screen voltages for both bands, two variable screen series resistors R11 and R12 are switched in series with the resistor R10. When the transmitter is set to operate in the 80m band, R11 (a 200K ohms variable resistor) is inserted which reduces the screen voltage to around 150 volts. This will allow the valve to operate at approximately half its normally rated output. To limit the input to 10 watts in the 160m position a further variable resistor R12 is inserted in series with the other resistors already in the circuit. In order to prevent the generation of any spurious oscillations a choke wound on a resistor (R9) is connected direct on to the anode cap. Condensers C13 and C17 are also included in the circuit as a precaution against any instability.

The circuit diagram (Fig. 2) shows the coils for only one band for the sake of simplicity. These could be for either 160 or 80m as desired. For those, however, with more experience, diagrams of the coil switching have been included under the main circuit.

Construction

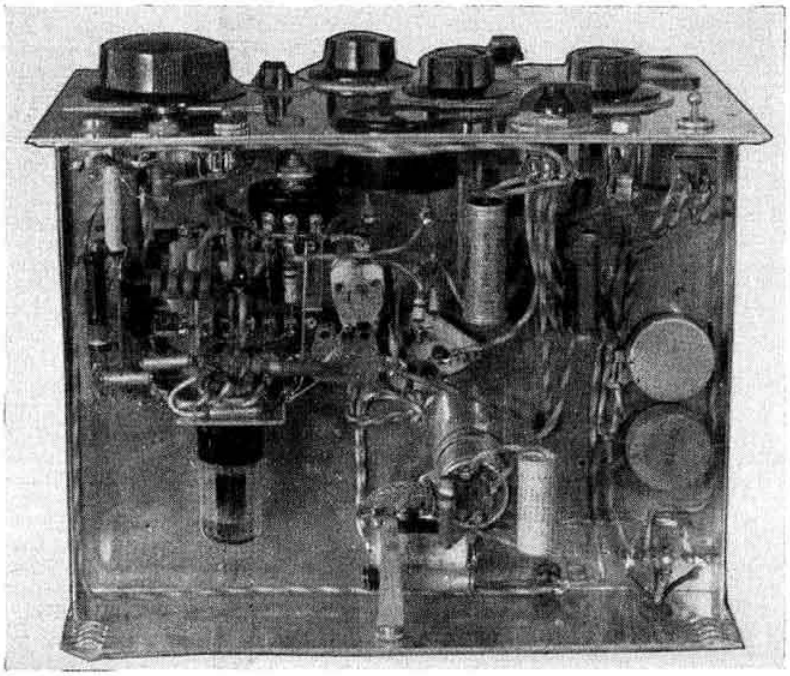
There is nothing critical or difficult in the construction of this transmitter. The aluminium chassis measures 9 in. × 12 in. × 2 in. and is bolted to a 12½ in. × 8 in. front panel, on which are mounted the meters, switches, jacks and control dials.

The v.f.o. coils and condensers are built into a metal box 4 in. × 4 in. × 4 in. which is mounted on top of the chassis, the valve and resistance-capacity network being carried underneath. To the right of the v.f.o. box is the 807 and behind it the 6V6 leaving plenty of room for the modulation transformer, p.a. and aerial coils.

All tuning coils are wound on 1½ in. diameter formers, which are screwed to the chassis by small steel brackets and rigidly wired to the wafer switches if more than one band is to be included. Care should be taken to see that the coils are mounted at least one diameter from the metal chassis or sides of the box and preferably at right angles to each other. The link coils are four turns each of 18 s.w.g. sleeved or enamelled copper wire wound on such a diameter as to slide tightly inside the coil formers. These links are joined to each other by a twisted pair of insulated wires of the same gauge. Coupling to the coils is made by sliding these links in and out of the respective coil formers. For switching the aerial coils it is essential to use ceramic wafers since r.f. is likely to burn away those made of inferior material.

Any 3:1 or 2:1 audio frequency intervalve transformer will be suitable for T1, but the primary winding must be sufficiently heavy to carry the 6V6 anode current, i.e. 45 mA. The writer used a Ferranti OPM2 output transformer which functions very satisfactorily.

All wiring should be carried out with 18 s.w.g. copper wire, to ensure rigidity. Grid leads should be kept as short as possible: the grid stopper R6 and condensers C13 and C17 should be soldered direct to the valveholder pins. The choke



Underchassis view showing the arrangement of the components. The valve mounted horizontally at the left is V1, the first half of which acts as the Clapp oscillator, the second as the buffer amplifier.

R9 should fit directly to the anode cap of the valve.

The whole assembly is slid into an aluminium box 12½ in. × 9 in. × 8 in. with a lid cut into the top to allow access to the tappings on the aerial loading coils and adjustment of the link couplings. Connections to the power supply are taken to the rear. The photograph of the underside gives a general view of the layout of the components. The set could be made smaller or larger if required, to fit into a metal box of other dimensions.

Operation

To obtain the best results care must be taken in the tuning of the transmitter. First switch to the c.w. position and with the aerial link very loosely coupled to the aerial coil rotate the variable condenser C14 to give minimum dip reading in the anode current read on the milliammeter M2. Tighten the aerial coupling by sliding the link into the aerial coil. Next adjust the variable condenser C26 until maximum current is indicated in the aerial ammeter M3. Re-check by rotating the condenser C14: only a very slight dip should be observed indicating that the transmitter is fully loaded. Adjust the drive condenser C12 to give optimum output with full rated screen voltage. This is given as 280 volts for the 807 in the makers' data sheets. Both the anode current and r.f. current into the aerial should be noted. Next switch to the 80 metre position and adjust R11 (the series screen variable resistor) until the d.c. voltage is reduced to about half of the initial value (see Table 1). The drive should then be decreased

TABLE 1

Typical Operating Conditions of Output Stage (807)

Band	Anode Voltage	Anode Current	Anode Power	Screen Voltage	Grid Drive
80m (c.w.)	500V	70mA	35W	280V	1–3mA
80m (phone)	500V	40mA	20W	160V	0·5mA
160m (phone)	500V	20mA	10W	90V	0·5mA

until the r.f. current just begins to fall: the aerial should then be coupled up as tightly as possible. The anode current and r.f. output current should have dropped by approximately one half of their initial value, if not, the grid drive and the anode loading should be varied until this condition is approached. In order to get within the 10 watt limitation for the 160 metre band, switch to the 160 metre position and adjust the second variable series resistor R12 in the screen circuit until the anode input wattage is correct. The screen voltage at this setting is approximately 90 volts. Keep the drive at a minimum and the aerial coupled as tightly as possible. When modulation is applied, there should be practically no movement in the anode milliammeter and only slight upward movement in the aerial ammeter, if the settings are correct. For phone operation the series resistors in the screen circuit will probably be a maximum, i.e. both R11 and R12 will be near the maximum setting.

Tropospheric Scatter

AT the meeting of the British Institution of Radio Engineers at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C.1, at 6.30 p.m. on October 30, M. Telford, B.Sc., will read a paper entitled "Tropospheric Scatter System Evaluation." Non-members of the Institution wishing to attend are asked to obtain tickets through members.

June in Jersey . . . or A Busman's Holiday

By J. DOUGLAS KAY (G3AAE)*

WHEN the XYL finally persuaded the OM to leave the shack for a while and take a holiday in the Channel Islands the idea was to get away from it all and have a complete change from the ordinary daily routine—including Amateur Radio. Arrangements were made in January, and all went well until March when K6EIV, in a 14 Mc/s c.w. QSO, asked whether it would be possible to arrange a sked with any GC station on c.w. as a number of the W6 boys badly needed a Channel Islands contact for DXCC. "Muggins," of course, fell for it hook, line and sinker, and promised to take a small transmitter along on the holiday. Raising the question with the XYL did not result in divorce proceedings as had at first been envisaged: on the contrary she was most amiable and gladly agreed to the idea "provided it does not interfere with what we would be doing if you had not taken a transmitter." Some XYLs really are FB!

Arriving in Jersey on June 5 the first problem was to find a site to establish the station. Fortunately a cousin living on the outskirts of St. Helier kindly offered the use of his house or garage. The garage was chosen so that the OM could—if the opportunity arose—burn the midnight oil without raising the whole household. There was, of course, no mains supply in the garage, but this was soon rectified on a temporary basis.

The site was a corner house fairly low on a long hill running due north for several miles, and was flanked by tall heavily foliaged trees (on the other side of the road)—not a very promising position. It was decided to use the top of a waste pipe on the house for one end of the aerial, but the only thing at the far end of the garden was a wall about 15 feet high. However, after much rooting around, an extending ladder was found in the roof of the garage, and this was extended fully and placed against the garden wall, resulting in a horizontal support of about 25 feet at both ends.

The B2 transmitter was installed on June 6 and operation started on 7 and 14 Mc/s c.w. using a long wire aerial. Results were poor, and even the "C" in the call sign failed to attract much attention. After two days, during which some 20 contacts were scraped together, it was decided to give up 7 Mc/s and erect a dipole for 14 Mc/s. From the outset this was a roaring success, and the boys were soon queueing up in the approved manner.

During the next ten days, working approximately two hours a day, a total of over 200 contacts in 40 countries and all six continents were made before the big switch was finally pulled on June 17. All contacts have been confirmed by QSL either direct or via the RSGB Bureau.

One surprising feature was that at least half of the contacts gave someone their first QSO with GC. A listener report from B.R.S.20317 stated that GC3AAE was his 201st country on 14 Mc/s c.w. since 1955—no wonder the queue was so quick to form.

This was not a DX-pedition in the true sense of the word, but a holiday with a little Ham Radio added as an extra. However it was a most pleasant feature of the holiday, and one which it is hoped will be repeated on future dates.

Several of the local GC gang were contacted, and thanks are due in particular to GC2FMV for the loan of his standby receiver, and to GC2CNC who was also most helpful. Jersey is an island with great natural beauty and a wealth of amenities should the sun not shine every day, but if you are thinking of taking a few days holiday there why not pack a small rig in case you get too home-sick for the home station?

* *18 Fairfield Way, Barnet, Herts.*

Simple Transistor Transmitter for 1·8 Mc/s

BY N. WAITE (G3KOX)*

TRANSISTORS currently available cannot be operated at radio frequencies at a high power level, but for the operator interested in low power work the use of transistors offers many advantages. A single-stage c.w. transmitter for the 1·8 Mc/s band can be constructed which is compact, has a high overall efficiency and may be powered by a torch battery. Although an input of 10 or 100mW may sound ridiculously low, it should be remembered that this is only 20 or 30db below 10W, and with a good aerial many stations can be worked.

Most of the junction transistors designed for use as i.f. amplifiers and local oscillators in miniature receivers will give a good efficiency when operating as oscillators on 1·8 Mc/s. The following types should be suitable:—Ediswan XA101, XA102; B.T.H. GT11, GT12; Mullard OC44, OC45; and Pye V6/R3.

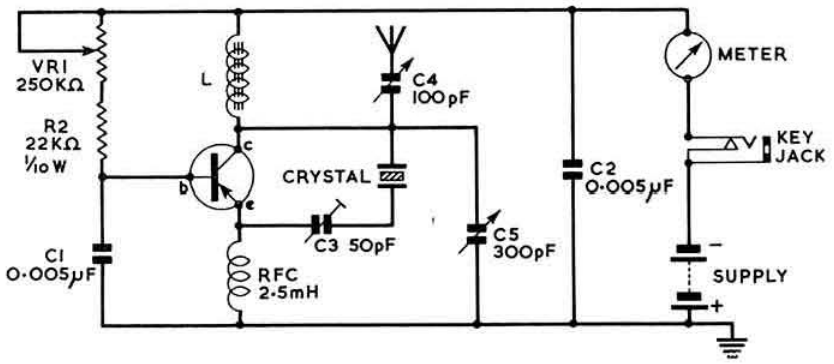


Fig. 1. Circuit diagram of the Top Band crystal controlled c.w. transistor transmitter. The coil L comprises 35 turns of 24 s.w.g. enamelled wire wound on a 1 in. length of ⅜ in. diameter ferrite rod. Alternatively, 40 turns of 18 s.w.g. enamelled wire wound on a 2 in. diameter former and tapped every five turns may be used. Suitable types of transistor are suggested in the text. The h.t. supply is a 4½ volt torch battery.

The Circuit

Transistors are inherently less stable than valves, and for a single stage transmitter crystal control is essential. With the circuit shown (Fig. 1), the transistor is operated with the base earthed for r.f. but the emitter earthed for d.c. Feedback is from the collector to the emitter through the crystal and C3. A crystal on the fundamental frequency gives best results, but it may be possible to use a 3·6 Mc/s crystal to lock the oscillator on 1·8 Mc/s.

The aerial is coupled directly to the tank circuit in the collector through the variable condenser C4. It is not necessary to use any sort of aerial tuning unit, as this would probably reduce the efficiency somewhat, and harmonic radiation is not likely to be a problem! A pi-section tank could be used, but in the writer's experience this is less convenient to tune than the type shown in the circuit.

If the tank coil L is constructed with several taps on it, it may be possible to increase the output slightly by adjusting the LC ratio of the tank circuit, and by tapping the crystal down the coil instead of connecting it directly to the collector, but where simplicity or small space is important the circuit shown will give satisfactory results.

Setting Up

A sensitive r.f. indicator is required. This can be a field-strength meter quite tightly coupled to the transmitting aerial, or a sensitive thermocouple meter can be obtained by removing the series resistor from some types of surplus " high cycle " voltmeters. In some cases it will be possible to use the receiver " S " meter.

VR1 should be set to maximum resistance and the battery connected, *with the positive side to chassis*. 4·5 volts is usually a satisfactory value. Next, the collector current should be measured and VR1 adjusted so that the power input is somewhat below the maximum collector dissipation of the transistor. With C4 at minimum and C3 at about one third maximum capacity, C5 should be tuned to resonance, as shown by a variation of the collector current. It should be possible to hear the note on the receiver. C3, C4 and C5 are then retuned for maximum output, and VR1 readjusted so that the input is not in excess of the maximum collector dissipation. Finally, ensure that the oscillator keys satisfactorily. If it does not, the aerial coupling may have to be reduced. A T9X note should be obtainable.

Precautions

No attempt should be made to use a greater power input than the rated maximum collector dissipation of the transistor, as it may cause other ratings to be exceeded.

When soldering to the transistor use a heat shunt, and disconnect the iron from the mains supply.

Results

With a similar transmitter and 100mW input, hundreds of contacts have been obtained, including 40 different counties, over 30 being worked with no help from other stations. The signals have been heard peaking to S4 in the Shetlands and to S6 in Germany. The aerial used is 210 ft. long.

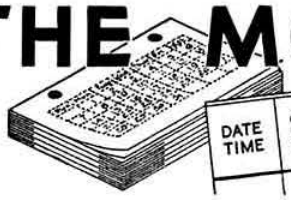
* *57 The Chine, Grange Park, London N.21.*

Take Heed

IT has been reported to the Society that wives and friends of licensed amateurs are frequently heard " on the air."

Readers are reminded that an Amateur Radio station may be operated only by the licensee or by a duly qualified person in the presence of the licensee. Duly qualified persons are other amateurs licensed by the P.M.G. and holders of the Post Office Radio Amateur Certificate.

THE MONTH ON THE AIR



By S. A. HERBERT (G3ATU) *

JT1AA active in Zone 23—Ten Metres Open

DURING the period under review, the change in conditions has been so marked that anyone who takes more than a passing interest in what goes on on the DX bands will have gathered that the leaves of Autumn are falling and that Winter is not far behind. Already, the higher frequencies are in a thoroughly healthy state. The North Altantic path started to open in late August on ten metres and by now the U.S.A. and Canada are providing consistent signals once more, while things are looking up on the other bands, too. It looks as though the coming season will produce conditions better than they have ever been. There will also be more stations using the bands than there have ever been, but we won't dwell unduly on that aspect, at least for the moment. Meanwhile, big things have been happening in the world of rare DX and so without further ado, here are the delightful details!

Zone 23 and All That

Early in September, people tuning anywhere near 14060 kc/s may have come upon just about the biggest pile-up ever to hit an amateur band. The cause was the entirely unexpected appearance of **JT1AA**, operating from the city of Ulan Bator, Mongolia, which is well and truly in Zone 23. The combination of a new country and the rarest Zone of all inevitably causes a somewhat explosive situation and is guaranteed to bring out the best—or the worst—in those concerned in the chase and European operators have been busily applying their three priceless aids to successful DX working: the rarer the DX the longer the call; if you hear the DX zero-beat him and call there; if you can't hear him—no matter—call him just the same!

The Czech Journal *Amaterske Radio* provides official news of JT1AA, which is operated by Ludovik of OK1KAA. He is crystal controlled on 7030·8, 7010, 14004, 14068, 14093 kc/s and their multiples, e.g. 21030 and 21092 kc/s and runs 150 watts to an aerial slung between two 100 ft. masts. He tunes for replies at least 5 or 10 kc/s *low*, so keep well clear of his own frequency. He will *not* work stations there or thereabouts. Foreign journals, please copy. JT1AA will normally use 14061 kc/s between 10.00 and 18.00 G.M.T. and it appears that he will be active for a year or more.

Latest news from the same source is that the anxiously awaited OK trip to **Albania** has been postponed due to technical complications and will now take place either in December during the OK-DX Contest or, failing that, in the Spring of 1958.

Maldive Is: Several reliable sources have it that VS1HJ/VS9 is or has been active from the Maldives, but it is uncertain how long he is staying or if, indeed, he has already left.

Goa: Late in September twenty metres was again disturbed, this time by a certain **CR8AC** (Raul) ,who said he was using 100 watts and could be reached via Box 32, Vasco da Gama, Portuguese India, for the next two years. As he was strong enough to over-ride the European QRM for three hours one evening and as he gave all his European contacts S9 reports, he seems somewhat suspect, especially as W1FH and other Ws were receiving him at S8. However, everyone who can is working him—just in case! *Late Note:* Further research seems to indicate that he is, in fact, quite genuine.

News from Overseas

John Knight, **W6YY** (La Canada, Cal.), passes on some excellent news of DX to come. Ray Baty, **VR3A** writes that he will be back on Fanning Is. by now and with any luck he will be active from early October on all bands, both on c.w. and phone. A rotary convertor has been procured, so power supply troubles are over and Ray is planning to erect Vee Beams. He expects to be on mostly between 02.00 and 04.00 and 05.00 and 07.00 G.M.T. He hopes to be on *160m* as well as on the higher frequencies. W6YY heard HL2AM on 14130 kc/s A3, saying he was officially licensed. He uses a BC610.

OH2XK (Vilhonvuorenkuja 20D 104, Helsinki) will operate from Aaland (OH0) from November 24 to December 2, on all bands from 80 to 10m, mostly on c.w. He asks for short QSOs and will listen 5 to 10 kc/s low. QSL direct or via the Bureaux. Enclose two I.R.C.s for airmail replies to Europe or three for countries outside Europe. **G3LOT** (15 Brockhall Road, Flane, Northampton) is **ex-4S7EM** and he still has some 4S7EM cards, should anyone need one.

VO1BD (11 Vaughan Place, St. John's, Newfoundland) operated recently as FP8AY while VO1BF (95 Forest Road, St. John's) was active as FP8AX. Roly (AY) and Alistair (AX) hope to be on from St. Pierre and Miquelon every Summer and they look forward to working more Gs.

G2CJN writes as Hon. Secretary of the Grafton Radio Society to say that W3DDV is going to Grafton, Vermont in November and from November 8 to 21, he will be active, mostly in the evenings, using phone and c.w. on 15, 40 and

I.G.Y. Flash

As readers will know, an Earth satellite was launched from the U.S.S.R. on Friday, October 4, 1957, and is expected to continue in orbit for up to about four weeks.

The satellite is orbiting the Earth in about 95 minutes and is radiating c.w. signals in the form of fast dashes on frequencies of 20.005 and 40.005 Mc/s. Signals are audible at any particular part of the Earth's surface for periods of between 15 minutes and 40 minutes depending on circumstances. The signals are strong at their maximum and accurate frequency measurement has proved possible. Many reports of reception have so far been received. A detailed analysis will be made from the regular reports of I.G.Y. observers when received. Facts to note are the times of appearance and disappearance of signals and also, if possible, an *accurate* measurement of frequency at these times. (The frequency will be slightly different because of Doppler shift, which varies according to the relative velocity of the satellite with respect to the observer.)

G.M.C.S.

* *Roker House, St. George's Terrace, Roker, Sunderland.*

160m, on which band he will welcome skeds and suggests 02.00-05.00 G.M.T., between 1800 and 1825 kc/s. G2CJN will gladly forward call-signs and times if those interested will send details to him at 145 Uxendon Hill, Wembley Park, Middlesex.

ZC4II is now home again as G3III, but before leaving Cyprus, Greg worked a certain 4W2RP on fifteen phone. The 4W2 said he was " Abdulle," QSL via the Royal Palace, Taiz. Taiz, a walled city some 150 miles from the Aden border, is in Yemen territory, but as " Abdulle " said he was using 500 watts, Greg remarks it is a question of " wait and see! "

Twenty Metres

With so much going on, twenty has been a lively band of late. Snags remain, of course, and the short-skip problem gets worse, rather than better. Ten years ago, short-skip was virtually non-existent, but since then, several European countries have permitted amateur operation and that, plus the all-round increase in activity which is still taking place has meant that semi-local skip is in operation *somewhere* for most of the day. However, there is no lack of DX to be worked and the rarer stations still seem to prefer the band.

B.R.S. 20317 (Bromley) was pleased with FB8XX (17.00, '040) and ZM6AS (07.30, '020), new ones for him. In addition, he logged c.w. DX signals from AP2AD, DU7SV, FE8AE, HL2AM (18.00, '032), ZK1AU (07.30, '336), ZK2AD (18.00, '045), YK1AT, W7BKL/KG6, XZ2TH, VK0AB, VP8AO and VQ6AC. He has QSLs from KM6AX, ZD9AE and ZD8JP and his country score stands at 225, with one or two others in the " possible " category. **B.R.S. 20106** (Petts Wood) remarks that commercials are filching more and more of the phone band and as the amateurs tend to move to the clearer spaces of ten and fifteen, things are getting worse. During the night, though, the band gets back into shape and Norman hears XE1EE, '2NT, TG9AD, '9AF, VP5BL, etc., quite easily. On c.w., VR6TC was a welcome new one at 06.50. ZM6AS, VP8AO, FB8ZZ, FO8AG, 'AK, ZK2AB (17.00), '2AD (07.00) and TA2CAS were also added.

DX Television Predictions for November 1957

Prepared by J. Douglas Kay (G3AAE)

Barbados	1145/1400	Bangkok	0800/1330
Bermuda	1300/1700	Bombay	0730/1215
Mexico City	1530/1630	Colombo	0800/1300
New York	1430/1700	Karachi	0700/1300
Trinidad	1200/1400	Rangoon	0745/1230
Lima	1200/1500	Singapore	0900/1000
Rio de Janeiro	1400/1600	Hong Kong	0900/1130
Aden	0700/1230	Accra	0800/1200
Ankara	0900/1145	Cairo	0700/1145
Baghdad	0700/1400	Dakar	0930/1200
Bahrein	0700/1330	Johannesburg	1300/1500
Teheran	0800/1400		
Tel Aviv	0700/1215	Nairobi	0800/1000
Cyprus	0800/1100	Salisbury	1400/1600

All times are G.M.T.

These predictions are based on the Channel 1 B.B.C. sound transmission on 41·5 Mc/s. The vision signal is transmitted on 45 Mc/s.

B.R.S. 21279 (Oldbury) heard UJ8AG for an unusual one on phone and logged PY2JU on s.s.b. Martin says the grapevine has it that **C9XF** is on 14125 kc/s c.w. from Manchuria. The fact that **B.E.R.S. 956** is in **Nepal** prompts hopes that he will be active with a transmitter. Well, you never know!

