

R.S.G.B.

Bulletin

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

Vol. 32 No. 8

FEBRUARY, 1957

Price 2/6 Monthly

K.W. ELECTRONICS LIMITED

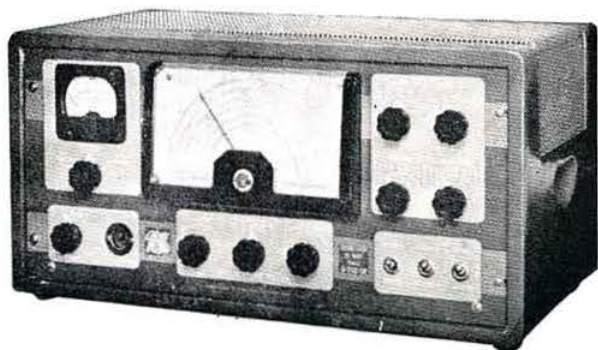
for GELOSO Equipment

This world famous equipment for the radio amateur is now available through K. W. Electronics Ltd., who laboratory test this equipment before dispatch.



RECEIVER G.207/DR (1957 Model). Double conversion super-het. Band spreads 80, 40, 20, 15, 10 metres A.M. and N.B.F.M. and C.W. 'S' Meter. Crystal filter. Excellent Signal/Noise figures. Price complete with valves, £83.

DEMONSTRATIONS
ARRANGED



TRANSMITTER G.210/TR. Completely enclosed with power supply unit 35 watts input. 80, 40, 20, 15, and 10 metres. Mod. pair 6L6g's. Pi output circuit. Audio input for crystal microphone, phone/c.w. A beautiful compact job. Price 65 gns., complete with valves.

GELOSO SIGNAL SHIFTER. Output 80, 40, 20, 15, and 10 metres to drive single 807 (model 4/101) or two 807's (model 4/102). Calibrated dial 8 1/2" x 5". Uses valves type 6J5GT, 6AU6, 6V6G(6L6G). Price less valves, £7-17-6.

Use it to drive that 6146 (QV06-20) or a pair, miniature 807's, 829, 4D32, etc. Just the job for that mobile rig! Available ex-stock.

Credit sale or H.P. facilities available

REMEMBER — K. W. ELECTRONICS Ltd. for GELOSO Equipment. We also manufacture "Hamobile" 2 metre transceivers and a complete range of VHF "BUSINESS RADIO" EQUIPMENT. All enquiries are given the personal attention of G5KW or G8KW.

IMMEDIATE
DELIVERY

K. W. ELECTRONICS LTD.

G5KW

136 BIRCHWOOD ROAD, WILMINGTON, DARTFORD, KENT

Telephone: Swanley Junction 2137

G8KW

BRIMAR

Valves and Teletubes



*Best
for
all
equipments*



Standard Telephones and Cables Limited

Reg. Office: Connaught House, 63 Aldwych, London W.C.2

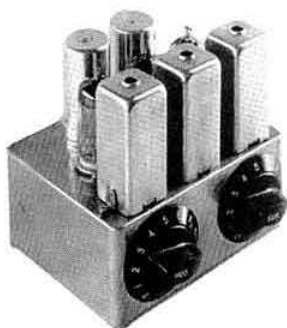
FOOTSCRAY, SIDCUP, KENT. FOOTSCRAY 3333

The CLIPFIL

An advanced design greatly increasing the loudness and intelligibility of modulation.

Price in U.K.

£9 nett. less valves.



This unit replaces the early stages of your modulator and incorporates response shaping, clipping and filtering circuits of unorthodox and unique design, raising your phone signals above the QRM

Available
shortly

HORNS

Write for
details

SIX • SOUTH PARADE • OXFORD

Telephone: Oxford 55360

*For TRANSISTOR work
solder with*

ORYX

MODEL 6

- 6 watts
- 6 volts
- 6" long
- $\frac{1}{16}$ " bit

25/-



No loss of heat—
the element is here →

Leaflet from :

ANTEX 3 TOWER HILL
LONDON E.C.3.



MODEL 7 50 RANGE
Universal **AVOMETER**

Fifty ranges...