A.1373 (Mill Hill, N.W.7) used a BC342 and a 132 ft. wire to copy AP2BP, '2BG, KA2, KC4USK, 'USW, KR6AF, KX6BQ, ZL5AA and VS6BE—all fine signals on s.s.b., while on a.m. he logged VR6TC, YS1MS, XE1DU and VK9AD. **B.R.S. 20104** (South Harrow) was one of the lucky ones to log JT1AA, heard weakly at 17.17 G.M.T., giving him 40Z this year. YK1AT was another good one, while OH1RX/0, FO8AO (08.15, '310), VP8CC (Deception Is.), DU7SK and UA0KUV (Chita) were pulled in on c.w. KS6AD was being called at 09.00. Goff heard some Ws discussing the possibility of VS1HJ/VS9 and says that

Frequency Predictions for November, 1957

PREPARED BY J. DOUGLAS KAY (G3AAE)

BAND	NORTH AMERICA East Coast	NORTH AMERICA West Coast	CENTRAL AMERICA	SOUTH AMERICA	SOUTH AFRICA	NEAR EAST	MIDDLE EAST	FAR EAST	AUSTRALIA	ANT-ARCTICA
M.U.F.	42 Mc/s 1500	30 Mc/s 1800	43 Mc/s 1215	42 Mc/s 1100	38 Mc/s 1400	46 Mc/s 0800	44 Mc/s 0900	42 Mc/s 0900	30·5 Mc/s 0900 SP	24·5 Mc/s 1100
28 Mc/s	1200/1930	1730/1815	1030/2030	0930/2100	0800/1900	0630/1800	0700/1715	0700/1700	0730/1030 SP	1100
21 Mc/s	1100/2215	1530/2000	0930/2315	0830/1200 1730/0030	0630/1030 1300/0000	0600/2000	0600/1915	1100/1815	0800/1830 SP 1000/1200 LP	0700/1300 1745/1830
14 Mc/s	0900/1215 2000/0600	0900/1530 0100/0600	2200/1030	2200/0900	1800/0500	0500/1030 1245/0300	1415/0200	1700/2300	0600/1000 LP 1200/2200 SP	2130/0900
7 Mc/s	2300/0800	0600	0600/0800	0200/0400	0000	1800/0630	2100	2100	1800 SP	0400
3·5 Mc/s	0400	0600	0730	0400	0000	2200/0300	2100	2100	1800 SP	0400

These predictions are based on information provided by the Engineer-in-Chief of the Post Office. All times are G.M.T.

As a result of numerous requests a new column is included in the frequency prediction table this month for the first time. The predictions for North America have been sub-divided into those for the two circuits between the U.K. and New York and between the U.K. and Vancouver, to show what can be expected on the circuits to the east and west coasts of North America. An approximation of the figures to other parts of North America may be obtained by interpolating between the figures given for the east and west coasts.

Fernando da Noronha Is. (off Brazil) may come up as a new one. PX1AC, according to an 11, peaks with the beam on Finland! **A. G. Edwards** (North Finchley) heard VK3, '5AB, '5MS, K5 and W5HUU on phone, while **B.R.S. 20135** (Newport, I.o.W.) logged phone from KH6BX, '6KH (08.30), VE6VC (07.40), K6RQT (s.s.b.), VK and ZL before falling victim to influenza. Whether Asian or otherwise, we hope he is now fully fit again.

G3IFB (Harrow) worked some new ones on the key, to wit, FF8BZ (23.15), UM8KAA, EA6AW, UD6DD, CP1CJ and VP2VB (07.00), followed by 11ADW/MI (QSL via W6AWT only), KH6IJ, VS1HU (still at Kranji!) and VE8NH, who had his aerial covered by ice at the time. **G3KGV** (Sunderland) runs 50 watts to two long-wires and is up to 110/73 countries on c.w. only. Ken's latest were JA1AG (Antarctica, 18.00, '020) and a ZL, while he has worked Shackleton Base on several evenings of late.

Your scribe has been scratching the surface of the band and heard JT1AA for a second or two at about RST239, ere he was swallowed up in the racket. (The stations who did work him all gave him R5 reports, so they are presumably using somewhat selective receivers!). ZK2AD has been quite active in the evenings, but again, he is weak and usually in the middle of half a dozen Europeans who are happily exhanging Q signals with each other. YK1AT is louder and requests QSLs to Box 2249, Damascus. VK9JF has replaced VK9AJ from the Cocos-Keeling Is., and XZ2TH can be reached postally via 75, Bogyoke Street, Rangoon. VQ8FD was weak at 18.00 and CR8AC was very, very strong at the same time. UA0KUV remains active from Chita and has yet to be heard working any but Iron Curtain colleagues. A pleasant chat with VQ4GT revealed the VQ4 as none other than Leny, well-known for so long as VQ8AB/8CB and now settled with his family in Nyeri. KC4USK has been dabbling in a little c.w., but the over enthusiastic reception given him must soon have driven him back to the delights of s.s.b. CE9AK is in the Chilean Antarctic, but just where, his QSL card will have to tell.

G2PU (Harston, Cambs.) writes that so many people have phoned and written regarding VR6TC that he is sure all will be relieved to learn that he has now been worked, both on 14 and on 21 Mc/s phone; Sant hopes to add his card to those of VR6AY and VR6AA! All is going well at the new QTH at Harston with the LG300 and bi-square beam. VK9AD (Norfolk Is.), KP6AL, VS4JT, VK0CJ (Macquarrie), VK9AJ, VK9HO, BV1US and ZK2AB were recent contacts. ZK2AB sent his QSL and says the contact was his first intelligible phone QSO with the U.K. Before leaving Cambridge, '2PU worked YV0AA, FS7RT, VP5FH, CR5SP, ZM6AS, ZD9SC, KX6ZB, FO8AB and ZK1BL, so it is hard to decide which is the better QTH. Perhaps the balance will be tipped if VK4FE (Thursday Is.), FK8AS and FU8AC can be persuaded to co-operate.

Fifteen Metres

All sorts of DX is popping up on fifteen these days and activity is comfortingly high. **G2HIO** (Nottingham) used phone to talk to VP9H (who hails from Cirencester), VS9AI, ET3XY, UA9CM (11.20), VK9BW (Bill in Rabaul), KP6AL (10.00, after the QRM cleared somewhat!), KL7MF, ZS3G (18.00) YN1MF and VK9NT (Port Moresby).

G3BHJ (Norwich) is using a home-made table-topper with 807s and a pi-network output circuit into a 135 ft. Zepp, while his 21 years old SX11 with outboard modifications netted him FF8BZ and JA7AD on c.w. and CN2, CE1, '3, MP4BBL, OA4, VP4MM, VP6, VO1DQ/VE8 (Resolution Is.,) on phone. VK3AZY was a potent signal, even though he runs but 12 watts on a.m. G3BHJ says he works most of his DX by answering " CQs " rather than by calling " CQ," which proves a somewhat obvious truth. **G3JNX** (Manchester) has just acquired a Heathkit DX100 transmitter and in 18 days he had phone QSOs with CP1CM, CX, HK, VP5CM, KZ5WA, VP6, FS7RT, CO8LL, MP4KDS and VP4RV, who said he would be on with his new call of PJ5CA from the end of September, then would be back at VP4RV late in October.

The phone DX from **B.R.S. 20315** includes ZK1BS (08.30), VK9BW, '9HO (10.40), VS1, '2, '4JT, VS6BE, (s.s.b.), FB8BW (17.20), FQ8AC, CR7CP, ZC4II, ZD2DCP, EL5A and lots of VK and ZL. **A. 1373** logged s.s.b. from FS7RT, PJ2MC, with PZ1AG, VP8CC, VS4JT and ZD1EO on A3. **B.R.S. 21279** heard WP4AKU and some WNs—all strong but they keep on sending " CQ DX." **UO5AA** on phone was working the U.S.A.

B.R.S. 20106 found the band wide open on August 24 and heard VR1A (17.00), VK9DB, KW6CA, KW6CE (07.20), KP6AL (07.30) and UA0KFG on c.w. and ZK1BS (10.15), VR2AS (08.00), FE8AH (17.00), FB8BX, ZS3W and OH0s on phone. **B.R.S. 20317** also did well and dug out FK8AT (09.30), KW6CE, KP6AL, PJ2ME, UA0GF, VP2VB, '8CO, VQ6LQ, ZD6RM and ZC5AL on c.w. FK8AC is also on around 10.00.

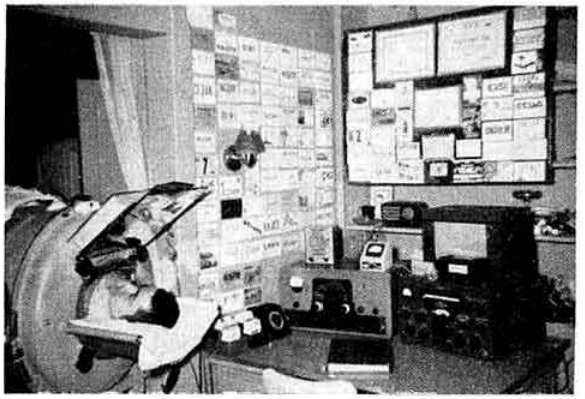
Ten Metres

Already this band is responding to Winter's increase in the M.U.F.s and activity will soon be greater than ever. **G3IFB** QSO'd VQ3SS and FQ8AP on A3 and VQ6ST on A1 for new ones, but he missed FE8AH (15.00). **B.R.S. 20135** heard VK6NF, VS9AI, CR7DQ, ZC4DT, OA4EE, VQ4, VQ6 and ZD3BFC on A3, while **B.R.S. 21279** heard VQ6ST, ZD3, ZD2, ZC4, MP4, all around 10.00. **B.R.S. 20317** stuck to the c.w. end of the band and pulled in VP7NM, UA9MI, VQ3SS, VS9AG, XW8AB (11.30) and ZP5HK.

Forty and Eighty Metres

A prophecy with a reasonable chance of success is that these bands will be under separate headings again next month; for the once, however, they remain entwined and **B.R.S. 20106** starts the communal ball rolling by remarking that on some mornings, phone was louder on 75m than on forty. W1AUK and W1AOH were very good on 75 and Spanish speech—probably Cuban—can be heard up there. On forty c.w., Norman heard CO2CO, W6MOJ, UA9FU and a peculiar ZS3US (circa 19.00). Forty phone has produced VP5CM consistently, with W3, '4, '5, '8 and '9 also to be heard.

A.1373 checked 7 Mc/s during a solar storm and was



Cliff Corne, Jr., K9EAB, of Peoria, Illinois, became a victim of polio in 1949 at the age of 11. Although he can use only his right thumb to control and key his rig, he has worked 106 countries, 100 on 15m, and has WAS, RCC and WAC certificates. He particularly welcomes contacts with British, French and Swedish stations. As G5KT remarks in sending this picture, all amateurs will wish K9EAB a speedy return to good health.

surprised to hear LUs at RS58 while the h.f. bands were quite dead. **B.R.S. 20317** has been hearing the Ws on occasion from 22.30 or earlier until after 08.30, but we hasten to point out that this was over a period of time: we all need some sleep! Bill mentions CO2CO, EA8CE, EA9EF (22.30), UA0AG (22.30), K5LHV, VP6UN and 4X4JH as some of his c.w. DX.

One-Sixty Metres

Sun-spots or no, this is the time of year when Top Band devotees come into their own as the nights lengthen, static dies away and a high level of local and semi-local activity is assured throughout the Winter months. Conditions for DX working are expected to be far from ideal, but surprising results may yet happen during the next few months.

VQ2GR (Luanshya) is willing to make a series of tests on the band and he suggests 23.00 G.M.T. on Fridays and 06.00 on Sundays as a start. He runs an 807 p.a., v.f.o. controlled and uses a half-wave dipole running east/west. Tests with **VQ2IE**, who is 300 miles south, have produced S7 signals both ways, despite a high noise-level, so perhaps the first VQ2/G QSO on 1·8 Mc/s is on the way. More news we hope next month. Those wishing to arrange a sked should write to G. W. Rowe (VQ2WR), c/o Rhodesia Railways, Luanshya, Northern Rhodesia.

G3LOE (Clitheroe) learns from W3RGQ that he will be looking for DX every Wednesday, Friday and Sunday in October, from 04.45-05.15 G.M.T. He will be on either 1801 or 1820 kc/s and suggests that 1828 to 1835 kc/s is the best spot for U.K. replies. W3RGQ worked FP8AA in July and QSO'd OA5G during August. **B.R.S. 20106** has heard rumours of the impending arrival of an OA with a kilowatt on the band, so it may be the same one. **OA7I** is also interested and has plans for a Vee beam pointed at Europe. Though Evert will not use 1 kW, he should be audible if the path should open.

G4XC (Grimsby), who is Contests Manager for the Tops C.W. Club, would like it known that the Club's " Rendal Contest " takes place on October 26, from 09.00-24.00 G.M.T. There is an award to the non-member giving most points to members and such QSOs should include an exchange of RST and QTH.

Geoffrey Ward (G3BOB), who is at present resident in Maryland, U.S.A., reports that a station using his call has been heard in Croydon and occasionally in Liverpool. Calls from a station signing G3BOB should be ignored until further notice.

Incidentally, now is the time to awaken interest in the second **R.S.G.B. 21/28 Mc/s Telephony Contest** to be held on November 23 and 24. We suggest members mention the contest to their overseas contacts.

* * *

Which brings one more month to a close. Reports and comment for the November *M.O.T.A.* to arrive by November 18, please. Meantime, continued good hunting and 73.

W.A.SM Award

THE Swedish Society, S.S.A., has announced that due to increases in costs they have been forced to raise the charge made for their attractive little table clothlet known as the W.A.SM.

The previous charge of 10 international reply coupons has been raiseed to 10 Swedish crowns (kronen) or its equivalent by cheque or money order. As 10 Swedish crowns, at the present rate of exchange, are equivalent to about 14s. sterling, there is not likely to be a big future demand. However, members desirous of claiming the award can remit the fee by obtaining Form P2229H from any Head Post Office, which, when authorized, will permit them to buy a Foreign Money Order made out to S.S.A., Stockholm 4, Sweden.

The cost of the W.A.SM II award remains as before.

Telecommunications Exhibition

ON the occasion of the Silver Jubilee of the Associate Section of the Institution of Post Office Electrical Engineers, an exhibition entitled " Telecommunications—Past, Present and Future " was held at the Hotel Metropole, Whitehall Place, London, W.C.2 from October 2 to 4, 1957.

Among the modern exhibits was a solar battery which derives electrical energy from the Sun's rays. Historic exhibits included Graham Bell's first telephone, the Electrophone (forerunner of wireless relay systems) and the first teleprinter. Transistors were shown in action, and a telephone exchange was shown working in " slow motion." There was also on show a revolutionary telephone of the future as well as an Earth Satellite Telephone Exchange.

The purpose of the exhibition was to show the highlights of telecommunications developments since 1858 up to the present day, the speculations of Associate Members of the Institute on " Things to Come," and the part played by lesser-known sections of the Post Office in giving, directly or indirectly, a service to the public.

The Moon as a Reflector

AFTER six years of experiments, United States Naval researchers have concluded that the Moon can be used for radio relay purposes. This was announced at a meeting of the International Scientific Radio Union in Boulder, Colorado, in September.

The first experiments involved sending 10 micro-seconds pulses from a transmitter of 1 Megawatt power operating on 200 Mc/s to the Moon and back. In order to get an aerial large enough, a parabolic shaped hole 250 ft. in diameter was scooped out of the earth. With this installation, it was discovered on October 21, 1951, that the Moon was comparatively smooth to radio waves, rather than rough as it appears optically, and so might serve as a " relay station " for radio communication. Continued experiments at the same and higher frequencies, which included transmission of voice messages, have confirmed this discovery and indicate that many types of communication can be carried on via the Moon.

On February 24, 1957, a 3,000 Mc/s signal of 2 micro-seconds duration was bounced off the Moon, the round trip of 500,000 miles taking 2½ seconds. The reflected signal was a weak but detectable echo.

Kilmarnock Hobbies Exhibition

VOLUNTEERS, especially for afternoon duties, are required to help man the Amateur Radio stand at the Hobbies Exhibition which is being organised by the Kilmarnock Rotary Club from October 15 to 19, 1957. Offers of assistance should be made to Mr. D. A. MacQueen (GM-4PW), 3 Ayr Road, Prestwick. The Exhibition will be open from 2.30 p.m. to 10 p.m. daily. An Amateur Radio Station will be operated from the exhibition using the call GM4PW/A.

Red Cross Broadcasts

DURING the International Red Cross Conference in New Delhi, from October 23 to November 7, the Swiss Short Wave Service will broadcast reports from HEU3 (9656 kc/s, 31·04m) and HEI3 (7210 kc/s, 41·61m). Tape recordings and/or reports on these broadcasts would be appreciated, and should be sent to the Director of Publicity, British Red Cross Society, 14 & 15, Grosvenor Crescent, London, S.W.1.

Mobile Column visits the

Harlow and Tunbridge Wells Mobile Rallies

By JOHN A. ROUSE (G2AHL)*

THE Mobile Rally organized by Harlow Radio Society and held at Stock Hall Farm, Matching Green, Essex, on September 1 was a great success with a total attendance of over 200. Nearly 50 mobiles were present, probably the largest number to attend an event of this type so far. In addition, 35 other licensed amateurs were present.

The Top Band control station was provided by G3ERN/P (who supplied much of the equipment used at the rally and made the arrangements for the site) and the 2m station by G3JMA/P.

A demonstration arranged by the British Amateur Television Club was an outstanding success and provided a continuous display of high quality pictures throughout the afternoon. The reception of excellent signals from G2WJ/T at Dunmow was of particular interest. KW Electronics Ltd. showed a comprehensive range of equipment of their own and Geloso manufacture.

In the parking area there appeared to be a forest of aerials: to quote G4DC (who did so much to make the event a success) there were " long whips, short whips, limousines with whips, whips with Morris Minors attached, interchangeable whips, base-loaded whips, centre-loaded whips, whips with capacity hats . . . " and even a halo or so. Quite clearly, Top Band was the favourite amongst those at this rally, though there were a number of 2m rigs and multiband equipments for 10 to 80m.

It is to be hoped that the Harlow Rally, the first to be held within easy range of northern London, will become an annual event. It certainly got off to a good start.

This capacity hat on G3JIP/M's aerial aroused considerable interest at the Harlow Mobile Rally on September 1.

Tunbridge Wells

The second Tunbridge Wells Mobile Rally, held this year in beautiful Dunorlan Park on September 15, again attracted a good crowd of over 100, of whom 53 were licensed amateurs.

One of the pieces of equipment which aroused most interest was an a.c. generator (driven from the engine) mounted under the bonnet of G3HLS's Rolls-Royce to supply power to the all-band mobile transmitter and the matching receiver. Inputs of up to 75 watts are possible with no need to worry about the strain on the car battery.

The prize for the best home-built installation was won by G3CIM of Romford with a very fine rig for Top Band only. The transmitter comprises a 6AM6 v.f.o., wideband coupler, EF91, and QV04/7 p.a. with pi-network output. Modulation is provided by a 12AX7, 12AU7 and another 12AX7 in zero bias class B. The receiver has one r.f. stage (12SK7), mixer (12K8), two i.f. stages, detector/a.v.c./ first audio (12C8) and a 12A6 output stage. An 8 ft. base-loaded whip is used as the aerial. A separate unit provides the following facilities: (*a*) field strength meter and phone monitor (using the broadcast whip); (*b*) " S " meter;

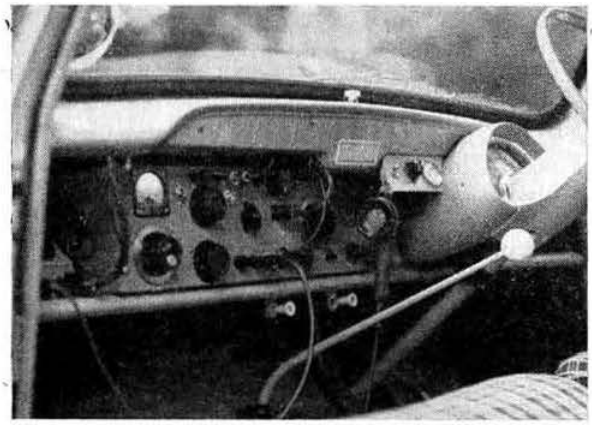
Some of the mobiles at the Tunbridge Wells Mobile Rally in Dunorlan Park on September 15. The rally was organized by the West Kent Amateur Radio Society and attracted a large gathering of local amateurs as well as regular participants in such events. *(Photo by G3IIE*

* *Deputy General Secretary.*

(*c*) voltmeter for checking the battery; (*d*) modulation meter. All the equipment is mounted on the parcels tray of a Ford Prefect, as may be seen in one of the photographs.

Mobile on Holiday

During a recent 1,500 mile trip in "Genevieve," the 1934 Morris Minor seen at many mobile rallies and previously mentioned in *Mobile Column*, G2BCX, operating portable and mobile, had more than 60 first class contacts. Twenty were worked from the Black Mountains in Breconshire using a box kite to support a 132 ft. aerial and 5 watt mobile transmitter. From the Yorkshire moors contacts were made all over northern England. Mobile operation brought many contacts en route from South Wales to Yorkshire on the return journey to London, and



G3CIM/M's neat rig mounted on the parcels tray of his Ford Prefect won the prize for the best home-built installation at Tunbridge Wells. *(Photo by G3IIE*

more than a dozen while travelling to the Tunbridge Wells rally. The reliability of G2BCX's equipment may be judged from the fact that no fault has arisen in 7,500 miles.

G5HO (Nazeing, Essex) worked and heard many of the mobiles going to the Harlow rally, using a newly erected vertical aerial 63 ft. high with inductance and capacity loading about 18 ft. from the top. G5HO would like to hear from other members interested in D/F work.

Late News

The Woburn Abbey Mobile Rally on September 29 attracted a record known attendance of well over 400 although the actual number is estimated to have been much greater. G3ATL was awarded a silver miniature in the *Concours d'elegance*. Full story next month.

Can You Help?

● B. Panneton (VE2LE), 1455 Circle Street, Apartment 6, Saint Laurent, Montreal 9, Quebec, Canada, who requires information on the Transmitter-Receiver TR9D (particularly the valve types)?

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road,

at 12.30 p.m. on Fridays, October 18, November 15 and December 13, 1957.

Telephone table reservations to HOL 7373 prior to day of luncheon. Visiting amateurs especially welcome.

LONDON U.H.F. GROUP

will meet at the Bedford Corner Hotel, at 7.30 p.m., November 7, 1957.

All u.h.f. enthusiasts welcome.

Bands Available

THE following is a summary of the bands in which amateur operation is permitted. The table also shows the maximum power input and types of emission allowed to holders of Amateur (Sound) Licences. Holders of Amateur (Sound Mobile) Licences are permitted to operate under the same conditions.

Frequency in Mc/s	Maximum d.c. input (Watts)	Types of Emission
1·8–2·0	10	A1, A2, A3, A3a, F1, F2 and F3
3·5–3·8	150	A1, A2, A3, A3a, F1, F2 and F3
7·0–7·150	150	A1, A2, A3, A3a, F1, F2 and F3
14·0–14·35	150	A1, A2, A3, A3a, F1, F2 and F3
21·0–21·45	150	A1, A2, A3, A3a, F1, F2 and F3
28·0–30·0	150	A1, A2, A3, A3a, F1, F2 and F3
70·2–70·4 *	50	A1, A2, A3 and A3a
144·0–144·5	150	A1, A2, A3 and A3a
144·5–145·5	150	A1, A2, A3, A3a, F1, F2 and F3
145·5–146·0	150	A1, A2, A3 and A3a
420–460	150	A1, A2, A3, A3a, F1, F2 and F3
1215–1300	150	A1, A2, A3, A3a, F1, F2 and F3
2300–2450	150	A1, A2, A3, A3a, F1, F2 and F3
2350–2400	25 (mean) and 2·5 kW peak	P1, P2d, P2e, P3d and P3e
5650–5850	150	A1, A2, A3, A3a, F1, F2 and F3
5700–5800	25 (mean) and 2·5 kW peak	P1, P2d, P2e, P3d and P3e
10000–10500	150	A1, A2, A3, A3a, F1, F2 and F3
10050–10450	25 (mean) and 2·5 kW peak	P1, P2d, P2e, P3d and P3e

* Not to be used within 50 miles radius of Jodrell Bank Observatory, Cheshire.

Types of Emission

IN accordance with regulations drawn up at the Atlantic City Radio Conference in 1947 all emissions are designated according to their classification and the width of the frequency band occupied by them and are classified and symbolised according to the following characteristics: (1) Type of modulation. (2) Type of transmission. (3) Supplementary characteristics.

Types of Modulation	**Symbol**
(*a*) Amplitude	A
(*b*) Frequency (or Phase)	F
(*c*) Pulse	P
Types of Transmission	
(*a*) Absence of any modulation intended to carry information	0
(*b*) Telegraphy without the use of modulating audio frequency	1
(*c*) Telegraphy by the keying of a modulating audio frequency or audio frequencies or by the keying of the modulated emission (special case: an unkeyed modulation emission)	2
(*d*) Telephony	3
(*e*) Facsimile	4
(*f*) Television	5
(*g*) Composite transmissions and cases not covered by the above	9
Supplementary Characteristics	
(*a*) Double sideband, full carrier	(none)
(*b*) Single sideband, reduced carrier	a
(*c*) Two independent sidebands, reduced carrier	b
(*d*) Other emissions, reduced carrier	c
(*e*) Pulse, amplitude modulated	d
(*f*) Pulse, width modulated	e
(*g*) Pulse, phase (or position) modulated	f
As an exception to the above principles, damped waves are designated by	B

Types of Emission Available to U.K. Amateurs

From the above information, the meanings of the various types of emission available to British radio amateurs may be ascertained. Examples are as follows:

A1	Telegraphy without the use of modulating audio frequency (on-off keying).
A3	Amplitude modulated telephony, double sideband, full carrier.
A3a	Amplitude modulated telephony, single sideband, reduced carrier.
F3	Frequency modulated telephony.
P1	Pulse modulated telegraphy without the use of modulating audio frequency.

RADIO SOCIETY OF GREAT BRITAIN

RADIO HOBBIES EXHIBITION

ROYAL HORTICULTURAL OLD HALL
VINCENT SQUARE, LONDON, S.W.1.

October 23rd to 26th

11 a.m. till 9 p.m. — Admission 2/-

Official opening at noon, October 23rd, by
SIR HAROLD BISHOP, C.B.E. (Director of Engineering B.B.C.)

Show will feature

HOME CONSTRUCTION–DO IT YOURSELF

RECEIVERS, TEST GEAR, TRANSMITTERS,
TELEVISION, HI-FI AMPLIFIERS, AERIALS,
TAPE RECORDERS, TRANSISTOR EQUIPMENT

Demonstrations by
ROYAL AIR FORCE and ROYAL NAVY
GB3RS/A will be in operation
LIVE AMATEUR TELEVISION STATIONS
TELEVISION TELEPHONE • MOBILE EQUIPMENT
Prizewinning Home Constructed Equipment
MODEL B.I.C.C. CRYSTAL PALACE TV TOWER

WIN AN EDDYSTONE COMMUNICATIONS RECEIVER

Radio Hobbies Exhibition

British Amateur Television Club
British Insulated Callender's Cables Ltd.
Clyne Radio Ltd.
Cossor Instruments Ltd.
E.M.I. Institutes Ltd.
Enthoven Solders Ltd.
K. W. Electronics Ltd.
Labgear (Cambridge) Ltd.
London U.H.F. Group
Measuring Instruments (Pullin) Ltd.
The Minimitter Co. Ltd.
Mullard Limited
Panda Radio Co. Ltd. and Home Radio (Mitcham) Ltd.
E. J. Philpott's (Metalworks) Ltd.
Radio Society of Great Britain
Royal Air Force
Royal Navy
Short Wave Magazine Ltd.
Standard Telephones and Cables Ltd. (Brimar).
Taylor Electrical Instruments Ltd.
Wireless World/Electronic and Radio Engineer
Whiteley Electrical Radio Co. Ltd.

A Preview of some of the Highlights

THE Radio Hobbies Exhibition, which opens at the Royal Horticultural Society's Old Hall in London on October 23, promises to provide plenty to interest most radio enthusiasts while there are likely to be some surprises as well.

Kits for the construction of many types of radio and associated equipment will be shown on several stands. One of the wide range of kits to be introduced by **K. W. Electronics** is a new transmitter, believed to be the first of its kind to become available on the British market. **Labgear** will be showing four kits from which an oscilloscope, signal generator, multimeter and a.f. power meter respectively may be made. A new printed circuit kit for a small hi-fi amplifier will be shown by **Whiteley Electrical** who will also exhibit ready-to-assemble loudspeaker cabinets. **Clyne Radio** will be showing many kits for the home constructor.

Labgear will display the LG300 transmitter and its companion power supply modulator while **K. W. Electronics** will have the Geloso G210TR transmitter on their stand. **Panda Radio's** new Explorer transmitter will be a feature of the firm's display while **Minimitter** are introducing another new full power transmitter—the Mercury—built on their well-known unit principle but entirely restyled. Both the Explorer and Mercury transmitters feature slide rule dials.

Aerials are of perennial interest to the radio amateur and three firms will be exhibiting arrays: the Labgear Bi-squares for 28 and 70 Mc/s, the Panda Minibeams for 14, 21 and 28 Mc/s and the K. W. Electronics multi-band dipole.

A new communication receiver is always an event and the **Minimitter Company** has chosen the exhibition to introduce its first amateur-bands only double superhet, which, from advance information, certainly sounds quite unlike any previous commercially built receiver. Its features include a Q multiplier, adjustable squelch and provision for 12 volt mobile operation.

Enthoven Solders will be demonstrating soldering techniques using Superspeed solders and soldering irons. **Taylor Instruments** will have new oscilloscopes, test meters, field strength meters and signal generators on show. Several new valves including types designed for car radio use on only 12 volts h.t. will be seen on the **Brimar** stand. V.h.f. transmitting valves will be shown by **Mullard.**

The radio press will be represented by *Short Wave Magazine*, and *Wireless World* and *Electronic and Radio Engineer*. The *S.W.M.* will display the many operating certificates it offers. Both stands will have technical publications available for examination and purchase.

All types of home-built equipment will be shown on the amateur stands including Amateur TV(B.A.T.C.), v.h.f./u.h.f. gear (London U.H.F. Group) and on the R.S.G.B. dais from which GB3RS/A will be in operation.

FOUR METRES AND DOWN

By F. G. LAMBETH (G2AIW)*

Are V.H.F. Contests Wanted?—Auroral Propagation Again Reported

THE European V.H.F. Contest has come and gone, and the outcome has posed a very searching question for all those directly or indirectly involved. Does the v.h.f. population of this country want contests under international rules? The apathy which was evident in the first 4m contest reflected itself during the weekend of September 7 and 8. There were rarely more than two or three stations on, and even some of these did not appear to know there was a contest, in spite of the publicity in the August BULLETIN. The fact that F8MX was operating throughout the time (and calling " CQ Contest ") did not seem to awaken any of the usual activity. Can it be that the virtual absence of Continental stations at that time (apart from F8MX and F8GH) dampened the enthusiasm of possible entrants? In any case the R.S.G.B. National V.H.F. Contest took place at the same time as the European one, which would appear to dispose of that argument, as after all that contest does not necessarily depend on overseas contacts except for the distance/points scoring angle.

It was unfortunate that in the September issue of *Short Wave Magazine* it was incorrectly stated that only members of I.A.R.U. Societies could enter these contests whereas the fact is that they are open to all v.h.f. operators—though, as the majority of v.h.f. operators in this country are members of R.S.G.B., this should have made little difference.

It has even been suggested that the contest was " deliberately boycotted " which we find it very difficult to believe. The reasons for the lack of interest appear somewhat obscure. One thing which does stand out however, is the urgent necessity of finding out whether we are wasting our time. Again we ask, do the v.h.f. fraternity want these contests or not? In passing we may say that the Continentals are very contest minded indeed, and a large proportion of the time at V.H.F. Conferences is spent on discussions centred around this subject. It is therefore imperative that the views of the British v.h.f. enthusiasts should be known. It is always very difficult to get people to write even on subjects which move them greatly, but *please* do so on this occasion and do it now.

Two Metre News

The 2m band does not seem to have been very happy in the last month, and conditions generally have been poor, or at least have appeared so—it may again be a question of activity. Certainly when a DX station comes up on the band he is usually audible and workable by someone else, even though the band be otherwise untenanted. The general reports, however, bear out the idea of poor conditions.

B.R.S. 16075 (Southampton) writing a little earlier than usual, noted the very great lack of interest in the European and National V.H.F. Contests: only a few stations were heard giving reference numbers, and these included F8MX, G2XV and G8VZ. At this time (says '16075) conditions were not extra poor either! Locally G3IBI has tried to get some of the northern boys to turn their beams south on Activity Nights—he hears many, but few seem interested in the Southampton area! G2UJ was heard recently with the beam north, and as '2UJ was also believed to be firing north, an auroral " bounce " is suspected. **G3KSR** now has a 6-over-6 beam and should be more frequently heard from his fixed QTH. **G5OB** is also " sorting out " beams and will be operating with an outside three element array.

B.R.S. 19162 (Dewsbury) found occasional bursts of fair conditions but generally they were not very good! Some type of auroral reflection was noted on **GB3IGY** at 1700 G.M.T. on September 4. With the aerial south the report was 339 and to the north 572. At 1800 G.M.T. '3IGY was normal again. **B.R.S. 20133** (Melton Mowbray) says " Poor month, even the contest day was adrift." The Sunday morning was hot, rising barometer, no wind, no cloud,—" and no signals either." Possibly the Sun's activity during preceding days was to blame. In spite of the poor conditions about 70 stations were heard at different times during the period. **B.R.S. 20162** (Selsdon) also says the general level of activity has sunk almost to an all time low and notes the poor support of the European Contest. **B.R.S. 20134** (Lymington) heard about 30 different calls, the best being G3KAG/P about 18 miles north of Derby on August 18. An interesting QSO " half heard " was G2WJ/G2DUS/M (a TV transmission) but only the sound was heard, weakly, on 2m. Some noise factor work and other experiments have been taking place recently.

G3WW (Wimblington) tersely reports " Nil—beyond locals, and G4MK/SM7QL" (We like the SM7QL part.—Ed.)

G3KHA (Bristol 4) had over 50 QSOs during the period, which covered two Contests dates, conditions for both being poor. G3KHA opines that it is easier to assess conditions from home QTH than from untried portable sites, and thinks that successful portable stations owe this to their gear and sites rather than to conditions. As regards the I.A.R.U. contests, the stations just didn't seem to be on, although **G2XV** was a workable signal all the time, even audible at 579 on 70 cm on the Sunday morning. G3KHA thinks ordinary tropospheric conditions have been poor this year, at least in the West. only one opening of any moment having occurred and that for only two days. As far as auroral reflection QSOs are concerned, more of these would take place if stations working local phone would listen between overs to see if anything " funny " is going on. '3KHA noticed the auroral conditions of September 4 when about six stations were audible at a time (1705 G.M.T.) when the band is usually empty. **G2ANS** (Roade) was raised normally at 1735, and reported hearing '3KHA's CQ earlier at 577 off the back of his beam. '3KHA notes the well known effect of auroral signals on the receiver, and counsels people to use c.w. during such conditions—as is well known, phone is usually unreadable.

G5MR (Hythe, Kent) found conditions for the Contest " unstable and generally disappointing." QSO total was less then half of that of last year. G5YV was heard but not worked on Sunday morning but activity seemed low.

G3JGJ (Plympton) heard G3XC/P and '3JTQ/P at Kit Hill, Callington, Cornwall (over 1,000 ft. a.s.l.) working Northampton, London, Bristol and Somerset all within one

* *21 Bridge Way, Whitton, Twickenham, Middlesex.*

hour—'3JGJ did not hear anything from any of them except G3FIH (Bath). '3JGJ understands there are three stations operating from Cornwall in Redruth, Camborne and Carbis Bay, and would like to hear from any of them regarding possible skeds. G3EOH/A and 3LCK/A were recently worked at Looe (Cornwall). **G2HDR** (Bristol 9) has worked locals—the only stations heard outside a 50 mile radius were G5MA and G5YV.

G8AL (Chingford) had a most exciting time on September 5, when GM3EGW, '2FHH, '3BOC/A and EI6A were worked via the aurora. **G3JR** (Barnes) worked G6OX/P (Span Head, Devon) on August 22, and G5BD for the first time on September 4. These are news, as '3JR is so badly placed. **G2XV** (Cambridge) had a fine time in the Contest with 44 contacts, some on 70 cm. The longest distance worked was F8GH (Beauvais) at 362 km.

G3FZL (Forest Hill) has had auroral QSOs with GM3EGW, '6WL, and '3BOC/A, the last in Brora (Sutherland). '3FZL puts this happy event to the credit of GM3EGW, who phoned at 23.30 on September 4. Immediately after this, GM3BOC/A was heard, followed by '3EGW. The aurora faded at 23.55 and did not return until 01.40, when GM2FHH was heard. The signals then improved, and '3BOC/A, '2FHH and finally SM6ANR (who came back to a CQ), were worked. EI6A was called several times without success. '3FZL, who is handling the I.G.Y. reports, specially requests that *any* reports on aurora be sent in on the special *red* I.G.Y. forms which are being supplied to correspondents, or if this is not possible, at least by letter. Information is also particularly needed as to beam direction for optimum signals also any aurora reception reports including those of GB3IGY.

G5BD (Mablethorpe) contacted HB1RG (August 4 at 01.00 B.S.T.) for the first HB in three years. DL6MHP (Bavarian Alps) was also heard but not raised. Otherwise 2m was featureless during the period.

Scottish Two Metre News

GM3BOC/A (Brora) reports having worked DL3VJ, EI6A, G3HBW, G8AL and GM3EGW, whilst hearing GM2FHH (his nearest local at 90 miles!) 594 most of the time during the aurora reported by G3FZL above. A peculiar thing was the small number of G stations audible. '3BOC thinks it is a great pity so few stations were on, but wonders if the auroral conditions did not affect the whole country, but he thinks this is not so. Although only 70 miles south of John o'Groats, '3BOC did not see the Northern Lights, but they were visible on September 5/6 (the next night when conditions were not so good) and also September 2/3. The Brora location is excellent, absolutely clear to the south overlooking the sea; to the north, hills rise to 1,000 ft. within one mile of the site which is almost 110 ft. a.s.l. only. Normally the best DX is G3BW (Whitehaven) although G2NY (Preston) has been heard. The QSO with DL3VJ was the best yet, about 660 miles. The transmitter was a Hamobile and the aerial a 4-over-4 slot at 12 ft. above ground. During aurora, beam positions do not seem critical. Auroral signals could be received from other stations from N.N.W. to E.N.E. (about 90 deg.). During the last five days of the Brora holiday no signals at all were heard by '3BOC.

GM2FHH (Aberdeen) had a good time with the recent aurora, but apart from that, found little doing on 2m. **GM3EGW** (Dunfermline) first spotted the aurora during his sked with G2NY and when closing down at 03.20 B.S.T., G, EI, GM, DL and SM stations were still audible! During the sked with G2NY on September 5 the signal was again being reflected by aurora—'3EGW thinks that several auroras had been missed between the last week of August and September 5, hence the nightly check which is now taking place. During September 4/5 the following were worked: GM6WL/P, '2FHH, '3BOC/A, G3FZL, '3HBW, '8AL, SM6ANR, '7BZX, '7ZN, DL3VJ, and EI6A.

GM6WL has just returned from a portable holiday at Mull of Galloway (Wigtownshire) and experienced the aurora condition while three miles S.W. of Drummore. At 22.00 G.M.T. (September 4) there was a brilliant visual display of aurora and with the aerial north, a number of unidentifiable carriers was heard. At 22.12 G2NY was heard 593 calling GM3EGW who was heard replying (593). At 22.45 GM3BOC/A (Brora) was contacted RST565 both ways. At 23.30, '3EGW was contacted both direct and via the aurora. By a coincidence, direct propagation was also rising to high peaks with deep QSB and for a short period '3EGW was R5S9+ on phone *direct* but with QSB to 569 c.w. in about two minutes. No Continentals were heard although during the period a QSO of 20 minutes duration with GM3NG might have overlapped some other activity. Direct QSOs included GM3BOC/A, G3KEQ, EI6A, GI3GXP and several English stations in the Midlands. '6WL was immensely helped by the co-operation of a local farmer who loaned a tractor to take the caravan to the top of the hill. GM4PW (Prestwich) was also very helpful with the loan of a petrol generator which kept the batteries full charged during the long stay.

Auroral Propagation Again

Auroral propagation was in evidence again during the afternoon of Sunday, September 22 from 1630 to 1745 B.S.T. **G5MA** (Bookham) was heard and called by an OZ station but no QSO resulted. **G3FZL** worked **GM3EGW** and **GM3DIQ** whilst **GM3HLH/A** (Crail, Fife) was heard by G5MA. **GM6XW** was heard by both G5MA and G3KEQ—strong auroral distortion was noticed on more local signals from G6NB and G2DUS/M. **G2NY** (Preston) and **G3HWS** (Southport) were also heard by auroral reflection. The GM stations were probably hearing some Continentals by the same means. At 23.00 **G5YV** was heard off the aurora by G3FZL calling CQ with the beam north.

On September 29, **G3FZL/P** at the Woburn Abbey Mobile Rally heard DJ1XX, GM3DIQ, GM6KH, G5BD, PA0FB and PA0UHF between 15.00 and 16.30 G.M.T. Towards midnight on the same day, **G3LIM** (Twickenham) worked EI6A, GI3GXP, GM2FHH, and, with G2AIW, heard GM3EGW (RST593), G3IWJ, G3IUD, G3IKV, G3AYT, G5YV and G3BW. PA0FB was heard working OZ7BB who was not audible.

Two Metre News from France

F3SK visited F8MX/A (St. Valery-en-Caux) during the European Contest and to them, conditions were not so bad. G5YV was heard as well as two DJs and some other interesting stations but the activity was again rather poor. '8MX/A had, however, 44 QSOs in the Contest of which six or seven were on 70cm. During the holidays, '3SK was in the Alençon area, and with the help of F8WV and '9CQ was able to carry out some interesting tests with slot aerials. At the beginning of August, the conditions were so good that F8MX/A worked 12 countries in one week (including that first F/GI QSO).

CT1 Heard?

G3JR writes that G3EYV with the beam southwest on August 31 heard a CQ of " carbon mike " quality signing **CT1**. The call may have been CT1AO, frequency about 145·30 Mc/s. This is quite unconfirmed and must be treated with reserve at the moment but if CT1AO or another CT station was on at that time, we should be glad to hear about it.

With regard to **OE2JG** (Salzburg), reported last month, a letter has been received from him confirming that he was actually operating as described. He heard two G stations neither of which was identified; but this appears to clinch the matter. A DL station told him that PAOs and ON4s were calling him, and he later worked some of them. OE2JG's frequency is 144·72 Mc/s. During Contests, the station is located on the Gaisberg (1286m a.s.l.). The operator would like to correspond with any G station interested.

California to Hawaii Again on Two Metres

W6NLZ and **KH6UK** made contact again on August 18. The QSO lasted 75 minutes although signals were weak and fading for the first 50 minutes.

Seventy Centimetre News

G8AL (Chingford) has been quite active lately and has worked F8MX, G2FCA, '2HDS, '3ECA, '3EOH, '3FP, '3IRW, '5DT, '5UM, '6NF, and '8RW the longest 70cm list received for months!

G5MR (Hythe, Kent) worked F8MX during the Contest but conditions were poor and signals not nearly so strong as previously. The Southampton boys are now getting the 70cm receivers and aerials organized to be able to receive the TV signal expected from **G3IBI** before long.

G3MI (Chesham) is still active on 70cm, although the QSOs are few and far between! His frequency is 434·62 Mc/s. The transmitter is QQV03/20 power tripler—the converter is c.c. with Lecher line mixer (CV364 crystal diode) and the aerial a ten-element stack.

G5BD (Mablethorpe) is still maintaining his sked with G3HBW, although signals vary between c.w. 229 and phone S9. F8MX was heard at RS56 on September 2.

More 70 cm frequencies, this time from **G8AL**.

G8RW	434·49	G5DT	434·9	G3FP	435·03
G2FCA	435·24	G3EOH	434·55	G8AL	435·1

G5BD gives the following frequencies:

G5BD	434·65	G5LL	434·45	G3HBW	434·65
F8MX	435·06	DL3YBA	432·6	ON4DE	434·4
PA0WAR	432·75	PA0GER	432·7	G5YV	434·05
G6NB	434·65	G3IRA	436·05	G6YU	434·25
G2CIW	433·95	G3JZG	433·38	G2BVW	434·15
G2FNW	434·75	G3IOO	434·33		

From the **B.A.T.C. [Birmingham Group]** come more frequencies:

G3BA	434·0	G2CVD	433·8
G2DCI	433·1	G3DFL/T	434·2
G3HAZ	433·6	G3JGY	433·0
G3KBA/T	434·4	G6YU	434·25
G3LGJ	433·39	G2FNW	433·38
G3EJO	433·88	G3JZG	433·38

Additions or corrections to these lists will be welcome.

B.R.S. 21034 (Lymington) has completed the i.f. and mixer stages of a new 70cm converter. The output is at either 45 Mc/s or 10.7 Mc/s—one for feeding direct to a tuneable television set for Amateur TV transmissions, the other at 10·7 Mc/s for normal sound.

GM6WL reports that **GM5VG** and **'3DDE** have been continuing their " Trans-Scotland " tests and have vastly improved the consistency of their results. '5VG is a 59 signal and '3DDE a steady 8/9 in Glasgow. At the Mull of Galloway '6WL had 13 phone QSOs with G13FWF (Drumbo, nr. Lisburn, N.I.). The average strength, due to aerial improvements at '3FWF, was S9 over the now visual distance of 43 miles. On other occasions '3FWF went portable to Torrhead (60 miles northwest of '6WL) and over a mainly sea path received '6WL at many db over S9; another trip to Bryanstown (Co. Down) was also successful.

Four Metre Notes

GM2FHH has been on the band quite a lot, using 50 watts phone and c.w. but has no DX to report yet. He will be on the band every evening at 11.30 p.m. and on Sundays from 9 a.m. to 1 p.m., using a four-element beam and a c.c. converter to an HRO.

G5MR (Hythe, Kent) will intensify his activities on 4m during the coming months, and it may well be his main operation band. As '5MR is able to receive 50 Mc/s, he hopes to work W1HDQ or some of the other Ws by looking for them on 50 Mc/s and replying on 70 Mc/s. '5MR hopes for stepped up activity in the Contest of November 16/17 (and so do we.—Ed.) and especially on c.w.

Six Metre Notes

This band is coming into the news again with the approach of the season. Reports have arrived from abroad which may be very useful to 70 Mc/s operators here.

VQ4EV (Nairobi) asked G3JYO to mention that Kenya amateurs now have 50/54 Mc/s and will be looking for Gs on 28 Mc/s. VQ4EV is himself equipped for receiving the new band and expects soon to be transmitting on 50·250 Mc/s. **ZC4IP** (ex-G8IP) told G2FDF in QSO that South African stations (ZS3G in particular) are being heard in Cyprus on 50 Mc/s. They also will listen for replies on 28 Mc/s. It is believed that a French station has already had a QSO with South Africa. *Late News:* **ZC4IP** on 28 Mc/s has worked **ZE2JE, ZE2JV** and **ZS3G** cross-band. F9BG has also been heard on 50 Mc/s but not worked. **ZE2JV** sends auto c.w. for five minutes on the hour from 17.00 to 21.00 G.M.T. daily and listens for replies on 28 Mc/s.

W7RT (Washington State) writes to G2MI—" Please tell the v.h.f. boys I am on 50·082 Mc/s with 400 watts—and will be watching for European DX at weekends for the next several months."

Three Centimetres

G3BAK, now living in Stockport, is trying to team up with **G3FDU** and **G3IUD** in order to continue his pioneering experiments on this band. Before leaving Havant, '3BAK had a QSO from Portsdown Hill with G3LZ—'3BAK was " all battery " powered for this effort, the only trouble being the heater supply. '3LZ is now trying to whip up activity in the Portsmouth and Southampton area again.

* * *

Please be sure to fill up the I.G.Y. forms which we are sending monthly. They may be returned with your reports for *Four Metres and Down* and will be passed to the proper quarter. October deadline, the *18th*. Please don't forget.

Worked and Heard on V.H.F.

Two Metres

B.R.S. 16075 (Shirley, Southampton) August 19—September 8.
Heard: F8MX, G2AHL/P, 2AHY, 2JM, 2UJ, 2WJ, 2XV, 2YB, 3CBU, 3FCQ, 3FIH, 3FQS, 3GHO, 3GNR/P, 3HBW, 3HDJ, 3IAM, 3IIT, 3IRA, 3KEQ, 3KHA, 4DC, 4HQ, 5DF, 5KW, 6AG, 6OX/P (Span Head, North Devon), 8RW, 8VZ, GC3EBK, GW8UH.

B.R.S. 19162 (Dewsbury, Yorks).
Heard: G2CIW, 2DTO/P, 3BA/P, 3FUR, 3FZL, 3GHO, 3GNS/P, 3IRA, 3JMA/P, 3KHA, 3LIM, 4BP/P, 5KEQ/P, 5KG, 5MA, 5ML, 6RH, 6XM/P 8AL, 8UG/P, 8VZ, GW2HCJ/P, PE1PL.

B.R.S. 20133 (Melton Mowbray) August 19—September 16.
Heard: G2BVW, 2CRL, 2FMO, 2FNW, 2HCG/M, 3DKF, 3EGE, 3ERD/P, 3FDF, 3FUR, 3FUW, 3GSO, 3IVF, 3JWQ, 3JXN, 3KAG/P, 3LHA, 3LHW, 3LKA, 4MK, 5ML, 5PP, 5YV, 6XM, GB3IGY.