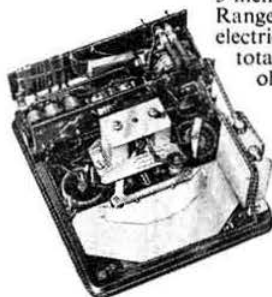
in one instrument

THE wide scope of this multi-range AC/DC measuring instrument, coupled with its unfailing reliability, simplicity of use and high degree of accuracy, renders it invaluable wherever electrical equipment has to be maintained in constant, trouble-free operation.

It provides 50 ranges of readings on a 5-inch hand calibrated scale fitted with an anti-parallax mirror. Accuracy is within the limits laid down in Section 6 of B.S.S. 89/1954 for 5-inch scale industrial portable instruments. Range selection is effected by means of two electrically interlocked rotary switches. The total resistance of the meter is 500,000 ohms.

The instrument is self-contained, compact and portable, simple to operate, and is protected by an automatic cut-out against damage through inadvertent overload.

Power and Power Factor can be measured in A.C. circuits by means of an external accessory, the Universal AvoMeter Power Factor & Wattage Unit.



CURRENT AC/DC
0 to 10 amps.
VOLTAGE AC/DC
0 to 1,000 volts.
RESISTANCE
Up to 40 megohms.
CAPACITY
0.01 to 20 mFds.
**AUDIO-FREQUENCY
POWER OUTPUT**
0—2 watts.
DECIBELS
—25Db. to +16Db.

Various accessories are available for extending the wide range of measurements.

Size 8" x 7½" x 4½"
Weight 6½ lbs.
(including leads)

List Price
£19 : 10s.

Illustrated Brochure
available on request.

---you can depend on



Sole Proprietors and Manufacturers:—

THE AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD.

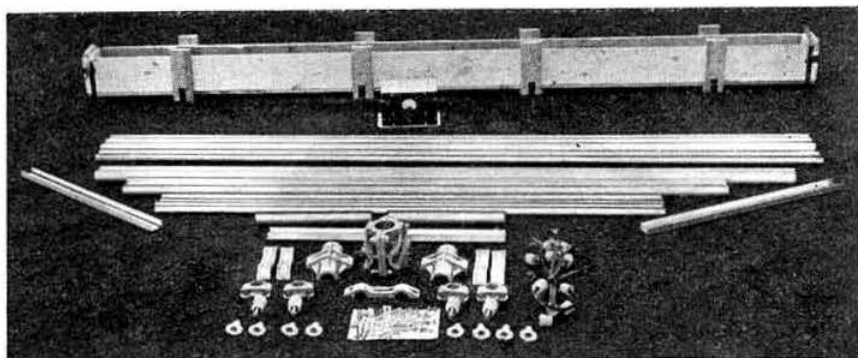
AVOCET HOUSE • 92-96 YAUXHALL BRIDGE ROAD • LONDON • S.W.1.

Telephone: VIctoria 3404 (9 lines)

A7/9

Instal the GLOBEMASTER 'MINIBEAM'

AND HAVE MORE
FUN WITH THOSE
DX CONTACTS



Use the beam with power *plus*—use the G4ZU Minibeam, manufactured exclusively by us as the Panda "GLOBEMASTER". It was the first three-band Minibeam and is the only one that does not require loading coils or switches due to the exclusive use of trombone tuning with the twin boom.

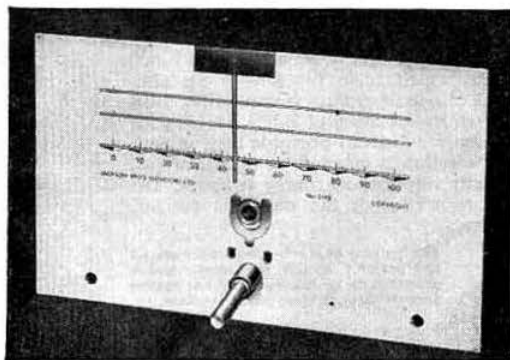
The Panda "GLOBEMASTER" beam is putting out an outstanding signal in all quarters of the globe. We don't need to tell you how it performs—YOU can hear for yourself on any DX band. The one beam the whole amateur world is talking about, it is patented in U.S.A., Canada, U.K., Germany, Australia, S. Africa, etc., and is readily available from our overseas agents or from us ex stock. Get to know more about this fine array—write now for full details to:—

- No loading coils or switches
- Nothing to go out of adjustment
- Keeps on working even when loaded with ice
- Compact — packs in a 8' long parcel

For the benefit of overseas visitors, etc., a small stock is kept by G4ZU at 94, Shirley Way, Croydon, Surrey. Tel: SPRING Park 4130.