B.R.S. 20162 (Selsdon, Surrey) August 14—September 13.
Heard: F8MX/A, G2AHP, 2AHY, 2ANT, 2AUD, 2BDP, 2CD, 2CIW, 2DDD, 2DSW/P, 2DSU/P, 2DVD, 2HDJ, 2HDY, 2RD, 2UJ, 2XV, 2YB, 3ANB, 3CO, 3DOR, 3DVQ, 3EJA, 3EOH, 3ERD/P, 3EYV, 3FAN, 3FCQ, 3FD, 3FEX, 3FRG/P, 3GHI, 3GHO, 3GNR/P, 3GOZ, 3GQK/P, 3HBW, 3IBI, 3IIT, 3IJB, 3ION/P, 3IRA/P, 3IRS, 3IRW/P, 3IUL, 3JMA/P, 3JQN, 3JR, 3JXN/P, 3KEQ, 3KEQ/P, 3KQQ/A, 3KSR/P, 3LIM, 3LOA, 3LOK, 3LTF, 3PV, 3YZ/P, 4DC, 4IB/M, 5BD, 5MA, 5NF, 5PP/P, 5UM, 5WW, 5YV/P, 6AG, 6JK, 6LL, 6NB, 6NF, 6NW, 6OH, 6OX, 8KW, 8LM/P, 8LN, 8RW, 8SC, 8SK, 8UQ/P, 8VZ.

B.R.S. 21034 (Lymington).
Heard: F8MX, G2BMZ, 2DSW/M, 2DVD, 2HCG, 2NM, 2WJ, 2XV, 2YB, 3CBU, 3CGE, 3FAN, 3FQS, 3GDR, 3GHI, 3GHO, 3HHY, 3IJB, 3JWQ, 3KAG/P, 3KEQ, 3KSR/P, 3LOK, 4DC, 5ML, 5NF, 5PP/P, 6AG/P, 6NB, 6OU, 6OX/M.

G3KHA (Bristol) August 12—September 11.
Worked: G2ANS, 2CIW, 2CPX, 2DTO/P (Epsom), 2HDR, 2JF, 2JM, 2XV, 2WJ, 3BA/P, 3CBU, 3DLU, 3DOR, 3FIH, 3FKO, 3FP, 3FUR, 3FWW, 3FZL, 3GHI, 3GHO, 3GNS/P, 3GOZ, 3GQK/P, 3HBW, 3HHY, 3HHY/P, 3IAM, 3IIT, 3IJB, 3ION/P, 3IRA, 3IRA/P, 3IRS, 3JTQ/P, 3JZW/P, 3KEQ, 3KSR/P, 3LTF, 3XC, 3XC/P (Cornwall), 4DC, 5DF, 5DW, 5WW, 5YV/P, 6AG, 6NW, 6OX/P (N. Devon), 8AL, 8DA, 8QY/P, 8UQ/P, 8VZ, GW3HAW, 8SC, 8SC/P, 8UH, 8UH/P.
Heard: F8MX, G2AHP, 2AUD, 2BMZ, 2DDD, 2DVD, 2GG, 2NM, 2UJ, 2YB, 3BA, 3CGQ, 3EGV, 3FAN, 3FCQ, 3FEX, 3HXS, 3JMA/P, 3JXN, 3LOA, 4HQ, 5MA, 5RD, 5UF, 5YV, 6FO, 6JK, 6NB, 6OX, 8KW, 8SK, GB3IGY.

GM3BOC/A (Brora, Sutherland) August 30—September 8.
Worked: DL3VJ, EI6A, G3BW, G3FZL, 3HBW, 8AL, GM3NG, 3DIQ, 3DDE, 3EGW, 6WL/P. *Heard:* G2NY, GM2FHH.

Seventy Centimetres

G3KHA (Bristol) August 12—September 11.
Heard: G2XV.

A Lucky Amateur Looks at Hi-Fi

By PHILIP G. TANDY (G2DU)*

TWENTY-FIRST anniversaries are always memorable occasions and the British Sound Recording Association's twenty-first annual exhibition held at the Waldorf Hotel, London, on September 20, 21 and 22, was especially memorable to the writer as he held the winning ticket in a raffle for the first production model of the Acoustical Quad electrostatic loudspeaker. This speaker has attracted world wide attention since it was first demonstrated to the public over a year ago. Its designer, Mr. P. J. Walker, had so many advance orders that he decided to give the first off the line to the B.S.R.A. to be raffled in aid of the Society's funds. A pilot production plant is just commencing, but initial production is likely to be small. As the only private owner of a full range electrostatic loudspeaker, the writer will be submitting a report on its performance for publication in the BULLETIN shortly.

In the last few years the demand for high quality reproduction from radio and records has grown enormously, and recordings on tape are no longer a novelty. With so many manufacturers catering for this demand, a short review is very difficult.

Of interest to those who build equipment themselves is the interior view of a modern audio amplifier. The excellence of the component layout and neatness of wiring is worth more than a casual glance. This quality of construction is maintained in all amplifiers throughout a wide price range.

For the home constructor, Jason Motor and Electronic Co. Ltd., displayed their reasonably priced kits of parts for f.m. and a.m./f.m. tuners. Complete f.m. tuners shown included the Leak Trough Line tuner which uses a frequency of 12·5 Mc/s for the i.f. chain instead of the more usual 10·7 Mc/s, in order to prevent possible interference occurring with a television receiver in the same house. The sensitivity is high, only two micro-volts at the aerial terminal being necessary for full limiting. This tuner, in common with most others, incorporates a.f.c. to provide an additional margin of tuning stability.

Among the many tape recorders demonstrated was the Swiss constructed Romagna-Revox B.36 with separate recording and playback amplifiers, and d.c. operated filaments in the playback and microphone amplifier stages. The E.M.I. stand was devoted entirely to recording equipment and ranged from the L.2 battery operated tape recorder to complex professional recording equipment.

Garrard Engineering Co. Ltd. demonstrated their now well-established transcription motor together with the TPA10 transcription pick-up arm and GMC5 moving coil pick-up. This pick-up is of the turnover type utilizing two independent moving coil systems with easily replaceable stylus. The arm can also be obtained separately and will accommodate a wide variety of pick-up cartridges.

Built round a diamond LP stylus, the Goldring Manufacturing Co. were showing their latest product, the new 600 cartridge. The specification for this claims a flat frequency response to well over 20 kc/s. The Goldring replacement styli now cover most makes of pick-up, and are attractively packed on individual cards.

Among the many excellent microphones such as the Reslo ribbon and the attractively styled Simon Cadenza, the writer managed to find one crystal microphone suitable for the amateur whose first consideration is the transmission of intelligible speech. This is the Lustraphone LX55 housed in a robust case and made for use as a table or hand microphone. Its frequency response, 30 to 8000 c/s, is adequate for use on the amateur bands, and the low price makes it very attractive.

In the demonstration rooms on the second floor at the Waldorf, loudspeakers of many shapes and sizes filled the corridors with sounds of low organ notes, shrill brass, and practically every type of percussion instrument, with prices ranging from £20 to well over £150. Demonstrations of stereophonic sound always create a lot of interest, and the stereophonic sound on disc developed by A. R. Sugden & Co. Ltd. was no exception. The system utilizes an improved version of hill and dale recording, together with the conventional lateral groove recording, and is played with a stereophonic pick-up. The channel separation achieved is of the order of 25db.

The B.S.R.A. themselves devoted a stand to showing the evolution of electrical sound recording and reproduction, and many interesting museum pieces were loaned to them for the occasion.

* *4 Harbord Road, Oxford.*

Amateur Television

BY L. ALWYN STOCKLEY (G3EKE/T)*

AMATEUR Television appears to be one of the few branches of Amateur Radio that does not suffer from the usual summer lapse of activity. This is amply borne out by the fact that throughout the summer months when good illumination is cheap, an average of one demonstration every three weeks has been put on by members of the British Amateur Television Club. Probably the most notable to date was the exhibit by the Birmingham Group using G3KBA/T's camera at the Boy Scout Jamboree. A larger display which possibly was not seen by so many members of the public was given at the Dagenham Town Show in July. Here five cameras were in constant use. They were provided by the South West Essex and Chelmsford groups, and the old faithful Roving Eye, " Matilda," from G8PY (Cambridge). With five camera chains running, comprehensive video mixing facilities had to be available. These were supplied by G3CVO/T and G3AKJ, while the audio side was taken care of by W. Hall. The video mixing was all remotely controlled, each input being taken to the grid of an EF91 and the anodes commoned. D.c. control voltages bias back the grids of the channels not required, these voltages being supplied through a multi-way flexible lead of any length. By this means it was possible to avoid having " hot " video leads up to the mixing console.

Other demonstrations were given at Harlow, Enfield and at Southampton, with another yet to come at the Radio Hobbies Exhibition later this month, when it is hoped to have in operation a " TV-Telephone," as well as the normal camera chains.

Members in the North London area who are interested in Amateur TV can now look on 70cm. for G3LOS/T radiating from Enfield. Tests are also being carried out by G3LCM/T in Coulsdon, Surrey, and, now that a pair of QQV03-20As are to hand, G3EKE/T (S.W. 16) is hoping to be on 70cm. soon. Activity is on the increase in the South West Essex area with G3LVL/T (Laindon) and G3LUS/T (Romford) apart from numerous other members who have joined recently as a result of the publicity obtained at the Dagenham Show. Amateur TV signals may be found anywhere between 425 and 455 Mc/s, so search outside the normal sound band between 432 and 438 Mc/s.

Members in the Yeovil area suffered a setback when the room over their shack caught fire. Burning molten wax and heavy machinery came through from the floor above, damaging much of the television gear. Luckily the 5527

* *4 Norbury Court Road, London, S.W.16.*

camera tube was not there at the time, but many tapes and reference books, etc. were lost.

News from VK6EC/T is that there are four cameras in use in Australia, where vision is permitted on 288 Mc/s. This gives them an advantage over the Gs, for whom the lowest frequency permitted is 425 Mc/s. '6EC/T is making good use of surplus 5FP7s as monitors, using them with blue filters to eliminate the afterglow from the long persistence phosphor. This also has the effect of improving the contrast range, in the same way as the neutral filters on TV sets.

* * *

The previous contributor of this column, Mike Barlow (G3CVO/T) is leaving for Canada in early November. We wish him the best of luck and hope to receive reports of Amateur TV activity from " over there " in the near future.

Radio Amateur Emergency Network

By C. L. FENTON (G3ABB)*

NO irregular working was observed during this year's **Rally** which appears to have been a great success.

The **East Coast Flood Warning Scheme** has been maintaining its usual regular watch on the band, and three amber warnings were given during the period of the high tides and gales at the end of August, followed by another on September 12.

With the approach of winter we enter the period of the year when R.A.E.N. is liable to be called upon. Members should be certain therefore to keep mobile gear ready for instant use, including emergency power supplies.

There is an increasing demand for a standard set for R.A.E.N. purposes, both mobile and walkie-talkie. A number of members have suggested that perhaps kits of parts could be made available, together with detailed assembly instructions. The R.A.E.N. Committees are investigating these demands, and any suitable proposals will be published in due course.

Essex R.A.E.N. Exercise

An extensive R.A.E.N. Exercise, covering the county of Essex from Harwich to Harlow and Southend to Clacton, was held on August 25, in conjunction with the British Red Cross. Nearly 20 mobile and portable stations participated, and these were spread evenly over the area for relaying, if and when necessary. All messages despatched from the Chelmsford Control Station were successfully received, as were the replies from each centre.

The co-operation of all Top Band amateurs in keeping the channel clear was particularly noted and very much appreciated.

Romford and District group put four stations into the field. The main station (operated by G3GOT, G3JHL and B.R.S. A. Barker) at Roneo Corner consisted of a 25 watt phone/50 watt c.w. transmitter covering the 160-80-40m bands, and associated equipment. The complete station was unpacked and set up in thirty minutes exactly. The signal proved to be insufficient, and one of the intermediate stations, G3KGS/M, at Shenfield, manned by G3JKL and G3KGS, was instructed to act as a relay between Chelmsford and Romford. These stations consisted of duplicate ZCI Mark II transmitter-receivers, and utilised a 12 ft. whip.

During the exercise, a small boy, seeing the Romford control aerial apparently unattended, took it down but was quickly persuaded to put it back!

Two other stations, under the call-signs of G3KXE/P and G3KXP/P, were set up on the Southend Road near Gallows Corner and at Upminster, these being manned by G3KXE, G3KXP, and G3LWA, with B.R.S. members D. Jones and R. Fronius.

The B.R.C.S. was represented at the Romford Headquarters by Mrs. L. M. Davis, the Divisional Director, and members of the local Group. A message from Col. Wilson, B.R.C.S. County Director, was handed to the Red Cross personnel and a reply was sent, arriving at Chelmsford within sixteen minutes.

Col. Wilson and the R.A.E.N. County Controller would like to thank all members for the hard work which had been put in beforehand to make this exercise a success.

News from the Groups

North Shields and Co. Durham have been approached by B.R.C.S. officials for wider co-operation. In an effort to increase activity throughout the county, G3JMT has undertaken to act as County Controller, and appeals to all interested amateurs to make contact with him.

Shropshire, with a steadily increasing membership, ask interested B.R.S. and licensed amateurs, to contact the Area Controller, or to complete a registration form, after which the Area Controller will make contact with them. **Staffordshire.** A County Committee has been formed, comprising the County Controller, the Area Controllers and two members of each group. The County Controller was appointed Chairman, and G3ESW Secretary. The first meeting was held on July 18 at B.R.C.S. H.Q., Stafford, and discussed Constitution, methods of mobilisation in emergency, equipment, finance, local and future exercises.

These meetings will be held at approximately three-monthly intervals. **Gloucestershire** members are now in touch with their local B.R.C.S. officials, and hope to establish a B.R.C.S. H.Q. station in Stroud shortly.

A meeting of the **Ilford** group will be held at G2BRH, 579 High Road, Ilford, on October 25 at 8 p.m.

Appointments and Resignations

E. Smith (G3JMT), 151 Cheviot Road, South Shields, Co. Durham, has been appointed a County Controller.

The following have been appointed Area Controllers: R. Cordingley, (G3BAP), 61 Cleveleys Avenue, Lancaster (Lancaster and Morecambe); J. J. L. Weaver (G2HNA), 72 Wolverton Road, Stafford.

K. T. Whithorn (G3BDS), 279 Oldbury Road, Worcester, has resigned as County Controller for Worcester.

Private Mobile Radio Licences

AT the end of August there were 1,561 licences in force for private mobile radio services (excluding police and fire). These covered 1,805 base stations and 13,008 mobile stations.

Details of the mobile stations from which messages are transmitted and received are as follows:

Cars (including ambulances, cranes, taxis, etc.)	11,411
Ships (including small ships and tugs) ..	901
Hand portable stations	563
Transportable stations	133
	13,008

A private mobile radio licence costs £3 for each of the first two stations and £2 for each additional station per year. Two new types of licence have recently been introduced; one, giving up to 28 days coverage which makes it especially useful for shows and exhibitions, costs £1. The other covers " inductive " paging systems and is used in hospitals and large buildings. The licence fee in this case is £2 for five years for an unlimited number of stations operated.

Cars fitted for reception of broadcast programmes only are not included in these figures as they are subject to the ordinary wireless licence of £1 a year. There were 319,163 of these licences in force in July of this year.

* *Niarbyl, Gay Bowers Road, Gay Bowers, Danbury, Chelmsford, Essex.*

Society News

Society Trophies

SOCIETY Trophies have been awarded by the Council for the current year to the following members:—

ROTAB: To Mr. Harry Gratton, G6GN of Bristol, in recognition of his consistent DX work over many years.

Courtney Price: To Mr. Clem Tucker, G5DT of Wallington, Surrey, in recognition of his outstanding experimental work on 420 Mc/s and higher amateur frequencies over many years.

Founders': To Mr. J. Douglas Kay, G3AAE of Barnet, Herts. in recognition of his outstanding services to the Society and in particular for his work in connection with the drive for new members.

Calcutta Key: To Mr. Alan Dennis, G3CNV of Sutton Coldfield, Warwickshire, in recognition of his work for International Amateur Radio, in organizing, with the help of local societies, the Amateur Radio station at the Boy Scout Jubilee Jamboree in Sutton Coldfield during August 1957.

BERU Senior Rose Bowl*: Mr. V. J. Williams (VE3KE), B.E.R.U. Senior Contest Winner.

BERU Junior Rose Bowl*: Mr. J. C. van Wyk (ZS6R), B.E.R.U. Junior Contest Winner.

BERU Receiving Rose Bowl: W/Cdr. A. R. Gilding (G3KSH), B.E.R.U. Receiving Contest Winner.

Col. Thomas Rose Bowl: Mr. F. J. U. Ritson (G5RI), Leading U.K. entrant in B.E.R.U. Senior Contest.

N.F.D. Shield and Miniature Replica: Slough Group.

N.F.D. Shield Miniature Replicas:

160m	Wirral Group.
80m	Gloucester Group.
40m	Gravesend Group.
20m	Croydon Group.
15m	Stamford Group.
10m	High Wycombe Group

Scottish N.F.D. Trophy and Miniature Replica: Aberdeen Group.

Bristol N.F.D. Trophy: Port Talbot Group.

**Due to the risk involved in sending the Silver Rose Bowls abroad, miniatures only will be forwarded to the winners. Their names will, however, be engraved on the respective Bowls.*

The R.S.G.B. QSL Bureau and the New Postage Rates

THE increase in postage rates will have a considerable effect on the working of the QSL Bureau, both in the additional cost of sending packets of cards to other Bureaux and also on the postage which members will have to pay to collect their cards.

The minimum postage rate is now 3d. for 1 oz. and 4½d. for 2 oz.

Our advice is that those members who have a considerable number of envelopes on file should send stamps to bring the postage up to 4½d. Those who have only one envelope on file may prefer to send in a new supply or even to pay the postage-due when the understamped letter is delivered.

THE EXTRA STAMPS SHOULD BE SENT DIRECT TO THE SUB-MANAGER CONCERNED AND NOT TO G2MI OR TO HEADQUARTERS.

A list of the Sub-managers and the call-sign groups which they cover is given below:

All G2 calls.	*Mr. G. Verrill 64 Forton Road, Gosport, Hants.*
G3, 4 and 5-two-letter calls & GC	*Mr. P. Jones, 94 Holme Lacy Road, Hereford.*
G6 calls.	*Mr. A. J. Mathews, 62 Ashlands Road, Hesters Way Estate, Cheltenham.*
G8 calls.	*Mr. A. W. Gover, 30 Amblecote Close, London, S.E.12.*
G3AAA-BZZ.	*Mr. M. Hassall, 99 Shenstone Valley Road, Quinton, Birmingham.*
G3CAA-DZZ.	*Mr. C. A. Bradbury, 13 Salisbury Road, Cheltenham.*
G3EAA-HZZ.	*Mr. W. J. Green, 82 Bloomfield Avenue, Bath.*
G3IAA-KZZ & BRS Nos.	*Mr. C. Usher, 24 Carlisle Road, Dartford, Kent.*
G3LAA upwards	*Mr. G. C. Voller, 13 Marlborough Road, Ashford, Middlesex.*
GD calls	*Mr. T. R. Moore, "Glyn Moar," St. John's, Isle of Man.*
GI calls	*Mr. W. H. Martin, "Swallow Lodge," Greenisland, Co. Antrim, N.I.*
GM calls	*Mr. D. Macadie, 154 Kingsacre Road, Glasgow S.4.*
GW calls.	*Mr. J. L. Reid, 28 Walterston Road, Gabalfa, Cardiff.*

Wherever possible, in future, envelopes for the collection of cards should be sent direct to your sub-manager and not to G2MI or to Headquarters. It should be noted, however that CARDS should not be sent to the sub-manager unless they also are in a call-sign group for which he holds envelopes. For example:—a G3J—can send any cards he may have for calls in the series G3IAA-KZZ, to his own sub-manager, with his envelopes.

Except as stated above sending cards for general distribution to the Sub-managers only involves the cards in delay and the Society in needless expense.

The list of Sub-Managers shown above will appear regularly each month in the R.S.G.B. BULLETIN.

R.S.G.B. Recorded Lecture Library

THE following recorded lectures are available on loan to R.S.G.B. Groups and Affiliated Societies:

"Aerials," by F. Charman, M.B.E. (G6CJ), 7·5 i.p.s. (50 minutes).

"Amateur Radio in the Antarctic," by Roth Jones (VK3BG), 7·5 i.p.s. (40 minutes).

"Astronomy and Cosmology," by Dr. Woolley (The Astronomer Royal), 3·75 i.p.s. (40 minutes).[2]

"Disc and Tape Recording," by H. A. M. Clark, M.I.E.E. (G6OT), 7·5 i.p.s. (90 minutes).

"The Engineer and Society," by Capt. P. P. Eckersley, M.I.E.E., 7·5 i.p.s. (75 minutes).

"Inter-planetary Travel," by W. A. Scarr, M.A. (G2WS), 7·5 i.p.s. (50 minutes).

"Hints on Mobile Operation," by C. H. L. Edwards, A.M.I.E.E. (G8TL), 7·5 i.p.s. (60 minutes).

"Radio through the Years," by Capt. P. P. Eckersley, M.I.E.E., 7·5 i.p.s. (60 minutes).

"Receivers," by R. H. Hammans (G2IG), 7·5 i.p.s. (55 minutes).

"Transmitter Design and TVI," by N. Shires (G3BTM), 7·5 i.p.s. (55 minutes).

"Two Metres," by W. H. Allen, M.B.E. (G2UJ), 3·75 i.p.s. (50 minutes).[2]

"V.H.F.", by Sir Noel Ashbridge, 7·5 i.p.s. (80 minutes).

"V.H.F. Propagation," by Ed. Tilton (W1HDQ), 3·75 i.p.s. (60 minutes).[1]

"V.H.F./U.H.F. Convention 1957" (Lectures and speeches), 3·75 i.p.s. (120 minutes).

"World-wide Commercial Communication," by L. Parnell (G8PP), 3·75 i.p.s. (75 minutes).[2]

All recordings on standard twin track.

[1] Re-recorded for the R.S.G.B. by the courtesy of the A.R.R.L.
[2] On loan to the R.S.G.B. from Joe Marctu.

Applications to book lectures should be made as far in advance as possible and should be sent to **Mr. E. Fish (G2HCZ), 107 Eton Road, Ilford, Essex.** When applying, the type of recorder to be used for the play-back should be stated. Those borrowing tapes are asked to take great care of them and to return them promptly by registered post.

London Lecture Meeting

AN attendance of nearly 100 was recorded at the meeting of the Society held in the Lecture Theatre of the Electric Lamp Manufacturers' Association, Savoy Embankment, London, S.W.1 on Friday, September 27, 1957 when Mr. Sant Kharbanda (G2PU) lectured on " Recent Trends in Aerial Design for the Amateur." During the lecture Mr. Kharbanda showed examples of the Bi-square and other new Labgear aerials.

The chair was taken by the Executive Vice-President (Mr. L. E. Newnham, B.Sc., G6NZ) who had the support of Council Members K. E. S. Ellis (G5KW), W. H. Matthews (G2CD) and W. R. Metcalfe (G3DQ).

Messrs. B. Davis (G2BZ), G. M. C. Stone (G3FZL), C. E. Newton (G2FKZ) and G. A. Bird (G4ZU) were among those who joined in the discussion.

A vote of thanks to the lecturer was proposed by Mr. Bird.

(It is hoped to publish Mr. Kharbanda's paper in a future issue of the BULLETIN.—EDITOR).

Society Christmas Card

THE Council has decided to make available to members a distinctive Society Christmas card at a price of 10/- per dozen, including envelopes. The card is being printed by the firm of W. R. Royle & Son Ltd., of London, one of the best-known names in quality printing circles.

Orders for cards will be dealt with in strict rotation, as initial supplies may be limited.

R.S.G.B. Amateur Radio Call Book

THE 1957-58 edition of the R.S.G.B. *Amateur Radio Call Book* is now printing and stocks are expected to become available within the next few weeks.

Due to increased production costs the price of the new edition has been fixed at 3/6 (4/- post free). The new edition will be the most complete ever produced as it is based, for the first time, on information made available to the Society by the G.P.O.

R.S.G.B. News Bulletins

AS R.S.G.B. News Bulletins are now transmitted twice each Sunday on 3·6 Mc/s, twice on 7·1 Mc/s and five times on frequencies in the 145 Mc/s band, the Council has decided that the need for a Morse Resumé has disappeared.

The Council has also recognized that it is frequently difficult to convey in a Morse Resumé the full sense of certain matters mentioned in the telephony bulletin.

GB2RS Schedule

AS from Sunday, October 20, 1957, the transmissions on 7 Mc/s will take place at 10.30 a.m. (London) and 12.30 p.m. (Yorkshire) instead of, as at present, 10.15 a.m. and 12.15 p.m.

Increased Postage Rates

NOW that postage rates have increased, members are asked, when writing to Headquarters, to enclose a 3d. stamp if a reply is required.

Receipts

IN order to reduce expenditure receipts for subscriptions paid by cheque or postal order will, in future, not be sent unless especially requested. Receipts will be drawn as usual and each member's copy kept on file at Headquarters for at least six months.

D-Xtraordinary

THE caption printed beneath the blocks used to illustrate the account published last month of the outstanding DX achievements of Herb. Bartlett, G5QA, and Jack Parminter, ZL2OU, stated that the former favours an HRO for reception. In point of fact Herb. Bartlett has been using an Eddystone 888 receiver with great success for the past 12 months.

The photograph used for the block was taken before the 888 was installed, hence the omission.

Current Comment **Continued from page 167**

Maybe there will be a better response this year—but only if members realize that nine days remain to do something about it!

"Not later than October 24 . . .". Remember the date!

Money In . . .

WHEN last month's *Comment* was written about the literally vital importance of the advertiser to the continued existence of this (or any) magazine, it was not known that the September BULLETIN would contain almost a record number of advertisement pages.

While this is a very satisfactory state of affairs from the mundane, financial viewpoint of bringing in important revenue to this magazine, another way of looking at it is from the advertiser's angle: clearly, he regards R.S.G.B. members as people worth talking to through the medium of his announcements, and as people likely to follow the oft-printed exhortation " Support BULLETIN advertisers."

Otherwise, he wouldn't bother to spend good money on *being* a BULLETIN advertiser!

. . . And Money Out

ANY increase in revenue such as the one referred to in the preceding *Comment* becomes of special importance not simply by reason of the steady rise in all sorts of costs with which the Society is faced, but by reason of the immediate, sharp and swingeing imposition of extra postal charges which came into force this month.

To a small business undertaking of any type, where inflation has imposed the need for a constant watch on expenditure, this latest increase in postal rates can wipe out all the small but useful economies that may have been made to date.

For the R.S.G.B. the increases will mean digging deep for almost another thousand pounds a year, the bulk of which will go towards posting the BULLETIN. This is going to represent a sizeable slice of the Society's total income.

J. H.

Council Proceedings

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Monday, August 26, 1957, at 6 p.m.

Present: The President (Mr. D. A. Findlay in the Chair), Messrs. W. H. Allen, H. A. Bartlett, C. H. L. Edwards, K. E. S. Ellis, W. J. Green, J. H. Hum, W. H. Matthews, W. R. Metcalfe, L. E. Newnham, W. A. Scarr, John Clarricoats (General Secretary) and John A. Rouse (Deputy General Secretary).

Apologies: Apologies for absence were submitted on behalf of Messrs. E. G. Ingram and A. O. Milne.

Absent: Messrs. R. H. Hammans, F. Hicks-Arnold and H. W. Mitchell.

* * *

Committees

Minutes of meetings of the Handbook Sub-Committee and the Exhibition Committee were submitted as Reports.

Resolved to receive the Reports and the Recommendations contained therein.

I.G.Y.

A Progress Report was submitted by the I.G.Y. Co-ordinators.

Resolved to receive the Report and to authorize the Co-ordinators to incur an expenditure not exceeding £100 during the period from July 1957 to December 31, 1958.

Membership

Resolved (i) to elect 74 Corporate Members and 11 Associates; (ii) to grant Corporate Membership to one Associate who had applied for transfer.

It was reported that of the 619 members whose subscription became due on May 1, 1957, 69 became three months overdue on July 31, 1957, and that 15 of the 69 members had written to resign.

Election of Council

Nominations were made to fill the vacancies in the Council that will occur on December 31, 1957.

Council Meetings

After considering correspondence received from groups of members it was *Resolved* to take no action on an earlier suggestion that the Council should meet quarterly or bi-monthly.

Subscription Rates

Resolved that Article 19 should be amended to read:

" The Annual Subscription shall be £2 10s. for Corporate Members and £1 5s. for Associates or such smaller sums as the Council may decide from time to time."

The Secretary was instructed to obtain the approval of the Board of Trade to the proposal to amend Article 19. In the event of the Board of Trade raising no objection it was agreed to submit a Special Resolution to the membership at an Extraordinary General Meeting of the Society on December 13, 1957. (The Board of Trade have raised no objection.—EDITOR).

An earlier proposal to amend Article 19 to read:

" The annual subscription shall be such sums as the Council may decide from time to time."

was not adopted.

Council

Resolved to constitute an *ad hoc* Committee of three members of the Council to examine Articles 27 and 28 with a view to submitting proposals for amendment if necessary.

Radio Hobbies Exhibition

Resolved to accept an offer made by Mr. P. A. Thorogood to donate a silver plaque for award in connection with a competition for the best piece of home constructed equipment exhibited on the Society's stands at the Radio Hobbies Exhibition.

Amateur Radio Handbook

The President and Mr. Hum reported upon a meeting they had had with Mr. Lewer to discuss the reasons why it will not be possible to publish a new edition of the Handbook this year.

Mr. Lewer had stated that the chief reason for the delay was due to the failure on the part of certain contributors to submit copy sufficiently early in the year. In other cases manuscripts had to be returned to contributors for amendment. Mr. Lewer anticipated that the earliest date for the Handbook to be published would be April 1958.

Region I News

In connection with a suggestion put forward in Region I News it was agreed to inform the Region I Division Secretariat that it is the view of the R.S.G.B. that little point would be served by holding a meeting of Region I Societies during the summer of 1959, bearing in mind that an I.T.U. Conference will open in Geneva on July 1 of that year. It was further agreed to suggest to the Secretariat that it would be wiser to hold a Region I Conference during the autumn of 1958 in order to formulate plans for the Geneva Conference.

I.A.R.U. Calendar No. 54

Resolved to record an " aye " vote in favour of the election of Radio Club of Costa Rica to membership of the I.A.R.U.

News Bulletin Service

It was reported that the G.P.O. had granted permission for the R.S.G.B. News Bulletin Service to be extended to frequencies in the exclusive amateur portions of the 7 and 144 Mc/s bands. (See announcement, page 138, September 1957 BULLETIN.—EDITOR).

Convention

It was reported that the Scarborough Amateur Radio Club were of the opinion that they could organize a National Convention in that town or in Bridlington during the middle week of September 1958. It was agreed to await a further report.

London Lecture Meetings

It was reported that a Lecture on " Microwave Link Developments " would be given at the meeting on November 1, 1957.

Regional Representatives

It was reported that Messrs. Hardie, Macadie and Douglas had for various reasons declined to be renominated for the office of Representative in Regions 12, 14 and 15 respectively.

It was agreed to reorganize Region 5 and to set up a new Region 16 (East Anglia) to comprise the Counties of Essex (outside London Region), Norfolk and Suffolk. (See announcement page 142, September 1957 BULLETIN.—EDITOR).

The meeting terminated at 9.10 p.m.

Region 1 Trophies

LIVERPOOL Group have the distinction of being the first group in Region 1 to win both the Region 1 Field Day and the R.R.'s Trophy for the highest placed Region 1 group in N.F.D. in the same year. Well done!

Regional Meetings

South Wales Meeting

MORE than 120 members and friends attended the South Wales Regional Meeting at the Park Hotel, Cardiff, on September 21, 1957—one of the most successful meetings of its type held since the war. The Council was represented by Messrs. D. A. Findlay, D.F.C., G3BZG (President), W. R. Metcalfe (Honorary Treasurer), Council Members C. H. L. Edwards, G8TL, and K. E. S. Ellis, G5KW, and Headquarters staff by J. A. Rouse, G2AHL (Deputy General Secretary).

Opening the business meeting, the Regional Representative, C. H. Parsons (GW8NP), welcomed members and mentioned the fine co-operation of the hotel management in making the meeting possible. Mr. Parsons went on to say that greetings had been received from Bert Hay (VK2AGW) and Austin Forsyth (G6FO), one time District 10 Representative. Mr. Parsons then introduced the President who expressed his great pleasure at being present at such an excellently organized and well attended meeting.

Three main points came from the discussions which followed. The first concerned representation, the outcome being the nomination of A. C. Williams (GW5VX) as Zonal Representative. The second related to reviews of commercial equipment in the BULLETIN, most members feeling that such reviews would be a most valuable service. Thirdly, it appeared that there was a certain amount of uncertainty in regard to licence matters, particularly insofar as log keeping is concerned. A resolution, asking the Council to give members authoritative advice on such matters, was passed unanimously.

During the afternoon, Mr. Metcalfe presented the *Metcalfe Trophy* to Tom Higginson (GW3AHN), the leading station in the Low Power Section of the 1956 R.S.G.B. Telephony Contest.

After high tea, a mammoth draw took place, the highlight being the winning of a CR300 receiver complete with power pack by a sightless member, S. H. Weaver (GW3ITQ). Those who generously donated the scores of gifts were as follows:

Mr. John Banner, M.B.E. (GW3ZV); Belling & Lee Ltd.; British Insulated Callender's Cables Ltd.; Mr. V. J. Bartlett (GW5BI); Chapman & Hall Ltd.; Cosmocord Ltd.; Dubilier Condenser Co. Ltd.; Enthoven Solders Ltd.; Erie Resistor Ltd.; Iliffe & Sons Ltd.; Jackson Bros. (London) Ltd.; C. Marks & Co.; Measuring Instruments (Pullin) Ltd.; McMurdo Instrument Co. Ltd.; Minnesota Mining & Manufacturing Co. Ltd.; Mullard Ltd.; Multicore Solders Ltd.; Painton & Co. Ltd.; Panda Radio Co. Ltd.; Mr. C. H. Parsons (GW8NP); Sir Isaac Pitman & Sons Ltd.; Siemens-Ediswan Ltd.; Short Wave Magazine Ltd.; Standard Telephones & Cables Ltd.; Stratton & Co. Ltd.; Mr. E. F. Sully; Taylor Electrical Instruments Ltd.; The Telegraph Condenser Co. Ltd.; Webb's Radio.

Following the draw, G. A. Bird (G4ZU), gave an illustrated lecture on " The Minibeam " and answered many questions.

A feature of the meeting was a small but interesting exhibition of products for the amateur arranged by E. J. Philpott's Metalworks Ltd. (cabinets and metalwork), Stratton & Co. Ltd. (Eddystone receivers and components), KW Electronics Ltd. (Geloso receivers, transmitters and components, and KW Electronics aerials and constructional kits) and Panda Radio Ltd. (transmitters and Minibeams).

A vote of thanks to the organizers, proposed by Mr. G. E. Evans (GW2AVV), was carried with acclamation.

North Wales Meeting

ABOUT 40 members, including about a dozen from Region 1, attended the Region 11 meeting at Nant Hall Hotel, Prestatyn, on Sunday, September 29, 1957.

The arrangements were in the capable hands of the Flintshire C.R. (John Lawrence, GW3JGA) who extended a warm welcome to the representatives of the Council and the visitors.

In the absence of the R.R. (Fergus Southworth, GW2CCU), who was on a Royal Observer Corps course, the Chair was taken by Mr. L. E. Newnham, B.Sc., G6NZ (Executive Vice-President).

After brief addresses by the Chairman and General Secretary the meeting was thrown open for discussion when many interesting points were raised and fully dealt with by the official delegates.

Earlier in the day GW3JGA/A had " talked in " on Top Band a number of mobile stations.

After tea, Council Member Frank Hicks-Arnold (G6MB) lectured for more than an hour on " Printed Circuit Techniques." The lecture, arranged at short notice as a surprise item, was one of the high spots in a full programme.

Among the visitors were B. O'Brien, G2AMV (Region 1 Representative), L. E. Goldsbrough, G3ERB (C. R., Cheshire), F. N. Kendrick, G3CSG (T. R., Wirral), H. Singh (G3BOC) and N. Routledge (G3DDO).

The draw for prizes donated by local members was well supported. Mrs. Routledge drew the lucky numbers.

National Radio Show 1957

THE theme of the Society's stand at the National Radio Show, Earls Court, this year was simple equipment for the newcomer. Nearly 2,000 information sheets describing the items displayed were sold, more than 700 members signed the Visitors' Book while 57 new members—the same number as last year—were enrolled.

The stand was again under the management of F. F. Ruth (G2BRH) who had the assistance of many members who undertook stand duty. The arrangements were made by the Exhibition Committee under the chairmanship of C. H. L. Edwards (G8TL).

WANTED

Amateur-built equipment of all types, from complete transmitters to simple gadgets, is urgently required for display on the Home Constructors' stands at the Radio Hobbies Exhibition at the Royal Horticultural Society's Old Hall, London, from October 23 to 26 inclusive. All gear loaned will be covered by the Society's insurance from the time it leaves members' homes until its return after the Exhibition.

A competition for a Silver Plaque (to be won outright) and cash prizes is being run in connection with the Exhibition. All items on display will automatically be entered in the competition.

Members wishing to enter items of home-built equipment are invited to send details to the Chairman of the Exhibition Committee,

C. H. L. EDWARDS (G8TL),
28 Morgan Crescent, Theydon Bois, Essex,

so that the necessary display cards may be prepared.

Tests & Contests

D/F National Final

PLACED third in last year's event, J. K. Finch of High Wycombe was the winner of the 1957 D/F National Final held in Buckinghamshire on September 15; E. L. Mollart of Marlow, entering the final for the first time, was second. They were the only two of the 12 competitors to find both hidden stations. The contest, organized by G. T. Peck, took place in fine weather—perhaps a little too warm at the time for some contestants.

The " A " station was located on top of a cutting on the main A40 road at Dashwood Hill only 150 yards from the starting point, whilst " B " station was concealed in a copse near Cholesbury, 11 miles away. The two stations and the start were all in a straight line on high ground, and in visual range.

All 12 competitors started promptly at 13.30 and the combination of the unexpected signal strengths and bearings gave them something to puzzle out. In fact only seven were able to find the " A " station G8VZ/P although it was a matter of yards from the road on which they had started, and only three located the " B " station. Tucked away in the undergrowth at Cholesbury, G3FAS/P transmitted steadily on schedule for 2 hours 20 minutes before being found by Mr. Finch only 10 minutes before the close-down. Mr. Mollart followed five minutes later. T. C. Reynolds, winner of the last two finals, located the " B " station shortly before 1600 but failed to find station " A," and R. D. Charlton found both stations but only reached station " B " after it had closed down.

At the conclusion of the contest competitors with their drivers and supporters enjoyed tea at the Little Abbey Hotel, Great Missenden, where they were joined by D. A. Findlay (G3BZG), President of the R.S.G.B.

The Wycombe Challenge Trophy was presented to Mr. Finch by Mrs. Norman Turner together with prizes donated by Norman Turner (G4NT) to the winners and runners-up.

After Mr. Peck had given a brief outline of the difficulties facing the competitors and an account of the results, Mr. Findlay expressed his pleasure at being present and congratulated the organizer on the excellence of the arrangements.

Thanks were also expressed to Alex. Dixon, operator of G3FAS/P and J. Redrup, G8VZ.

J. K. Finch, winner of the D/F National Final 1957, receiving the Wycombe Challenge Trophy from Mrs. Norman Turner.

Second 1·8 Mc/s Contest, 1957

THE rules for this contest will be the same as those for the First Top Band Contest, 1957, published on page 374 of the February 1957 issue of the R.S.G.B. BULLETIN, the only alterations being as follows:

Rule 2. The contest will start at 22.00 G.M.T. on Saturday, November 9, and end at 08.00 G.M.T. on Sunday, November 10.

Rule 5. Entries must be addressed to the Contests Committee, Radio Society of Great Britain, New Ruskin House, Little Russell Street, London, W.C.1, and must bear a postmark not later than Monday, November 18, 1957.

Rule 12. The *Victor Desmond Trophy* will be awarded to the station in the British Isles with the highest total score, and Certificates of Merit to the stations placed second and third. In addition, the *Maitland Trophy* will be awarded to the Scottish station with the highest aggregate number of points in this contest combined with the First 1·8 Mc/s Contest, 1958.

Contests Diary

1957-8

October 26-28	-	*CQ* World Wide DX Contest (phone)[1]
November 9-10	-	Second Top Band Contest[2]
November 16-17	-	Second 70 Mc/s Contest[3]
November 23-24	-	21-28 Mc/s Telephony Contest[5]
November 30 to December 2	-	*CQ* World Wide DX Contest (c.w.)[1]
January 25-26	-	B.E.R.U. Contest[4]

[1] See page 145, R.S.G.B. Bulletin, September, 1957.
[2] See this page
[3] See page 145, R.S.G.B. Bulletin, September, 1957.
[4] See page 27, R.S.G.B. Bulletin, July, 1957.
[5] See page 516, R.S.G.B. Bulletin, May, 1957.

Club Stations

MEMBERS of affiliated clubs are reminded that the conditions governing the operation of club stations are the same as for personal licences, except that in order that the licensee need not be in constant attendance, the G.P.O. are prepared to approve as additional operators (who may act in place of the licensee) the licensees of other amateur stations. The call-sign allocated to a club is for use by the club only, and the call-sign may therefore be used only by the licensee, or one of the duly authorized additional operators, when operating the club station. It is permissible for a club station to be operated from an alternative address but individual members of the club are not permitted to use the club call except on club premises and only then if they are approved operators.

Silent Keys

DERMOT O'DWYER (ex-EI8B)

The death is announced from Dublin of Dermot O'Dwyer, ex-EI8B, well-known to old timers as one of the two operators of GW18B, a famous station in the late '20's. Dermot did most of the operating, brother Donel built the gear. Their shack at Leeson Street, a hot spot during the Rebellion, was an amazing place, untidy to the last degree but the gear worked, as the thousands of QSL cards on the wall bore testimony.

Dermot had not been active recently but at the I.R.T.S. meeting in Dublin two years ago he came along to meet some of his old friends—including the writer of this brief tribute to his memory. Those who knew him mourn his passing.—J. C.

R. C. MURDEN (G3GCG)

It is with deep regret that we record the death on August 21, 1957, of Rupert Murden, G3GCG of Bexleyheath, Kent, after a long illness. Although not active in recent times, he took a great interest in local happenings and was always willing to help the newcomer. To his widow and young daughter we extend our sympathy in their great loss.—N.K.R.S.

Letters to the Editor . . .

Neither the Editor nor the Council of the Radio Society of Great Britain can accept responsibility for views expressed by correspondents.

Amateur v. Commercial

DEAR SIR,—Being very much in favour of the use of amateur built equipment I cannot let pass one comment of Brigadier Cole's in the July issue.

At the end of the second paragraph of his letter G2EC says, referring to advocates of home-built equipment in the June issue, " . . . our June critics seek to place a halo around the head of the semi-skilled manual labourer."

It would seem that G2EC has been unlucky in that he has not been able to attend any of the recent exhibitions staged by the Society. If he had he would have seen the excellent craftmanship of many of our members displayed there and in particular items of equipment constructed by the T.R. for this area, Mr. E. W. Yeomanson (G3IIR). I am quite sure that a 'phone call to G3IIR would result in an invitation to call and inspect some really first-class amateur built equipment. If, after such a visit, Brigadier Cole still considered such products the work of a semi-skilled manual labourer " then I am the Man in the Moon! "

I might remind G3AAM, who draws attention to the fact that the home constructor uses commercially made resistors, condensers etc., that to make these items oneself would necessitate a study of resistor and condenser design but would in no way contribute to one's knowledge of the design of radio equipment. It is for the latter reason that most of us go in for Amateur Radio.

In reply to Mr. Edwards (G3DO) who states that " the re-sale value of home built gear is practically nil " I can only remark that I am astounded that any amateur should want to place a cash value on our hobby. The fascination of Amateur Radio is that it can be all things to all men and I do not care a hang *what* equipment the other chap uses. For me there is far more pleasure in working across London with a home-built Top Band transmitter and receiver than in working VKs and ZLs with commercially made equipment. With the latter I should expect to work DX but the former provides me with a permanent source of wonderment. The fact that my gear is falling to pieces and still works is nothing short of a miracle!

Yours faithfully,

Sydenham, London, S.E.26. E. RAYNER (G6IO).

Folded Dipoles

DEAR SIR,—I wonder if other amateurs have encountered trouble in radiating a signal using a folded dipole? During recent months on 14 Mc/s, I have been using a simple folded dipole made from 300 ohm flat twin transmission line. A piece one-half wavelength long is shorted at the ends and one wire opened at the centre where it is connected to a feeder made of any length of the same line.

My aerial was supported with hemp ropes which shrunk and twisted when it rained, producing half a dozen twists in each limb of the dipole. When this occured I found that stations (even short skip stations) became very difficult to work although meter readings of aerial current and input current were apparently unchanged.

A remedy, which is to my satisfaction a cure, is this. At each end a small weight on a piece of stiff wire about a foot long hangs from the insulator and effectively prevents the ropes from being able to twist the dipole.

This effect fooled me for a long time. It may account for some of the unpopularity of this simple aerial and its two-band counterpart.

Yours faithfully,

Ealing, London W5. M. C. HATELY, B.Sc. (Eng.) (G3HAT)

7 Mc/s Operation

DEAR SIR,—I heartily agree with G3JEG in his letter published in the September issue of the BULLETIN regarding 7 Mc/s operation.

Surely it has always been understood that the low end of this and other allocated bands should be devoted entirely to c.w. while the remaining major section is given over to telephony.

I limit myself to 7005/7055 crystal controlled and find this ample space to enjoy myself, but any narrowing of this 50 kc/s by thoughtlessness on the part of R/T operators is strongly condemned.

Recently I tactfully pointed out to one offender that a " Gentleman's Agreement " existed regarding c.w./R/T band allocation, but his reaction was far from polite.

I could be rather forthright in my remarks about " The Blather Boys," but wish to enjoy in peace the wonderful facilities Amateur Radio affords me. Although I graduated in the days of fixed gap and magnetic detector, yet I still marvel when my call is returned.

Yours faithfully,

Tiverton, Devon. H. S. NAYLOR (G3AKO).

New Subscription Rates

Home Corporate Members are reminded that the annual subscription to the Society is now 30/-. Members who renew their subscriptions by means of a Bankers' Order are asked to amend the Order to the new rate. A Bankers' Order can be obtained on application to Headquarters

Novice and Technician Licences

DEAR SIR,—In the comments and correspondence concerning Novice and Technician licences, the howls of protest at any possible lowering of the standards of the test for any Novice licence have tended to distract attention from the much better case existing for Technician licences, where such considerations do not arise. In this case, the arrangements would be simple: pass the R.A.E. or its equivalent, and go on the air on 420 Mc/s and upwards. Pass the c.w. test, and you can go on the lower frequencies. There are very many people who have not the slightest intention of using c.w. once licensed (and why should they?). Such a system would be ideal for them, at the same time increasing the v.h.f. band population.

Personally I can see no reason at all for retaining the c.w. test. In 1957 no emergency traffic is likely to appear on amateur bands using c.w. in the 'phone sections. Aircraft who can call in as a last resort on an amateur band are not even fitted with keys nowadays—so let those that like c.w. keep it, but don't please inflict it on the rest of us. After all, one does not have to pass an exam. in French to do German, so why c.w. for phone? And if the emergency business rankles, why, then let us all take riding lessons in case the power fails and we have to resort to horses for message carrying. . . .

(Maybe I am biased; after two c.w. QSOs in 10 years of solid 'phone operation, I now have to swot it all up again to pass a c.w. test in VE—to go on phone again!)

Yours faithfully,

Gt. Baddow, Essex. M. BARLOW (G3CVO).

Boy Scout Jubilee Jamboree

DEAR SIR,—I was delighted to read the excellent account in the September issue of your Journal of the operation of the Amateur Radio station at the Jubilee Jamboree. Copies of that issue have been passed to the Chief Scout (Lord Rowallan) and to Lord Peter Baden-Powell.

I take this opportunity of saying how greatly we enjoyed having the co-operation of radio amateurs and I thank them, through you, for the very excellent performance they put up. It was quite obvious to all of us who are not Amateur Radio enthusiasts that they had achieved a tremendous standard and it is certainly very fitting that in this Centenary Jubilee Year we should have been able to keep the World of Scouting informed in this way of minute-to-minute events so that our members could join in the celebrations.

We are all tremendously grateful to you and your colleagues.

Yours sincerely,

The Boy Scouts Association,
25 Buckingham Palace Road,
London, S.W.1. K. H. STEVENS, Organising Commissioner.

The " Bristol " Trophy

DEAR SIR,—While the N.F.D. results are of great interest to us as competitors, there is one facet which grieves us—to wit, the qualifications governing the award of the " Bristol " trophy. This year, Port Talbot group is adjudged the winner, the single station having scored the highest number of points.