PANDA RADIO CO. LTD.

16-18 HEYWOOD RD., CASTLETON, Nr. ROCHDALE
Tel: Castleton (Rochdale) 57396. Cables & grams: Panda, Rochdale.



S.L.16. DRIVE

RETAIL PRICE 11/6

A general purpose slide rule drive for FM/V.H.F. units, short-wave converters, etc. Printed in three colours on aluminium, with a 0-100 scale and provision is made for individual calibrations. Travel of pointer 4½in. Scale plate 7in. x 4½in. Scale aperture 5½in. x 1½in.

S.L.15. DRIVE

RETAIL PRICE 25/6

A complete kit of parts for the construction of the Jackson S.L.15 drive, scale calibrated for the F.M./V.H.F. band.



Write for our illustrated Price List:—

JACKSON BROS. (LONDON) LTD.
KINGSWAY · WADDON · SURREY
Telephone: CROYDON 2754-5

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.

We will be pleased to quote for any frequency in the range 500 kc/s to 18 Mc/s fundamental frequencies, overtones or harmonic generators, in a wide variety of bases.

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

PADDINGTON 1008/9 and 0401

OPEN MONDAY TO SAT. 9-6. THURS. 1 o'clock
SEND STAMPS FOR NEW 1957 28-PAGE CATALOGUE
OVER 50,000 VALVES IN STOCK

QUARTZ CRYSTALS



TYPE FT243 fundamental frequencies.
2 pin in. spacing.

120 TYPES. 5675 kc/s to 8650 (in steps of 25 kc/s).

80 TYPES. 5706 kc/s to 8340 kc/s (in steps of 33.333 kc/s).

ALL BRAND NEW. 10/- each

Special price for complete sets of 80 or 120.

Above are suitable for re-grinding.

TYPE FT241A 54th harmonic Crystals.

2 pin in. spacing.

80 TYPES. 20 Mc/s—27.9 Mc/s (in steps of 100 kc/s).

Also available: 32.5 Mc/s. 36.3 Mc/s.

36.6 Mc/s. 32.6 Mc/s. 36.4 Mc/s.

36.7 Mc/s. 32.7 Mc/s. 37.5 Mc/s.

ALL BRAND NEW. 7/6 Each

FT241A 200 kc/s. 10/-. 500 kc/s. 10/-.

Crystal Holders for both Types 1/3 each



TRANSMITTER/RECEIVER

Army Type 17 Mk. II

This well-known R/T Transceiver is offered complete with Valves. High Resistance Headphones. No. 3 Hand-mike and Instruction Book giving complete details and circuit, contained in strong cabinet. Variable tuning.

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.

SPECIAL REDUCTION FOR SETS OF VALVES

1A7GT, 1N5GT, 1H5GT, 1A5GT (or 1Q5GT or 3Q5GT) ... 37/6 Set

10 EF50 (Ex-Brand New Units) 5/- each ... 45/- ..

10 EF50 (Red Sylvania, ex-new units) 6/- ea. ... 55/- ..

6K8G, 6K7G, 6Q7G, 5Z4G, 6V6G ... 35/- ..

1R5, 1S5, 1T4, 1S4 or (384 or 3V4) ... 27/6 ..

TP25, VP23, HL23/DD, PEN25 (or QP25) ... 25/- ..

DK96, DF96, DAF96, DL96 ... 32/6 ..

6K8G, 6K7G, 6Q7G, 25A6G, 25Z5 (or 25Z6G) ... 37/6 ..

12K8GT, 12K7GT, 12Q7GT, 35Z4GT, 35L6GT (or 50L6GT) ... 37/6 ..

12SA7GT, 12SK7GT, 12SQ7GT, 35Z4GT, 35L6GT or 50L6GT ... 35/- ..

TRANSMITTER/RECEIVER SCR 522

Comprising the well-known BC625 and BC624A. Units complete with 17 valve types: 2-832, 3-12A6, 3-12SG7, 3-9003, 9002, 6G6G, 12J5GT, 12AH7GT, 12C8, 6SS7. The complete unit is in very good condition, having very useful parts including Relays, Transformers, Condensers, etc.