A study of the results will show that in several groups which entered *two* stations, *one* of the two collected more points than Port Talbot's 676:—

Slough	935
Bristol	756
Cambridge	712
Stourbridge	775
Stamford	845
Gravesend	700
Weston-s-Mare	754
Pontefract	714
Croydon	688

Surely the performance of any of these groups is better than that of Port Talbot?

It might be argued that the single station entries are by small groups without the operators or resources for two stations, and that effectively the " Bristol " Trophy is an award for the winner of the N.F.D. " Minor " Contest; but such an idea has no real validity. We in Pontefract area must be one of the smallest groups in the country. Our maximum operating strength (discounting two out-of-town visitors who had the odd QSO) at N.F.D. this year was five, plus an ex-member now living near Doncaster, whom we " borrowed." The half-dozen included all who were available who could in some way operate a Morse key. We nevertheless ran up a creditable score.

We won no trophy or plaque. Yet, if we had abandoned our ideas of running two stations, and concentrated all efforts on our higher scoring one, or entered one station with bands selected for scoring potential, obviously we could have won the " Bristol " trophy. So equally might any other of the stations listed above. However, we shall still run two stations in the future. *Per ardua ad N.F.D. Shield!*

In view of the fact that the " Bristol " Trophy has yet to be awarded to any group which really earned it, we suggest that the donors reconsider their conditions, so that the trophy may be awarded to a deserving group. The following suggestions are offered:—

1. To the group with the highest aggregate score operating in Yorkshire, Lancashire or more northerly counties.
2. To the group having a station scoring most points from contacts with *portable* stations.
3. To the group having a station with the highest score.

(With suggestions 2 and 3, single or double station groups could compete on equal terms).

We would welcome the views of other competing groups (views from non-competing groups or individuals are not required, as the issue does not concern them) either through the BULLETIN, or direct.

Yours faithfully,
W. FARRAR (G3ESP)
on behalf of the N.F.D. operators:
R. SHADLOCK (G3US)
M. H. MUNROE (G6MF)
J. ARUNDEL (G3HCX)
G. MOORE (G3JQJ)
Pontefract, Yorks. J. B. WALKER (G3CYS)

Ham Spirit

DEAR SIR,—The letter from Mr. W. Farrar (G3ESP) published in the September issue prompts me to write to you on the subject of Ham Spirit.

When I first started up in this hobby some 11 years ago I was quite independent but soon realised that this could not continue and I was afforded immeasurable assistance by my local old timer. Subsequently as I became known locally as one interested in Amateur Radio I was similarly helped by the not-so-old amateurs. The help given by them was often of material nature such as parts from the junk box and literature, to say nothing of untold numbers of advisory conversations. I have for a considerable time wished to acknowledge all the help I have received from local amateurs and would certainly appreciate the chance to thank them through the medium of this publication.

Instances of the lack of Ham Spirit have also shown themselves, as is evidenced in the case where I travelled a fair distance by car, photographed a relatively well-known amateur's portable gear, printed, developed and enlarged the photograph, sent it to him and did not receive so much as an acknowledgment, let alone a letter of thanks. Also I recall the amateur who ignored my letter to him wherein I suggested he might care to borrow an aerial array for portable activity.

One incidence of inward Ham Spirit "out of the blue" came when an amateur travelled two miles just to deliver a QSL from another amateur and did not even wait for my thanks. Another was when in answer to a request I had made through a radio periodical for information about starting up on 2m, which is now my exclusive listening pasture. On a Sunday afternoon, shortly after the publication of my request, a well-known listener appeared having travelled from Malvern, Worcestershire to Melton Mowbray and gave me more information in an hour's conversation than any lengthy correspondence could have done. His parting gesture, apart from refusing any payment for petrol, etc., was to leave me a fully operational 2m 3-valve convertor, my first, for the ridiculous price of 27s. 6d.

However, Ham Spirit must be given as well as received and it is the former that must be of the greater frequency if it is to continue and I would suggest that G3ESP gives the information required on the German equipment irrespective of his previous disappointments for when the final CQ call is heard he will certainly be entered in the Big Log and get his QSL!

Yours truly,
Melton Mowbray, Leics. RICHARD WINTERS (B.R.S. 20133).

Poor Show

DEAR SIR,—I am reluctantly compelled to write in agreement with your correspondent, who recently complained of the apathetic attitude of members who request information through the medium of your *Can You Help?* requests published in the BULLETIN.

As a seconded officer at the Royal Aircraft Establishment, it is possible for me to put members in touch with the design authorities of certain Service equipment which subsequently become available to the general public.

In response to several inquiries I have taken advantage of my position in this respect with the result that some of my colleagues have been requested (in one case, instructed) to supply information of which they have first-hand knowledge.

In no case, to date, has my action been acknowledged by enquirers, neither have the recipients of inquiries been supplied with even a stamped addressed envelope.

Yours faithfully,
Farnborough, Hants. JOHN HARRIS (G3JJH).

Thanks Chaps

DEAR SIR,—Being an Overseas Corporate Member of the Society I should like to take advantage of your correspondence column to thank all the R.S.G.B. members I have met and visited since I came to England last July. The amazing spirit of friendship shown to me, a complete stranger, has been a revelation. The visit to R.S.G.B. Headquarters in July was a genuine thrill. To G3IDG, G3ANW, G3IDF and G3JUL I owe much for their kindness in showing me around your great City of London.

To the more than 40 Gs I have had the pleasure of meeting, plus the radio amateur clubs I have also visited as a guest, I can simply say, thanks fellows.

My one regret has been my inability to attend a gathering of the R.S.G.B. London Members' Luncheon Club. However, I hope to be over again in a couple of years and at that time take full advantage of the invitation. I look forward to renewing my contacts again when I return to the States in October.

Yours sincerely,
Kidderminster, Worcs. REGINALD H. CHERRILL (W3HQO).
Home address, Philadelphia, Pennsylvania.

INCREASED POSTAGE RATES

When writing to headquarters for information please enclose 3d. stamp for reply.

Regional and Club News

Bristol—Sixty members were present at the September meeting to hear an illustrated lecture on the Eddystone 888 Communications receiver given by J. N. Walker (G5JU). A short colour film taken by G3GON during N.F.D. was also shown. On October 18, J. A. Thomas (Avo Ltd.) will be giving an illustrated lecture on " The Development of the Avometer and its Manufacturing Techniques." *Hon. Secretary:* D. F. Davies (G3RQ), 51 Theresa Avenue, Bishopston, Bristol.

Bury Radio Society—Nearly 50 members and guests were present at the Society's Hamfest at the Derby Hotel on September 14. Following an excellent dinner, the Loyal Toast was proposed by John Crowther (G3KMM) and the toast " Amateur Radio—may it never QRT " by the Chairman, John E. Hodgkins (G3EJF). After the raffle, the film *Race for Life* was shown. At the meeting at the George Hotel, Kay Gardens, at 8 p.m. on November 12, T. C. Platt (G2GA) will give a talk entitled " An Old Timer Looks Back." *Hon. Secretary:* C. L. Robinson, 56 Avondale Avenue, Bury.

British Amateur Television Club (Chelmsford)—At the A.G.M. in September, a new committee was elected and G3KWD appointed TV net controller. Recent lectures have included " Amateur Colour Television," " Unusual Circuits " and G3CVO/T's final talk before going to Canada, " Clippers and Clamps." *Hon. Secretary:* John Tanner, 16 Norfolk Drive, Chelmsford. **(South-West Essex)**—After the A.G.M. on September 18, tape recordings from overseas TV groups were played and a lecture on camera tube construction given. Monthly lecture meetings are held throughout the winter and three cameras are under construction. *Hon. Secretary:* Martin Lilley, 25 Netherpark Drive, Romford.

Cornish Radio and Television Club—At the end of August members visited the B.B.C.'s North Hessary Tor Television Station on Dartmoor. Tea was provided by Plymouth Radio Society and G5ZT was visited during the evening. *Hon. Secretary:* J. Brown (G3LPB), Waterworks, Renryn, Cornwall.

Flintshire Radio Society—Monthly meetings were resumed on September 2 when F. L. Howes of the G.P.O. Engineering Dept. gave a talk on " The Uses of R.f. in Landline Communication." Those interested in R.A.E. instruction should communicate with the *Hon. Secretary:* J. Thornton Lawrence (GW3JGA), " Perranporth," East Avenue, Bryn Newydd, Prestatyn.

Grafton Radio Society—At the recent A.G.M., the following were elected: *President:* J. H. Clarke (G2AAN); *Vice-Presidents:* B. Randall (GW3ALE), W. H. Jennings (G2AHB), L. Kippin (G8PL), P. Beresford (G3AFC), J. A. Reading (G3RX) and C. T. Bird; *Hon. Chairman:* P. Beresford (G3AFC); *Hon. Vice-Chairman:* J. H. B. Mulcahy (G3JVV); *Hon. Secretary and Treasurer:* A. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex; *Committee Members:* E. Alban (G3JEA), P. Bernal (G3KQZ) and S. Legg (G3KNL).

Hartlepool's Amateur Radio Club—Meetings are held on Mondays at 7.30 p.m. above the " Farm Shop," Murray Street, West Hartlepool.

Leeds Amateur Radio Society—Meetings, which are held on Fridays at Swarthmore Educational Centre, 4 Woodhouse Square, have been arranged for October 18 (Talk on Army communications equipment), October 23 (Visit to Skelton Grange Power Station) and November 1 (Amplifier for Record Reproduction). Further information may be obtained from the *Hon. Secretary:* J. R. Hey, 40 Richmond Avenue, Headingley, Leeds 6.

Nottingham Amateur Radio Club—Meetings are held on Tuesdays and Thursdays at Woodthorpe House, Mansfield Road, from 7.15 p.m. to 10 p.m. for practical constructional work, Morse training, lectures and discussions. Prospective members are always welcome. The club station is active on Top Band. *Hon. Secretary:* F. V. Farnsworth, 32 Harrow Road, West Bridgford, Nottingham.

Nottingham and District Amateur Radio Society—The R.S.G.B. recorded lecture " TVI-proof Transmitter Design " by N. Shires (G3BTM), will be given at the meeting on October 18 at 7.30 p.m. at the Basford Hall Miner's Welfare, Nuthall Road, Cinderhill, Nottingham. *Hon. Secretary:* H. H. Pickering (G3DUL), 43 Plains Road, Mapperley, Nottingham.

Scunthorpe Amateur Radio Society—New members continue to enrol but the society would welcome more. Club secretaries within a radius of 50 miles are asked to communicate with the *Hon. Secretary:* J. Stace, 38 Skippingdale Road, Scunthorpe, with a view to arranging exchange visits.

Slade Radio Society—The Annual Dinner will be held at the Roe Buck Inn, High Street, Erdington, on October 19. The Mullard films *Mirror in the Sky* and *Transistors* will be shown at the Y.M.C.A., Snow Hill, Birmingham 4, on October 25. Two lectures from the R.S.G.B. library, " Astronomy and Cosmology " by the Astronomer Royal and " Interplanetary Travel " by W. A. Scarr (G2WS), and recordings of GB3SP will be played on November 8. The Slade Net will be on the air on November 1. *Hon. Secretary:* C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.

South Shields and District Amateur Radio Club—At the South Shields Annual Flower Show, equipment built by 17-year-old Owen Jackson (G3LKZ) was used under the call-sign GB3SFS. The transmitter comprised a Geloso v.f.o. driving a pair of parallel 807s running at 60 watts input using screen modulation. The aerial was of the G8KW type loaned by G8AO. Contacts were confined to 40 and 80m. On the night of the second day gale force winds blew down the marquee, luckily causing only slight damage to the club's stand. At the October meeting Mullard films will be shown. Prospective members and visitors are always welcome. *Hon. Secretary:* W. Dennell (G3ATA), 12 South Frederick Street, South Shields.

Stourbridge and District Amateur Radio Society—Meetings are now held at the Brotherhood Hall, Scotts Road, Stourbridge, at 8 p.m. on the first Tuesday in each month. Recent talks have included a description of a home-built receiver built by John Hogg (G2OG). *Hon. Secretary:* A. K. Davies, 48 Church Avenue, Amblecote, Stourbridge.

Torbay Amateur Radio Society—Recent talks at the Y.M.C.A., Torquay, have been by W. Jones (G3BBF) and by R. Barrat. A Junk Sale was held at the October meeting. *Hon. Secretary:* G. Western (G3LFL), 118 Salisbury Avenue, Barton, Torquay.

Welwyn Garden City—The General Secretary will be attending the open meeting of the Group on November 14 when he will speak on " The Next Two Years " with special reference to the impact of the forthcoming I.T.U. Conference on the Amateur Radio movement. This meeting is the annual " open house " which the Group holds for groups and clubs anywhere in the Home Counties who care to send members. Other attractions on November 14 include a showing of the new Esso Aviation colour film *The Deep Blue Sky* and a draw for several valuable items of equipment. The meeting will be held at the I.C.I. Recreation Club, Blackfan Road, Welwyn Garden City and will commence at 8 p.m.

Worthing and District Amateur Radio Club—At the A.G.M., the Chairman, Peter Robinson (G3KFH/T) and the Hon. Secretary, J. R. Tootill (B.R.S. 20543), 113 Kings Road, Lancing, were re-elected, with G. Bridge as Hon. Treasurer. Morse classes arranged by G3GVM are held at Beach House every fortnight. Club meetings are held on the second Monday in each month at the Adult Education Centre. Beginners are being specially catered for in this season's programme.

Representation

Change of Address

The address of Mr. R. A. E. Fronius, B.R.S. 15083 (representative for Brentwood), is now: (Staff) Warley Hospital, Brentwood, Essex.

R.S.G.B. BULLETIN PRODUCTION

TO enable the R.S.G.B. BULLETIN to be published in time for bulk postings to take place by not later than the 14th day of the month, the closing date for editorial copy, namely the 22nd day of the preceding month, must be strictly adhered to.

Feature contributors, Society Representatives and Club Secretaries will greatly assist the Editorial staff by posting copy to reach Headquarters by not later than the 20th of the month whenever possible.

Copy received after the 22nd day of the month will be held over for future use if still topical.

New Members

THE following were elected to Membership at the September 1957 Meeting of the Council:—

Corporate Members, Home (Licensed)

G2SB †J. W. BAKER, 13 Castle Drive, Heswall, Cheshire.
G2BJN †K. B. ROULSTON, 28/29 Church Gate, Loughborough, Leics.
G2CDB R. A. PITTOCK, 15 Sandringham Drive, Bramcote, Beeston, Notts.
G3AGX †L. D. COLLEY, 24 Skirbeck Road, Hull, E. Yorks.
G3EMI †M. P. HOPKINS, 48 Station Road, Long Marston, Herts.
G3FCV E. L. BARTHOLOMEW, 2 Palace Court, Watling Street, Gillingham, Kent.
G3GET P. J. COPPINS, 32 Hardwicke Road, Dover, Kent.
G3GHO †J. B. McCALL, 15 Hyde Close, Roade, Northants.
G3HMR †G. B. MOSER, 59 Highgate, Kendal, Westmorland.
G3HUB †M. E. J. HARRISON, Old School House, Sherbourne, Warwicks.
G3JCF C. FRY, 21 Suffolk Road, Newbury Park, Ilford, Essex.
G3KQQ C. A. MATTACKS, 307 Compton Buildings, Goswell Road, Finsbury, London, E.C.1.
G3KUT D. C. MILLS, 115 Audley Road, Hendon, London, N.W.4.
G3KYN A. R. DANIEL, 18b, Tyndalls Park Road, Bristol 8.
G3LLS H. STOCKLEY, B.Sc., 6 The Priory, Alcester, Warwicks.
G3LNM *R. Scrivens, 26 Newlands Green, Smethwick 40, Staffs.
G3LSR D. RUMBLE, 15 Albany Road, Sittingbourne, Kent.
G3LUH K. E. READER, 3 Balliol Road, Welling, Kent.
G3LUO C. H. EVANS, 39 Nevern Square, London, S.W.5.
G3LVQ W. BATES, 61 Whitfield Avenue, Glossop, Derbys.
G3LWD P. STONE, " Fairhurst," Crabble Road, Dover, Kent.
G3LWQ H. HILTON, 60 Montrose Drive, Southport, Lancs.
G3LWU G. P. BRISBAR, 15 Ash Grove, Wallasey, Cheshire.
G3LWY MRS. F. E. WOOLLEY, Rochmount, Sturton Road, Saxilby, Lincoln.
G8UI †F. J. DAWES, St. Leonards, 2 Greengatse Avenue, Mapperley, Nottingham, Notts.
GM3JGG R. SMITH, 21 Eskdale Drive, Ruthergien, Lanarks.
GW2CPU †D. I. MORGAN, 2 Pendre Cottages, Llanbadarn, Aberystwyth, Cards., N. Wales.
GW3ENN G. W. KING, 4 St. Marys Avenue, Barry, Glam., S. Wales.
GW3KBC J. L. CUTLER, 20 George Street, Llanrwst, Denbighs, N. Wales.
GW3LII D. CLAYTON, 3 Maindy Road, Ton Pentre, Rhondda, Glam., S. Wales.
GW3LJW L. D. V. TAYLOR, 20 North Drive, Rhyl, Flints, N. Wales.
GW5TJ †E. T. JAMES, 6 Fairview Terrace, Merthyr Tydfil, S. Wales.
GW5VX †A. C. WILLIAMS, 14 Holland Street, Port Talbot, Glam., S. Wales.
GW8MQ †J. MILLIE, 21 Steele Avenue, Carmarthen, S. Wales.

Corporate Members, Overseas (Licensed)

CN2AK T. RAMON, Villa Joelle, Valencia Street, Tangier, Morocco.
CN8FV Capt. G. W. SCHRYVER, Base MARS Director, 3926 Transportation Squadron, A.P.O. 113, U.S.A.F. Europe.
DL2GA Lieut. J. E. P. Philp, R. Signals, Officers' Mess, 2 L. of C. Signal Regt., B.F.P.O. 34.
EI4C H. W. Moss, Kilternan, Bonniconlon, Ballina, Co. Mayo, Eire.
EL1P L. W. HIBBERT, c/o P.A.A., Robertsfield, Liberia.
K5GJZ A. C. MITCHELL, 112 W. Ragley, Henderson, Texas, U.S.A.
K6IXF B. L. LANDSON, 112 Eye Street, Bakersfield, Calif., U.S.A.
KP4AEQ C. BRANDON, 5 Aqueduct Road, Guaynabo, Puerto Rico.
MP4BCI A. HORTON, Box 804, c/o BAPCO, Awali, Bahrain Island, Persian Gulf.
VE3EAM A. A. MILLIGAN, 81 Mayfield Avenue, Toronto 3, Ontario, Canada.
VE3MR M. ROSENTHAL, P.O. Box 304, Postal Station " F," Toronto 5, Ontario, Canada.
VE3RN H. L. FOSTER, 42 Anndale Drive, Willowdale, Ontario, Canada.
VE4TT T. H. TIMLICK, 1317 Magnus Avenue, Winnipeg 4, Canada.
VE5FN W. G. TILL, P.O. Box 143, Lloydminster, Sask., Canada.
VE6TF A. L. TUCKEY, 3332 38th Street, S.W., Calgary, Alta, Canada.
VK2AXD E. A. DRUITT, 13 Curtin Street, Griffith, N.S.W., Australia.
VK3AEL A. F. ELLIOTT, 31 Fenton Street, Ascot Vale, W.2, Melbourne, Victoria, Australia.
VK3AHR A. H. REID, 347 Darebin Road, Thornbury, Melbourne, N.17, Australia.
VP4LD F. O. THOMAS, c/o Government Wireless Station Quarters, Government Wireless Station, Piarco, Trinidad, B.W.I.
VP6JK C. E. P. WEATHERHEAD, Madron, Pine Hill, St. Michael, Barbados, B.W.I.
W1DWH J. P. MILLS, 147 Glenwood Avenue, Boston 36, Mass., U.S.A.
W1FZ E. T. JAMES, 65 North Main Street, Farmington, New Hampshire, U.S.A.
W2MZB K. ROSENBAUM, 37 Hickory Street, Islip, L.I., N.Y., U.S.A.
W3KUK R. H. EDWARDS, 29 E. Fornance Street, Norristown, Penna., U.S.A.
W3YLL H. C. JUNG, 213 North Tenth Street, Philadelphia 7, Penna., U.S.A.
W5ARQ C. E. BESANCON, 49 Aspley Hill, Woburn Sands, Bletchley, Bucks.
W6NNV N. F. WASSON, 301 East Lemon Avenue, Arcadia, Calif., U.S.A.
W6PFJ ASA G. LANGFORD, 1620 West 251 Street, Harbor City, Calif., U.S.A.
W7ADS G. LAY, 109 No. Grandview Avenue, Yakima, Washington, U.S.A.
W9FNR †FLOYD E. SMITHBERG, R.R. 1, Box 233, St. Charles, Ill., U.S.A.
W9JDF REV. H. B. PARTIN, 6 Avalon Road, Orpington, Kent.
W9RCQ L. M. SHOREY, R.D. No. 3, Halsted Road, Rockford, Ill., U.S.A.
ZB1BC R. STOREY, 37 High Street, Sliema, Malta.
ZB1BQ R. DAVENPORT, R.N. W/T Station, Dingli, c/o F.M.O., Malta.
ZC4WV †N. H. SEDGWICK, c/o M.E.M.U., B.F.P.O. 53, Cyprus.
ZD2TBS T. BELL, c/o Exlands Ltd., Barakin Ladi Post Office, Plateau Provinces, Northern Region, Nigeria, West Africa.
ZS6OY W. V. FAULKNER, 20 First Avenue, Maraisburg North, Transvaal, South Africa.

Corporate Members (British Empire Receiving Stations)

958 F. C. COLLINS, Tauranga Hotel, P.O. Box 37, Tauranga, New Zealand.
959 E. J. HUGHES, Box 98, Mdola, Northern Rhodesia.
960 H. D. MONTGOMERY, P.O. Box 2800, Mombasa, Kenya.

Corporate Members (Foreign Receiving Stations)

279 P. A. VANDERWEEL, 11 Woodbine Crescent, Stockport, Cheshire.
280 S. TEJASEN, Office of the Air Attache, The Royal Thai Embassy, 21 Ashburn Place, London, S.W.7.
281 A. DIONYSIOU, 70 Parkhurst Road, Holloway, London, N.7.

Corporate Members (British Receiving Stations)

21523 P. D. ETHERIDGE, 10 Trinity Road, Handsworth, Birmingham 6, Warwicks.
21524 P. S. ODELL, 20 St. John's Grove, Redcar, Yorks.
21525 P. NICHOLSON, 22 West View, Mold, Flints, North Wales.
21526 W. J. COX, 1 Crown Street, Dudley, Worcs.
21527 F. G. SISSON, 74 Queen's Hill Crescent, Newport, Mon.
21528 C. W. PLATTEN, c/o Box 555, G.P.O., Reading, Berks.
21529 K. G. CHALMERS, 71 Westminster Road, Ellesmere Port, Wirral, Cheshire.
21530 G. M. SIFFORD, no permanent address at present.
21531 R. SEWART, 12 Park Hill Road, East Croydon, Surrey.
21532 H. W. PATERSON, 85 Fereneze Avenue, Clarkston, Renfrews, Scotland.
21533 A. J. LAKEY, 82 Uplands, Stoke Heath, Coventry, Warwicks.
21534 M. D. G. BREEZE, 95 Shanklin Drive, Leicester, Leics.
21535 H. J. FARMER, 140 South Esk Road, Forest Gate, London, E.7.
21536 M. Mackusick, Hazelbury-Bryan, Dorset.
21537 R. J. R. PEDDER, 27 Hillside Grove, Southgate, London, N.14.
21538 L. D. WATTS, 110 Dunvant Road, Killoy, Nr. Swansea, South Wales.
21539 †J. A. BURROWS, Bwthyn-y-Twr, Tower Hill, St. David's, Pembrokeshire, South Wales.
21540 P. D. STOKES, B.E.M., 20 Blunts Road, Eltham, London, S.E.9.
21541 W. WEBB, 862 Mosspark Drive, Glasgow, S.W.2, Scotland.
21542 M. E. SLATER, 173 Broadlands Road, Swaythling, Southampton, Hants.
21543 C. N. CORY, 17 St. Margaret's Road, Maidenhead, Berks.
21544 N. JONES, 4 Medl-y-Felin, Rhiwbina, Cardiff, Glamorgan, South Wales.
21545 D. C. J. GREEN, 36 St. Augustine Road, Heath, Cardiff, Glamorgan, South Wales.
21546 P. S. BRACKENBURY, 13A Earls Court Square, London, S.W.5.
21547 R. WEBB, 12 Sayes Court, Addlestone, Surrey.
21548 G. D. WILSON, 154 Park Road, West Hartlepool, Co. Durham.
21549 G. C. REID, 48 Reynolds Close, Carshalton, Surrey.
21550 A. J. Hawkins, 9 Avon View, Devizes, Wilts.
21551 R. G. GARMAN, 3 Shelley Close, Tubbenden Lane, Orpington, Kent.
21552 D. J. PERRETT, 15 Dunsmuir Road, Cardiff, Glamorgan, South Wales.
21553 M. A. GREEN, 175 City Road, Edgbaston, Birmingham 16, Warwicks.
21554 K. ASHCROFT, 145 Cromwell Road, Fulwood, Preston, Lancs.
21555 D. BOND, 14 Brook Road, Gidea Park, Essex.
21556 J. JOSLIN, 84 Wainfleet Road, Skegness, Lincs.
21557 J. CHANDLER, Knole, Ashley Common Road, New Milton, Hants.
21558 P. K. WARRICK, 118 Sixth Cross Road, Twickenham, Middlesex.
21559 F. V. OLIVER, 12 Finchley Park, N. Finchley, London, N.12.
21560 W. J. HUNT, 35 Tenterden Road, Dagenham, Essex.
21561 T. L. PAINTER, Almondbury, Carters Lane, Old Woking, Surrey.
21562 H. A. G. SOUTHON, 112a Castle Road, Chatham, Kent.
21563 *C. BERRY, 4 Godwin Road, Canterbury, Kent.
21564 P. T. STAPLETON, 112 Essendine Mansions, Maida Vale, London, W.9.
21565 A. G. BALL, 57 Spey Street, London, E.14.
21566 D. A. J. SHILLAND, 53 Wolfington Road, West Norwood, London, S.E.27.
21567 A. J. SHAWCROSS, 35 Silver Street Lane, Trowbridge, Wilts.
21568 A. W. HOGBEN, B.E.M., 54 Alwyn Road, Maidenhead, Berks.
21569 J. R. YATES, 30 Cashio Lane, Letchworth, Herts.
21570 M. H. ROGERS, Ivy Cottage, Chesham Road, Wigginton, Nr. Tring, Herts.
21571 E. J. BROCKWAY, 31 Rectory Avenue, Farlington, Hants.
21572 C. J. SIEBERT, 6 Arlow Road, Winchmore Hill, London, N.21.

21573 G. R. PEARCE, 43 Boston Manor Road, Brentford, Middlesex.
21574 A. G. KING, 11 Rochester Avenue, Rochester, Kent.
21575 F. W. M. KUHLMANN, 5 Blackhorse Crescent, Amersham, Bucks.
21576 M. H. WICKHAM, East Cottage, Tirley Garth, Tarporley, Cheshire.
21577 J. H. WILSON, 253 Liverpool Road, Haydock, Nr. St. Helens, Lancs.
21578 J. A. R. MILLS, 1 Acacia Walk, Chadwell St. Mary, Grays, Essex.
21579 D. C. SMITH, 55a Poole Road, West Ewell, Epsom, Surrey.
21580 A. FRAME, 107 Church Road, Hayes, Middlesex.
21581 G. HETHERINGTON, 4 Meadows View, Sandy Lane, Chester, Cheshire.
21582 B. M. WAITE, 59 Westmere Drive, Mill Hill, London, N.W.7.
21583 J. P. BARKER, 42 Arundel Road, Worthing, Sussex.
21584 L. H. A. PILKINGTON, Stretton House, Lower Stretton, Nr. Warrington, Lancs.
21585 H. R. HENNESS, 11 Blundell Road, Evington, Leicester, Leics.
21586 G. HOLLEBON, Supplies Office, Horton Hospital, Epsom, Surrey.
21587 J. JULEFF, 41 Lesney Park Road, Erith, Kent.
21588 F. HOEFIELD, 26 Rosemary Hill Road, Streetley, Sutton Coldfield, Warwicks.
21589 K. JACKSON, 6 Birk Green, Park House Estate, Barnsley, Yorks.
21590 R. E. B. LEE, 29 Heathfield Road, Handsworth, Birmingham 9, Warwicks.
21591 J. F. BARKER, 18 Coleby Street, Lincoln, Lincs.
21592 F. H. J. JENNER, 1 Strathconn Avenue, Woodlands Road, Bookham, Surrey.

Associates

1476 G. D. KETLEY, 16 Chestnut Avenue, Grays, Essex.
1477 J. W. GOULD, A.E.R.E., Harwell, Didcot, Berks.
1478 R. C. EDWARDS, 6 Longdown Lane N, Ewell, Surrey.
1479 R. A. YOUNG, Ashfield, Reading Road, Yateley, Camberley, Surrey.
1480 F. A. Griffiths, 9 Heyeswood Lane, Hartford, Nr. Northwich, Cheshire.
1481 M. H. DAVIS, 100 Northgate Mansions, Regents Park, London, N.W.8.
1482 R. L. CHAPMAN, 29 Davis Avenue, Northfleet, Gravesend, Kent.
1483 J. STEVENS, 4 Mulgrave Road, Ealing, London, W.5.
1484 K. B. GORRIE, 6 Beechhill Road, Eltham, London, S.E.9.
1485 A. J. WATTS, 2 Churnwood Road, Colchester, Essex.
1486 M. PUGH, Rosegarth, Himley Road, Lower Gornal, Nr. Dudley, Worcs.
1487 J. L. LANGLEY, 6 St. Mary's Road, Leamington Spa, Warwicks.
1488 B. W. SPILMAN, 11 Cranbourne Road, Patchway, Nr. Bristol.
1489 F. MEREDITH, 102 Pontypridd Road, Barry, Glamorgan, South Wales.
1490 F. TURNER, 21 William Street, Earby, Colne, Lancs.
1491 E. C. HODSON, 20 Spencer Avenue, Palmers Green, London, N.13.
1492 D. J. PENNY, 175 Burrow Road, Chigwell, Essex.
1493 W. E. J. WINTERBOURNE, 22 Cherry Orchard, Codford, Wilts.
1494 M. HEATHCOTE, 42 Courtenay Gardens, Upminster, Essex.
1495 R. B. I. RUTHERFORD, 14 Chandos Avenue, Southgate, London, N.14.
1496 M. E. RENTELL, 55 Eaton Avenue, Bletchley, Bucks.
1497 J. P. BARKER, 42 Arundel Road, Worthing, Sussex.
1498 A. C. EVANS, 471 Greystones Road, Sheffield 11, Yorks.
1499 J. E. GRIGG, 4 Syon Lane, Isleworth, Middlesex.
1500 C. G. LEE, 29 Belgrave Road, Tunbridge Wells, Kent.
1501 B. P. M. A. GAUNT, Conifers, Boyn Hill Road, Maidenhead, Berks.

Forthcoming Events

REGION 1

Blackpool (B. & F.A.R.S.). — Wednesdays, Gadsby Street Hall, off Nelson Road.
Bury (B.R.S.).—November 12, 8 p.m., George Hotel, Kay Gardens.
Chester (C. & D.A.R.S.).—Tuesdays, 7.45 p.m., Tarran Hut, Y.M.C.A.
Crosby (C. & D.A.R.S.).—Tuesdays, 7.45 p.m., Tarran Hut, Y.M.C.A.
Crosby.—Tuesdays, 8 p.m. over Gordons' Sweetshop, St. John's Road, Waterloo.
Isle of Man (I.o.M.A.R.S.).—November 6, 20, 7.30 p.m., Manor Guest House, 48 Victoria Road, Douglas.
Lancaster (L. & D.A.R.S.).—November 6, 7.30 p.m., George Hotel, Torrisholme.
Liverpool (L. & D.A.R.S.).—Tuesdays, 8 p.m., Room "A," Wavertree Community Centre, Penny Lane, Liverpool, 18.
Manchester (M. & D.R.S.).—November 4, 7.30 p.m., Brunswick Hotel, Piccadilly. **(S.M.R.C.).**—Fridays, 7.45 p.m., Ladybarn House, Mauldeth Road, Manchester, 20.
Preston (P.A.R.S.).—Wednesdays, 7.45 p.m., 48 High Street, off Lancaster Road.
Southport.—Thursdays, 8 p.m., Sea Cadets Camp, Esplanade.
Stockport (S.R.S.).—October 23, November 6, 20, 8 p.m., The Blossoms Hotel, Buxton Road.
Warrington (W. & D.R.S.).—October 17, November 7, 21, 7.30 p.m., Royal Oak Hotel, Bridge Street.
Wirral (W.A.R.S.).—October 16, November 6, 20, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

Barnsley (B. & D.A.R.C.).—October 25, 7.30 p.m., King George Hotel, Peel Street.
Hull.—Second and last Tuesdays, 7.30 p.m., "Royal Oak" (Tony's).
Leeds.—Wednesdays, 7.30 p.m., 4 Woodhouse Square, Leeds.
Rotherham.—Wednesdays, 7 p.m., "Cutler's Arms," Westgate.
Scarborough (S.A.R.S.).—Thursdays, 7.30 p.m., Chapman's Yard, North Street, Scarborough.
Slaithwaite.—Fridays, 7.30 p.m., 3 Dartmouth Street, Slaithwaite.
York.—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

Birmingham (M.A.R.S.).—November 19, 7 p.m. Midland Institute, Paradise Street ("Modern Electronic Instruments"). **(Slade).**—October 25, November 8, 7.45 p.m., Church House, High Street, Erdington. **(South).**—Tuesdays, 7.30 p.m., No. 4 Committee Room, Cadbury Bros., Bournville.
Coventry.—October 25, 7.30 p.m., Vine Street, School, Coventry. **(C.A.R.S.).**—October 21, November 4, 7.30 p.m., H.Q. 9 Queens Road, Coventry.
Solihull.—October 21, November 4, 7.30 p.m., Civil Defence H.Q., Sutton Lodge, Blossomfield Road.
Stourbridge.—October 25, Informal, 8 p.m., "White Horse," Amblecote. November 5, 8 p.m., Brotherhood Hall, Scotts Road ("Mobile Operation," G6WF).
Wolverhampton. — Mondays, 8 p.m., H.Q., Nechells Cottage, Stockwell Road, Tettenhall.

REGION 4

Alvaston.—Tuesdays, Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Boulton Lane, Alvaston, Derbys.
Chesterfield.—Tuesdays 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D.&D.A.R.S.).—Wednesdays 7.30 p.m., Room 4, 119 Green Lane, Derby.
Ilkeston (I. & D.A.R.S.).—Thursdays 7 p.m., Ilkeston College of Further Education, Field Road.
Lincoln (L.S.W.C.).—November 6, 7.30 p.m., Technical College, Cathedral Street.
Newark (N. & D.A.R.S.).—November 3, 7 p.m., Northgate House, North Gate, Newark.
Northampton (N.S.W.C.).—Fridays 6.30 p.m., J-Beam Aerials Factory, Weston Favell, Northampton.
Nottingham.—October 18, November 15, 7.30 p.m., Basford Hall, Miners' Welfare, Nuthall Road, Cinderhill.
Peterborough. — November 6, 7.30 p.m., 21 Hankey Street.
Retford & Worksop.—October 21, 7.45 p.m., Lincs. Road Car Social Club, Grove Street, Retford.
Scunthorpe.—October 22, November 7, 7.30 p.m., Talbot Hotel, Earl Street.

REGION 5

Cambridge (C. & D.A.R.C.).—October 18, November 15, December 13, 7.30 p.m., "The Jolly Waterman," Chesterton Road, Cambridge.
Chelmsford (C.A.R.C.).—November 5, 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.
Norwich.—Fridays, 7.30 p.m., The Golden Lion, St. John's, Maddermarket.

REGION 6

Cheltenham.—November 7, 8 p.m., Great Western Hotel, Clarence Street. **(C.A.R.S.).**—Wednesdays 8 p.m., Club Room, St. Mark's Community Centre, Brooklyn Road.
Gloucester (G.R.C.).—Thursdays, 7.30 p.m., The Cedars, 83 Hucclecote Road.
High Wycombe.—October 23, 7.30 p.m., G6JK, 17 New Drive, Totteridge.
Newbury (N. & D.A.R.S.).—November 29, 7.30 p.m., The Canteen, Elliotts of Newbury, West Street.
Oxford (O. & D.A.R.S.).—October 23, November 13, 7.30 p.m., Club Room, Cherwell Hotel, Water Eaton Road, Oxford.
Portsmouth.—Tuesdays, 7.30 p.m., British Legion Club, Queen's Crescent, Southsea.
Southampton.—November 2, 7 p.m., 1 Prospect Place, Above Bar, Southampton.
Stroud.—Wednesdays 7.30 p.m., Subscription Rooms.

REGION 7

London.—November 1, 6.30 p.m., I.E.E., Victoria Embankment ("Microwave Link Equipment," S. Korytko of Transmitting Division, Standard Telephones and Cables Ltd.).
London (L.M.L.C.).—October 18, November 15, December 13, 12.30 p.m. for 1 p.m., Bedford Corner Hotel, Bayley Street, Tottenham Court Road.
London (U.H.F. Group).—November 7, 7.30 p.m., Bedford Corner Hotel.
Acton, Brentford & Chiswick.—October 15, November 19, 7.30 p.m., A.E.U. Club, 66 High Road, Chiswick, W.4.
Bexleyheath (N.K.R.S.).—Second and fourth Thursday, 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
Chingford.—For date and venue phone: Wanstead 2321 or Silverthorne 1740.
Croydon (S.R.C.C.).—November 12, 7.30 p.m., "Blacksmith's Arms," 1 South End, Croydon.
Ealing.—Sundays, 11 a.m., ABC Restaurant, Ealing Broadway, W.5.
East Molesey (T.V.A.R.T.S.).—November 6, 8 p.m., Carnarvon Castle Hotel, Hampton Court. ("Carnarvon Trophy" Contest).
Finsbury Park and District.—October 15, 7.30 p.m.; venue from A. J. Mourton, CAN. 2970.
Guildford and Woking.—October 25, 8 p.m., "Prince of Wales," Guildford.
Harlow & District.—Tuesdays, 7.30 p.m., rear of G. E. Read G3ERN, 6 High Street, Harlow.
Holloway (G.R.S.).—Mondays (RAE & Morse) 7 p.m. Isledon School, Upper Hornsey Road, N.7. Fridays (Club), 7 p.m., Grafton School, Eburne Road, N.7.
Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road, Ilford.

Norwood & South London.—October 18, Windermere House, Westow Street, Crystal Palace. ("Valve Construction"—Film Show and Lecture by Mullard Ltd.)

Slough.—November 5, QTH from G2HOX, 13 Quaves Road or G3GYD, 5 Parklands Avenue, Slough.

Welwyn Garden City.—November 14, 8 p.m., I.C.I. Recreation Club, Blackfan Road. (Open Meeting for Home Counties' clubs and groups. Speaker: John Clarricoats, O.B.E., G6CL (Subject: "The Next Two Years,") followed by film show.)

REGION 8

Worthing (W. & D.A.R.C.).—November 11, 8 p.m., Adult Education Centre, Union Place.

REGION 9

Bath.—October 21, November 18, 7.30 p.m., 12 James Street West.

Bristol.—October 18, November 15, 7.15 p.m., Carwardine's Restaurant, Baldwin Street.

Exeter.—November 14, 7.30 p.m., G8DA, 3 Chard Road.

Falmouth.—First Wednesday in each month, 7.30 p.m., Y.M.C.A., Bar Road, Falmouth.

North Devon (Bideford).—November 7, 7.30 p.m., G2FKO, 38 Clovelly Road, Bideford.

Plymouth.—Alternate Tuesdays, 7.30 p.m., Virginia House Settlement, Barbican.

Torquay.—Second Saturday in each month, 7.30 p.m., Y.M.C.A., Castle Road.

Weston-super-Mare.—Second Wednesday in each month, 7.30 p.m., Albert Hotel, Sea Front.

Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road, Yeovil.

REGION 10

Cardiff.—November 11, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff.

Neath and Port Talbot.—November 5, 7.30 p.m., Royal Dock Hotel, Briton Ferry.

Pontypool.—Tuesdays, 7 p.m., Educational Settlement, Rockhill Road.

REGION 11

Prestatyn.—Railway Hotel, 7.30 p.m., November 4 (Junk Sale and Auction), December 2 (Film Show).

REGION 14

Falkirk and Stirling.—October 24, 7.30 p.m., Temperance Café, Falkirk.

Glasgow.—October 25, 7.15 p.m., Christian Institute, 70 Bothwell Street, Glasgow C.2. (V.H.F. Demonstration).

REGION 15

Belfast.—October 28, 7.45 p.m., Y.M.C.A., Wellington Place.

Kendall & Mousley Ltd., 18 Melville Road, Edgbaston, Birmingham 16, have introduced a new range of four sided chassis made of 18 s.w.g. steel and finished in grey wrinkle enamel to match the firm's instrument cases. The corners are wired and soldered, the result being unusually robust and capable of carrying considerable weight. Prices range from 6/9d. for the 4 in. × 7 in. × 2 in. size to 17/9d. for the 16 in. × 10 in. × 2 in. size.

* * *

Francis & Lewis Ltd., 126/8 Prestbury Road, Cheltenham, have introduced a new range of "Unimasts" available in all sizes from 30 to 120 ft. in multiples of 10 ft. The sections are made of tubular vertical members latticed with solid steel rods, the three pieces bolting together to form a strong triangular girder section approximately 16 in. across. The sections are supplied "knocked down" for economical transport. Full details may be obtained on request.

* * *

K. W. Electronics Ltd. are now manufacturing moderately priced low pass filters designed for use with 75 ohm co-axial cable and transmitters of up to 1 kW input. They comprise three constant-k pi-sections, both ends being terminated with m-derived sections. Individual filters are adjusted to give maximum attenuation in the Band 1 B.B.C. television channel for the area in which they are to be used. When correctly terminated with a 75 ohm resistive load, the attenuation is greater than 80 db at television frequencies. The insertion loss below 35 Mc/s is less than 0·25 db. The filters are compactly constructed so that they may be installed within transmitter cabinets.

* * *

Mr. W. H. Dyson (G8TD) has joined the staff of **Panda Radio Co. Ltd.** and will be responsible for production control.

New Books

TRANSISTOR ENGINEERING REFERENCE BOOK. By H. E. Marrows. Published by John F. Rider (New York) and Chapman and Hall (London). Price 80/-.

Section I provides the reader with a general survey of transistors, Section II gives reference data on commercial transistors. Section III describes commercial transistor components and test sets, Section IV gives reference data on the commercial applications of transistors. Section VI is a Manufacturer's Directory.

The book assembles data on some 200 transistors; no small task in view of recent developments in the field of transistor design.

BRIMAR RADIO VALVE AND TELETUBE MANUAL.

The new edition (No. 7) of the Brimar Radio Valve and Teletube Manual has been revised and enlarged to accommodate many new Brimar types, including those for f.m. and Band III television transmissions.

Revised information is given on frequencies used for television, f.m. and amateur transmitting while the circuit section has been brought up to date by the inclusion of many transistor circuits.

The Manual can be obtained from Standard Telephones and Cables Ltd., Radio Receiver Valve Division, Footscray, Sidcup, Kent. Price 6/-.

* * *

TRANSISTORS HANDBOOK, by W. D. Bevitt. 410 pages Page size 8¼ in. x 5½ in. Published by Prentice-Hall Inc., Englewood Cliffs, New Jersey, and Bailey Bros. & Swinfen Ltd., 46 St. Giles Street, London, W.C.2. Price 63/-.

The author, an American transistor applications engineer, has written this book for use primarily in electrical engineering and physics courses. Material essential to the engineer is often widely scattered in technical literature. In summarising technical articles the author has made this information, previously difficult of access, readily available.

Major contributions of companies which have developed transistors and their circuits are also covered, and the book contains a thorough treatment of specific practical transistor circuits and applications.

REGIONAL REPRESENTATIVES

Region 1.—North Western. B. O'Brien (G2AMV), 1 Waterpark Road, Prenton, Birkenhead, Cheshire.

Region 2.—North Eastern. J. R. Petty (G4JW), 580 Redmires Road, Sheffield, 10, Yorkshire.

Region 3.—West Midlands. W. A. Higgins (G8GF), 28 Kingsley Road, Kingswinford, nr. Brierley Hill, Staffs.

Region 4.—East Midland. E. S. G. K. Vance, M.B. (G8SA), 43 Blackwell Road, Huthwaite, Sutton-in-Ashfield, Notts.

Region 5.—Eastern. T. A. T. Davies (G2ALL), Meadow Side, Comberton, Cambridge.

Region 6.—South Central. N. F. O'Brien, F.B.I., A.C.C.S. (G3LP), 143 Brunswick Street, Cheltenham, Gloucestershire.

Region 7.—London. F. G. Lambeth (G2AIW), 21 Bridge Way, Whitton, Twickenham, Middlesex.

Region 8.—South Eastern. Office Vacant.

Region 9.—South Western. W. J. Green (G3FBA), 82 Bloomfield Avenue, Bath, Somerset.

Region 10.—South Wales. C. Parsons (GW8NP), 90 Maesycoed Road, Heath, Cardiff, Glam.

Region 11.—North Wales. F. G. Southworth (GW2CCU), Samlesbury, Bagillt Road, Holywell, Flintshire.

Region 12.—East Scotland. L. Hardie (GM2FHH), 91 Inchbrae Drive, Garthdee, Aberdeen.

Region 13.—South-East Scotland. Office Vacant.

Region 14.—West Scotland. D. R. Macadie (GM6MD), 154 Kingsacre Road, Glasgow, S.4.

Region 15.—Northern Ireland. J. W. Douglas (GI3IWD), 54 Kingsway Park, Cherry Valley, Belfast.

R.S.G.B. QSL BUREAU: G2MI, BROMLEY, KENT

THE NEW 'HAM' SHOP

WIRELESS SET No. 19 MK. II
Two transmitter-receivers and an intercom amplifier in one case. "A" set covers 2-8 Mc/s. RT and CW, and "B" set 240 Mc/s. RT only. Complete with 15 valves 6—6K7G, 2—6K8G, 2—6V6G, 6B8G, 807, EF50 and 500 Micro amp. check and Tuning Meter. Made in U.S.A., only **70/-**, plus 15/- carr.

FILTER UNIT 503 Frequency 20-35 Mc/s. with silver plated coil. Condenser 140 pf., Veeder counter, coax input and output sockets. Suitable for conversion to absorption wavemeter. **12/6**, p.p. 2/-.

500 Microamps Meter 2 inch circular calibrated 0-15 and 0-600 volts, resistance 500 ohms. **12/6**, p.p. 2/6.

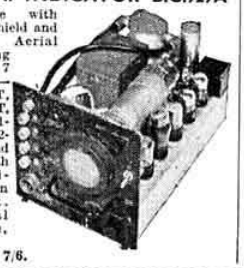
HIGH RESISTANCE HEADPHONES
Type MK IV 4,000 ohms, with cord and plug, brand new, **11/6** each. P.p. 2/-.

BENDIX RECEIVER MN 26.C.
Covering 150-1500 kc/s. in 3 bands. Valves used, 5-6K7, 2-6N7, 2-6J5, 1-6F6, 1-6L7. Complete with switching motor and dynamotor. This superb unit has been modified for 12v. operation, only **80/-**, carriage **8/6**.

VIBRATOR PACK
6V input, 230V output at 100mA, complete with 4-pin vibrator, OZ4 rectifier. Fully smoothed. **25/6** each. P. & p. 2/6.

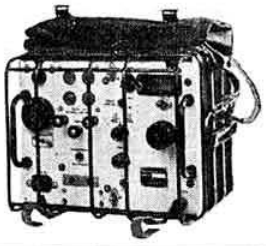
AMERICAN TUNING UNITS
TU-7-B 4500-6200 kc/s. TU-8-B 6200-7700 kc/s. TU-10-B 10,000-12,500 kc/s. Price **14/-** each. P. & P. 4/-.

U.S.A. INDICATOR B.C.929A



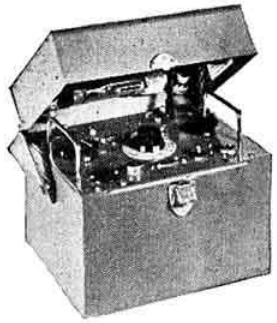
Complete with 3BP1, shield and holder. Aerial switching unit. 7 valves :— 2-6S6GT, 1-6X5GT, 1-2X2, 1-6G6, 2-6Z-N7. Brand new, with modification circuit. Original cartons, **60/-**. Carriage 7/6.

R109 RECEIVERS



8 valves : 5 ARP 12s, 3 AR 8s, covering 1·8-8·5 Mc/s on two frequency bands. Contains 6v Vibrator Pack and built-in 3½ in. Goodman speaker, operates from 6V battery, consumption 1½ amps. Housed in metal case 13×12×11 in. Designed for Mobile or Ground station. Operates with any normal aerial. Complete and tested, including circuit. Very good condition. Only **80/-**. Carr. 7/6.