Less valves, £3/10/0, carr. paid

With valves, £7/10/0, carr. paid.

TRANSISTORS

JUNCTION TYPE (Red Spot) (P.N.P.). Offered at less than half-price
10/- each (Tested and complete with Data and Circuits)

N.B.—These Transistors may be used in place of Mullard OC71 or similar Transistors.

Please note that these Red Spot Transistors are ideal for most circuits including "WV" Pocket Transistor Receiver and Transistor Amplifier. All Transistors are British Manufactured and Guaranteed. Send for Circuits and Data.

PRE-SELECTED TRANSISTOR-SEVEN PUSH-PULL PORTABLE SUPERHET

Just switch to your favourite Station. No Tuning, no Aerial or Earth. Pre-select 3 stations. Complete with all components and seven Transistors, 7" x 4" Elliptical speaker. Teletron Superhet Coils and I.F.T.'s. Powered by 7½V dry battery which lasts for months. 150 Milliwatts output. All the above with Circuits, etc. £9/17/6

Or with Matched Mullard OC72's (200 Milliwatts Output) and 7" x 4" Elliptical High Resistance Speaker 30/- extra.

Suitable Plastic Cabinet easy to assemble 18/6

Call and hear demonstration model working.

"EAVESDROPPER"

3-TRANSISTOR PERSONAL PORTABLE

No Aerial or Earth Required. Pre-selected 2-station Receiver. We can supply all the components for building the above set as per "Radio Constructor" less Microphone for 77/6d. Acos Mike 15/6. Miniature Hearing Aid 24/-

SPECIAL OFFER

Set of four Transistors including one R.F. Transistor ... 42/6

Set of six Transistors including one R.F. Transistor ... 60/-

TRANSISTOR SIGNAL TRACER

Complete Kit with 2 Transistors, Components and 'Phones with Circuit, 42/6.

TRANSISTOR SQUARE WAVE GENERATOR

Ideal for signal tracing. Complete Kit with 2 Transistors, Components and Circuit, 25/-.

CRYSTAL MICROPHONE INSERTS

Ideal for Tape Recording, Gramophone Amplifier, etc. Very sensitive, Guaranteed and Tested. 5/-

INDICATOR UNIT TYPE 182A

Unit contains VCR17 Cathode Ray 6in. tube, complete with MuMetal screen, 3 EF50, 4SP61 and 1 5U4G valves, 9 wire-wound volume controls and quantity of resistors and condensers. Offered Brand New (less relay) at 67/6. Plus 7/6 carr. "Radio-Constructor" scope circuit included.

MINIATURE TRANSMITTING STRIP "TYPE 81"

Size 7½in. x 6in. x 3in. Complete with Valves Type CV415, CV309, 2-6AM6, 2-7D9 and Quartz Crystal, 4,860 kc/s. Fully wired with circuit. £4/10/0 complete.

1355 RECEIVER

Complete with 11 valves 8-SP61, 5U4G, VU120, VR92. As specified for inexpensive TV. In absolute new condition. 27/6, carr. 5/-. R.F.24 10/-. R.F.25 12/6. R.F.26 25/-. Brand new with valves. carr. 2/6.

TRANSISTOR PUSH-PULL AUDIO AMPLIFIER

(150 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), £4/10.

F.M. CONVERTER UNIT

88/100 Mc/s

Containing 6 valves—2-6BA6, EB91, VR137, 2-EF54. Two I.F. stages and separate local oscillator, graduated Vernier tuning. Just plug in to your radio and obtain good listening on F.M. Voltage required 250V 50 mA and 6.3V 2 amps. £7/19/6

CATHODE RAY TUBES

VCR139A 2½in. C/R Tube £1 15 0

VCR97, Guaranteed full

TV picture (carr. 2/-) £2 0 0

VCR517C, Guaranteed full

TV picture ... £1 15 0

MU-METAL SCREENS for

VCR97 or 517 ... 10 0

VCR97, Slight cut-off.

Carr. 2/- ... 15 0

3BR1, Brand New ... £1 10 0

MINIATURE I.F. STRIP TYPE

"373" 9-72 MEG.

Brand new miniature I.F. Strip size 10½in. x 2½in. x 3in. high. Valve line-up: 2-EF92; 3-EF91 and EB91. With circuit. With valves, 45/- (less valves 8/- Post free).