TEST OSCILLATOR TS 170/ARN5
Complete Test Transmitter or Signal generator, cavity for Receivers or other UHF applications in the **330 Mc/s** Range, Modulated 90 to 150 cycles. Valves 2-959, 3-IN21, 1-3Q4. Milliammeter 0-1 and 3 crystals. Brand New. **£4 10.** Carr. 7/6.



TEST SET 102
Consists of impregnated mains transformer 200-250 v. 50 cycles, 12 v. 2 amp. 6 v. 3 amp. output 280 v. at 80 mA. S.T.C. metal rectifier 80 mA. 1-DET19, 1-6J5. Bulgin plugs, sockets and pilot lights. Main leads. Circuit is a multi vibrator locked mains type, with a cathode follower. Can be modified for:
- Audio Amplifier
- Audio Oscillator
- V.F.O.
- External Synchronizer
- Stabilized Power Unit
- Modulator, Etc.

Brand new including circuit only **40/-**, carr. 5/-.

Relda Radio Ltd.
(Dept. 'B') 32a Coptic Street, London, W.C.1
Tel. MUSeum 9607

No. 38 TRANSMITTER/RECEIVER WALKIE TALKIE.
Range approx. 5 miles. Covering 7.4-9 Mc/s. Absolutely complete with junction box, headphones, microphones, webbing haversack and spare set of valves. Brand new only **65/-**, carr. 7/6.

MUIRHEAD VERNIER DRIVES
Scaled 0/180 deg. Ratio 25 to 1, 3 inch dia. **10/6**, p.p. 1/6.

PARMEKO CHOKES 8H. 100 mA **7/6**, p.p. 1/6.

COMMAND TRANSMITTERS

2·1/3 Mc/s valved with crystal	...	25/-
3/4 Mc/s ,, with crystal	...	25/-
4/5·3 Mc/s ,, less crystal	...	17/-
5·3/7 Mc/s ,, ,, ,,	...	17/-

P. & P. 3/6 each.

COMMAND RECEIVERS
1·5/3 Mc/s, fully valved ... **65/-**
P. & P. 3/6 each.
MODULATORS for above, **25/-** each.
P. & P. 3/6.

R.F. UNITS

R.F. 26	20-30	Mc/s.	8/6 each.
R.F. 25	40-50	Mc/s.	8/6 each.
R.F. 24	50-65	Mc/s.	25/- each.

All valved. Postage 3/6 on each.

ORIGINAL AR88 MAINS TRANSFORMER
Input 110 volts.-240 volts. Output 345-0-345 at 150 mA. 5v. at 2 amps. and 6·4v. at 4·5 amps. Fully shrouded, size 5½ × 4×4½ in. Brand new. **50/-**. P. & p. 3/-.

INDICATOR UNIT SLC No. 5
Ideal for conversion into an Oscilloscope using a 139A or ACR10 tube. Unit consists of 2-VR65, 1-VR66, various resistors, condensors and pots. Size 11×6×3ins. Brand new, complete with modification circuit. **20/-**. P. & P. 3/-.

RCAF AMPLIFIER UNIT

12v input. Vibrator Pack 250v output. OZ4. Microphone Transformer into a 6K6GT output valve with negative feed back. Size 8in. x 5½ in. x 8½ in. Brand new, **35/-** each. p.p. 3/-.

THE SPOT G3EKX DERBY (CENTRE)

26 OSMASTON ROAD — Telephone 41361

We wish to announce that Derby has a "Ham" shop at the "Spot." Catering for all Ham equipments, aerials, Hi-fi gear, etc. It is run personally by G3EKX (managing director) and aims to give utmost satisfaction to all past and future customers. Here are a few of our large selection of items, etc. for sale:

EDDYSTONE

680X, £120. 888, £110. 750, £78. 840A, £55. 870, £34 16s. AM/FM tuner 820 unit, £31 18s. Most components by Eddystone stocked. Orders for RXs taken in strict rotation. Order now so as to get early delivery.

GELOSO

G207RX, valved, £83. 210TX, 35 watts, 65 gns. less valves. VFO units with calibrated dial (6V6 or 6L6 O/P), less valves, £7 2s. 6d. Pi-tanks (as in 35 watt TX), 18s. 6d. each. Geloso Mic's, desk type with SW, 4½ gns. Floor stand, 6 gns.

WAVEMETER CALIBRATORS

consists of HRO dial and gearing assembly, large O-1M/A meter, beautifully scaled. 5R4 rect. 2-UR 150/30 3-6SL7, 2-9002 conds. and 110 volt A.C. power pack, all on F.B. chassis, in grey steel case, with calibration chart, spare cables, connectors, etc. Mint condition. Few only range 144 to 214 Mc/s. £7 10s. plus 15s. carriage.

Hand mic., rubber covered, 3 gns. Geloso mic. inserts, 30s. each.

R.C.A. AR77 540 kc/s to 31 Mc/s, £30. Hallicrafter SX28, 550 kc/s to 43 Mc/s, £35. (Both with manuals.) Eddystone 640, £20. Collins TCS15 (with audio filter, as new), £6.

ALLOY TUBING

⅜ in. O/D, 8d. per ft. ½ in., 11d. ¾ in., 1s. 1d. 1 in., 1s. 6d. We can send it anywhere. Carriage 2s. 6d. per parcel. 1 in. to ⅜ in. element to boom holders, 2s. each. ⅜ in. to ⅝ in. and ⅝ in. to ½ in. T-pieces, 1s. 3d. each. Dipole centres, 5s. each. 2 in. dia. 14 ft. masts, 57s. 6d. Guy support clamps, adjustable element holders, 1 in. to 2 in. mast head, 1 in. boom fittings, 6s. 6d. each, etc. etc. etc.

AMPLIFIERS

2 valve, £3 17s. 6d. 3 valve, £5 10s. 3-4 watt output 956, 957, Collaro changers, 4-speed, £10 17s. 6d. and 11 gns. respectively. 954 single player, 3-speed, £7 5s. Corner cabinets, 8 in. W.B., £5 10s. 10 in. W.B., £9 9s. 12 in. W.B., 11 gns. Mullard 5/10 kits and amplifiers, Jason FM tuner kit with 4 valves, £7 10s. Built up, 10 gns. Arganout Jason AM/FM kit in stock, also TSL kits and complete tuners.

Cheap co-ax, 8d. yard, and super quality, 1s. 8d. yard. All types cables, ribbon, etc.

2 metre, 5 element Yagi's wide spaced, well made, with 1 in. to 2 in. mast head fitting included, only 49s. Carriage 3s. 6d. each.

Breast mikes and pair of phones in wooden box, 16s. plus 2s. carriage.

Aspden tape deck kits, new model, £8 10s., 5s. post. Amplifier kits to suit deck, £5 18s., plus 4s. post. Power pack available. All by return post at present.

Open 9-6 o'clock weekdays and Saturdays. Wednesdays close 1 o'clock (half day). Next to Lloyds Bank, just ask for the "Spot" when in town.

NORMAN BIRKETT LTD.,

Dept. DX, "THE SPOT",
26 Osmaston Road, Derby,

Send "S.A.E." for lists and any enquiries or queries you have. We will despatch goods by return wherever possible, subject to being in stock, of course.

We can supply a 6d. resistance to a 680X so let's have your order. Personal visitors gladly welcomed. Remember you'll get a better buy at Birketts. Please send extra to cover postage.

FOUR-SIDED BLANK CHASSIS

Made in our own works from commercial quality half-hard aluminium of 16 s.w.g. thickness, these chassis will carry components of considerable weight and normally require no corner strengthening.
Standard stock sizes (in inches) are as follows:—

Size (in)	Price	Size (in)	Price	Size (in)	Price	Size (in)	Price
6 ×4 ×2	5/-	9×8×2½	7/6	13× 8×2½	8/10	15×10×2½	10/6
7 ×5 ×2	5/6	10×8×2½	7/10	12× 9×2½	8/11	17×10×2½	11/3
8½×5½×2	6/-	12×5×3	7/11	14× 7×3	9/6		
10 ×4 ×2½	6/4	12×7×2½	8/-	13×10×2½	9/9	17× 9×3	11/6
9 ×7 ×2	6/6	11×8×2½	8/3	14×10×2½	10/-		
12 ×4 ×2½	6/10	10×8×3	8/6	12×10×3	10/3	17×10×3	12/3

Other sizes *pro rata* plus 2/6. Keep this list for reference.

Panels cut to any size 4/- per sq. ft. and *pro rata*. Special discounts for quantities of the above. Please include postage with order.

SMITH'S of EDGWARE ROAD

Component Specialists since broadcasting started
287/289 EDGWARE ROAD, LONDON, W.2
Telephone: Paddington 5891

CALLING S.W. ENTHUSIASTS

HOME STUDY COURSES

for radio amateurs exams and P.M.G. 1st & 2nd Class certificates (Theory) also courses in all branches of Radio & T/V engineering. Special Practical Kits are available as part of our Radio Courses. A typical course for beginners covers the design, construction and operation of a short wave 2-valve receiver. Equipment supplied upon enrolment, remains your property

The only Home Study College which is part of a World-wide industrial organisation

EMI INSTITUTES

POST THIS COUPON TODAY

To E.M.I. Institutes, Dept. 21R, London, W.4.

Subject(s) of interest .....

Name .....

Address .....

Oct./57) IC97

Associated with H.M.V. Marconiphone, etc etc.

URGENTLY REQUIRED

RECEIVERS

RCA AR88 models D and LF
EDDYSTONE model 640 etc.,

TUNING UNITS

Types TN16. TN17, & TN18
for Receivers AN APR/4

FREQUENCY METERS

Type BC221
,, TS174
,, TS175

ALL TYPES of U.S.A. COMMUNICATION and TEST EQUIPMENT etc.

AIRCRAFT EQUIPMENT

BC375 TX
AN ARC1
TR 1934/1935/1936
ARN7 Radio Compass Receiver

HIGHEST PRICES PAID

UNIVERSAL ELECTRONICS

22-27 Lisle St., Leicester Square, London, W.C.2
Tel: GERrard 8410

MORSE CODE HIGH SPEED RECORDERS, McElroy 110V a.c./d.c., **£6** (10/-). **TAPE PULLERS,** McElroy 110V a.c./d.c. **£6** (10/-). **MORSE LEARNING COURSE,** 15 tapes in case, **£6** (10/-). **TG-10 AUTOMATIC ELECTRONIC KEYERS,** variable speed, **£25** (20/-). **BENDIX 800V SUPER POWER SUPPLIES** in rack mount 400 mA out, 230V a.c. in with 4—5Z3 valves, **£8** (20/-). **BENDIX TRANSMITTER CABINETS,** totally enclosed, 6ft. high × 22in. × 20in. standard rack width, **£6** (20/-). **30ft. ONE-PIECE WOOD POLES,** 4in. dia. throughout, perfectly round, straight and smooth. Hollow, lightweight yet very strong, made for radio use, **35**/- (special cheap rate). **12V INPUT POWER UNITS,** 300V, 250 mA smoothed out, **35**/- (7/6). **6V INPUT POWER UNITS,** 250V, 80 mA smoothed out, **50**/- (7/6). **INSTRUCTION MANUALS** (not photographs) HRO, AR-88, AR-77, MI-11220 Amplifier, MI-19468 Crystal Oscillator. All **27/6**; **T-30 ELECTROVOICE MOVING COIL MICROPHONES, £4** (3/6). **TRANSFORMERS** by Marconi. All 190/260V input 1000-0-1000V, 500 mA, **75**/- (10/-). 1000-0-1000V, 400 mA, **65**/- (10/-). **CHOKES,** Woden 20H, 400 mA, **20**/- (7/6). **DOOR SAFETY SWITCHES,** enclosed D.P., 3/6 (2/-). **MILLIAMMETERS,** 2½in. flush 0/100 or 0/30, 12/6 (2/6). **MODULATION TRANSFORMERS,** 85 watts, Audio, **40**/- (7/6). **VOLTMETERS,** 2½in. flush, 0/15, a.c./d.c., **15**/- (2/6).

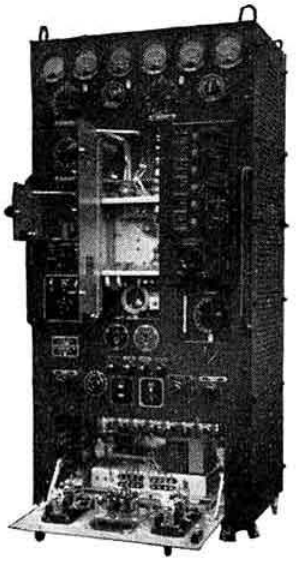
Forty-page descriptive list available.

Amount in brackets is carriage England and Wales. Please cross remittance.

P. HARRIS, ORGANFORD, DORSET

TRANSMITTER NAVY MODEL TCK-7

Yours for only £10 deposit



American transmitters still in original packing cases. Designed for the Navy, these are really beautifully made and most impressive, standing 5 ft. high by 2 ft. wide and finished in instrument crackle. All meters and controls are on the front panel. The transmitter tunes over the range of 2 megacycles to 18 megacycles and it is designed for high speed precision communication without preliminary calling. Frequency control and stability is particularly good, being better than ·005% under the worst conditions. Power output is 400 watts on c.w. and 100 watts on phone. Tuning is very simple—a unit control mechanism gives a direct reading in frequency.

Complete with valves and instruction manual. Price £65 cash or £10 deposit and 12 payments of £5—carriage extra at cost.

NOTE: Power packs are not supplied with these but full details of power requirements are given in the instruction manual.

View by appointment only.

ELECTRONIC PRECISION EQUIPMENT LIMITED
(Dept. R) 66 Grove Road, Eastbourne

AT LAST! *Efficient 3 band working with the*

GM3BQA

TRIPLE QUAD

- **10-15-20 metres.**
- **Over 10 DB gain on each band.**
- **Pretuned elements.**
- **Co-ax feed—minimum T.V.I.**
- **No antenna tuning unit.**
- **Overall width 16 ft. 9 ins.**
- **30/40 DB F/B ratio.**
- **Broad bandwidth—low SWR**

Full kit of parts—easily assembled (pat. applied for).

£17. 0. 0. Carr. extra. 10/15 dual quad also available.

S.A.E. for particulars.

Forth Motor Co.

19 EDINBURGH ROAD, COCKENZIE, EAST LOTHIAN, SCOTLAND.

EXCHANGE AND MART SECTION

ADVERTISEMENT RATES. Members' Private Advertisements 3d. per word, minimum charge **5s. Trade Advertisements 9d.** per word, minimum charge **12s.** (All capitals **1s.** per word, minimum charge **18s.**) Write clearly. No responsibility accepted for errors. Use of Box number **1s. 6d.** extra. Send copy and remittance to **National Publicity Co. Ltd., 36-37 Upper Thames Street, London, E.C.4, by 22nd** of month preceding date of issue.

ALL types of Valves required for cash. State quantity and condition. Radio Facilities Ltd., 38 Chalcot Road, N.W.1 (PRImrose 9090). (236

ALL Types of valves: receiver, transmitter, Octals UX, British. Also valves, meters, etc. AR88 spares.—J. Brown, Waterworks, Penryn, Cornwall. (477

AMERICAN SSB Exciter/Transmitter for sale, complete with Power Pack, etc. Ready for the air.—Box No. 489, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4.

BARGAINS.—Valves from 1/6. Components, new and used, all excellent condition. Stamp for list. Service sheets.—G2DJA, 32 Neasden Lane, N.W.10. (482

BEGINNERS Morse records (L.P. 33⅓).—Complete course with booklet designed to pass G.P.O. test at 12 w.p.m. easily. Only 45/-. Send p.o. now. Course by return.—45 Green Lane, Purley, Surrey. Upland 2896. (473

COMMUNICATION receiver Eddystone 680X in mint condition. Reasonable offer.—Mortimer, 51 Townhead Road, Dore, Sheffield. (483

COMPLETE station.—120W Bandswitched. 2-5 ft. racks. Tesla WBC 829B Antennamatch M/C/ mic. TZ40 relay controlled Top Band transmitter. Spare 1 kV. P/Pk HRO receiver. Seven coils in steel cabinet. Class C wavemeter crystal calibrator. Mod. meter. GDO. 100 Valves, assorted components. £85. —VK-QSY, G3KPW, 5 Kingsbridge Lane, Ashburton, Devon.

CR100 Noise Limiter Model, good condition, £19. Electronic key, £2 10s. Johnson variable 200DD35, £1 5s. HRO Type Dial and Gearbox with ¼ in. shaft, £2.—Hill, 23 Horner Road, Taunton. (488

DISC Ceramic Capacitors 470 pf, 500V d.c. wkg., 6d.; 200 pf and 1,000 pf 4 k.v. d.c.w., 1/6; midget ceramic tubulars 2·2, 3·3, 5, 47 pf, 4/6 doz.; 1,000 pf, 2,000 pf, 3,000 pf, 500V w., 6/- doz. can mix; one only B.C.348 with tuning units, complete mains operation with dynamotor, etc., £35.—Gladstone Radio, 82B High Street, Camberley, Surrey, 3 Church Road, Redfield, Bristol. (480

EDDYSTONE 840 receiver, instructions, circuit, interior untouched, little used, bargain £20; prefer buyer collects. Bound volumes by W. H. Smith, All 1955-56, clean condition, Radio Constructor, Short Wave Magazine, R.S.G.B. BULLETIN, 5/- each add postage. Complete radio course, 20/-.—20 Cromwell Road, Dorchester, Dorset. (490

ELIZABETHAN transmitter, 19 in. rack mounting. Labgear W.B.M. with valves, offers or exchange. Receiver preferred.—G3JVI, Jones, Moreton, Ongar, Essex. (481

FB mobile outfit 6/12 volt, 10 watt 80/160m transmitter AVR-20 receiver complete with two P.U.s, aerial, cables, microphones, the lot, £25.—G3DKS/M, 139 Brownlow Road, New Southgate, N.11. (Bow 9728). (493

FOR SALE.—Hallicrafter S38B receiver a.c./d.c., 550 Kc/s–30 Mc/s. Good condition, £20 o.n.o.—Marriott, R.A.F. Weyhill, nr. Andover, Hants. (470

FOR SALE.—HRO GC/Coils. 1·7-4, 3·5-7·3, 7-14. Good condition. 15/- each. Prefer buyer collects. Wanted, AR88 HRO.—G3IFB, 12 Elmsleigh Avenue, Kenton, Middlesex. (Wor. 7544). (485

G3CGD QSLs. Fixed and mobile samples on request. Printing enquiries welcomed.—30 St. Luke's Road, Cheltenham. (443

HALLICRAFTERS S27, 28-143 Mc/s, AM/FM, good condition £25, or exchange for Panda Cub or similar.—G2DJA, 32 Neasden Lane, N.W.10. (486

LATE G3IXX Station, 6 Band, 5RV, 75W transmitter with 3 power supplies, 2-300V, 1-600V, S640 receivers. Modified RF Stage. Class D Wavemeter. Wilcox Gay v.f.o. valves, etc. S.a.e.—G3JDI, 119 Langley Crescent, Dagenham, Essex. (476

LODGING offered in DL-Ruhr District for language exchange. —DJ2HD. (474

(Continued on page 208

METALWORK.—All types cabinets, chassis, racks, etc., to your own specifications.—Philpott's Metalworks Ltd. (G4BI), Chapman Street, Loughborough. (99

MINIMITTER TX for sale, purchased April this year, modulation meter in place of bulb, in perfect condition, price £65.—Desmond G5VM, " Compton," Meriden Road, Hampton-in-Arden. (469

PANDA Cub transmitter, few hours use only, buyer collects, any offers?—Wanted TVI-proof table top transmitter, 40 watts. 1·8-28 Mc/s. — G5UH, 13 Alexandra Road, Uplands, Bristol 3. Tel. 63723. (487

QSL cards, G.P.O. approved. Log books, cheapest, best, prompt delivery. Samples—Atkinson Bros., Printers, Looe, Cornwall. (206

" S " METERS, 2¼-square, flush panel, suitable for AR88 or other receivers. New stock, 39/6, p. & p., 1/6.—Leslie Dixon & Co., 214 Queenstown Road, Battersea, S.W.8. MAC 2159.

SALE AR88D, fitted " S " meter, matching speaker, two manuals, latest R.C.A. data. Spares-crystal, two IFTs, few valves. AVO electronic test meter. Hunts R.C. bridge.—G3JYV, 67 Fleming Mead, Mitcham, Surrey. (465

SALE, new Minimitter. Only used 12 hours, £80. Panda PR 120V and Low Pass Filter. Worked 162 countries, £50.—Paine G6PR. (466

SALE.—Valves. 6L6G, 5/-; 832, 10/-. TT11 2/6, 955, 9003, 1/6d. 10m Convertor, £2. Oscilloscope E.H.T. Transformer, 17/6d. Carriage Extra.—G3KAB, 28 The Vale, Southgate, London, N.14. (492

STILL urgently required. Second I.F. Transformer for Hallicrafter SX28. Your price paid.—G3KJG, 6 Handforth Grove, Manchester 13. (468

WANTED: All types of communications receivers, test equipment, tape recorders, amplifiers, etc. Prompt cash payment.—Details to R.T. & I. Service, 254 Grove Green Road, Leytonstone, London, E.11 (LEYton 4986). (241

WANTED BC610 Hallicrafters, E.T.4336 transmitters, BC312 Receivers, BC221 Frequency Meters and spare parts for all above. Best cash prices. P.C.A. Radio, Beavor Lane, Hammersmith, W.6. (266

WANTED, A.T.U. for Panda 120V and mains powered " D " wavemeter.—K. Wright, 27 Haverstock Court, Orpington, Kent. FOO 4266. (479

WANTED: Good communication receiver and commercially built TVI-proof transmitter. Must be in excellent condition and unmodified. Send details and prices to G3LAM, 143 Brunswick Street, Cheltenham. (484

1155B with output stage. No case. New panel. Working condition. Manual. £4/15/-.—G3LXD, 37 Burford Road, Catford, S.E.6. (475

75 watt. Modulator wanted, Labgear, Woden, or similar. Need not be commercial. Also Beams for 21 and 28 Mc/s. Price and particulars, 22 Pembroke Terrace, South Shields, Co. Durham.

APPOINTMENTS SECTION

Situations Vacant

ASSISTANT EDITOR required for three editions of Murphy News to work with well known G5. Age 21-40. Send details of experience and salary required to Murphy Radio, Editorial Department, Welwyn Garden City. (491

LABORATORY Technician required for development of prototype electronic equipment. City and Guilds or National Certificate qualification desirable, but practical experience essential. Salary in accordance with qualifications and experience.—Apply in writing to the Director of Research, Research Laboratories, The British Aluminium Co. Ltd., Chalfont Park, Gerrards Cross, Bucks. (471

OVERSEAS.—Oil Exploration Company with world-wiae seismic parties, offers permanent career to electronic technicidns. Maintaining and operating field equipment. Men prepared to accept responsibility and to live in camp conditions. Academic qualifications to H.N.C. or equivalent or genuine practical experience to this standard. Liberal home leave.—Box No. 472, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4. 472)

INDEX TO ADVERTISERS

	Page
Alpha Radio Supply Co.	205
Avo Ltd.	161
Bentley Acoustic Corporation Ltd.	206
Birkett, N., Ltd.	204
Brookes Crystals Ltd.	162
Candler System Co.	*Cover* iii
Electronic Precision Equipment Ltd.	207
E.M.I. Institutes	204
Forth Motor Co.	207
General Radio Co.	206
Harris, P.	207
Henry's (Radio Ltd.)	163
Home Radio (Mitcham) Ltd.	205
Jackson Bros. (London) Ltd.	205
J. P. Electric	*Cover* iii
K. W. Electronics	164
Labgear Limited	*Cover* ii
Lustraphone Ltd.	162
Minimitter Co. Ltd.	164
Padgett, Alfred	162
Panda Radio Co. Ltd.	*Front cover* & *cover* iv
Philpott's Metalworks	164
Plessey Co. Ltd.	208
Proops Bros. Ltd.	166
Radio, Television & Instrument Service	*Cover* iii
Relda Radio Ltd.	203
Smith, H. L., & Co. Ltd.	204
Smith, W. H. & Son	206
Southern Radio & Electrical Supplies	208
Standard Telephones & Cables Ltd.	202
Universal Electronics	204
Whitaker, H.	162
Young, Chas. H., Ltd.	*Cover* iv

Printed in Great Britain for the RADIO SOCIETY OF GREAT BRITAIN, New Ruskin House, Little Russell Street, London, W.C.1 by Loxley Brothers Limited, Letchworth, Hertfordshire

IF UNDELIVERED Return to:— R.S.G.B., NEW RUSKIN HOUSE, LITTLE RUSSELL STREET, W.C.1