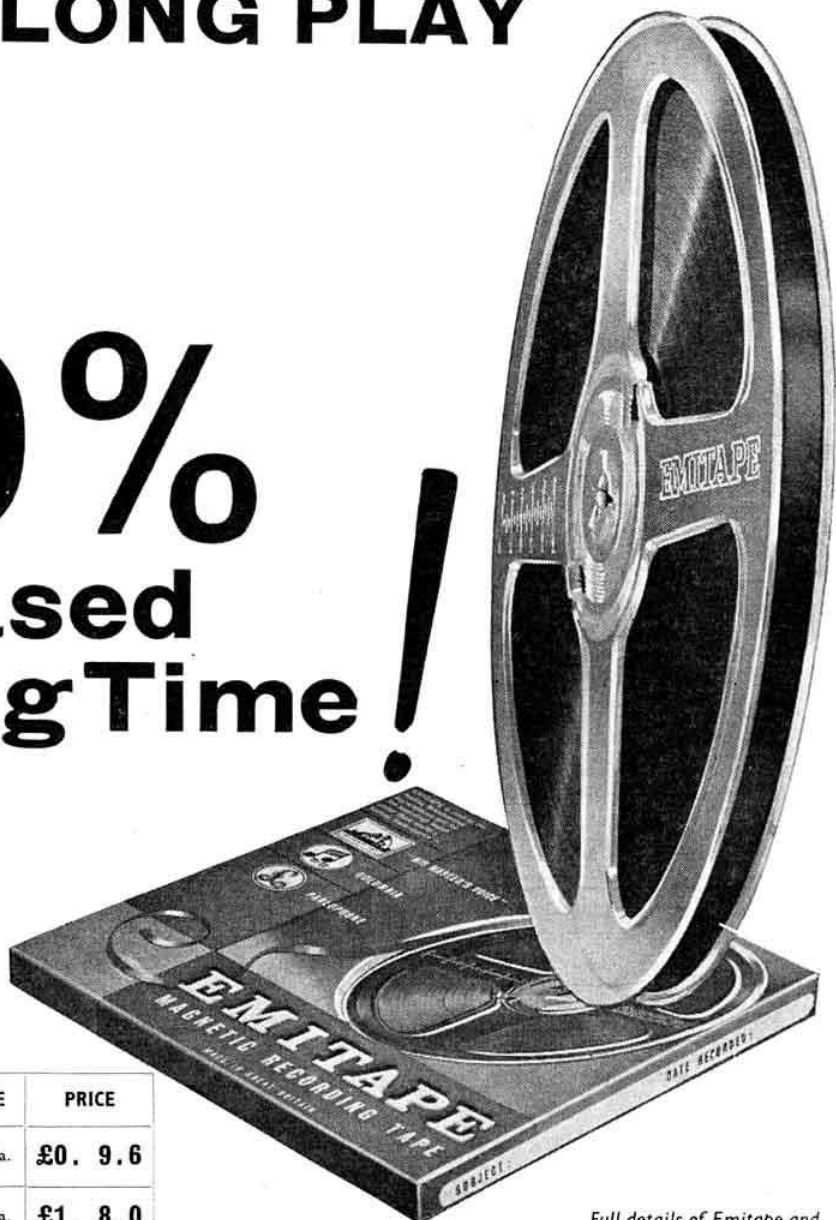
62A INDICATOR UNIT

Containing VCR97 with Mu-Metal Screen. 21 Valves: 12-EF50, 4-SP61, 3-EA50, 2-EB34. Plus Pots., Switches, H.V. Cond., Resistors, Muirhead 5/M Dial, Double Deck Chassis and Crystal. Brand New. Original Cases, 67/6 carr. free.

EMITAPE

'99' LONG PLAY

**for
50%
Increased
Playing Time!**



Full details of Emitape and accessories are available from our Distributors.

TYPE No.	LENGTH APPROX.	TITLE	SIZE	PRICE
99/3	250 ft.	"Message"	3" dia.	£0. 9. 6
99/9	850 ft.	"Junior"	5" dia.	£1. 8. 0
99/12	1200 ft.	"Continental"	5½" dia.	£1. 15. 0
99/18	1800 ft.	"Standard"	7" dia.	£2. 10. 0

Home Enquiries to:

E.M.I. SALES & SERVICE LTD. (RECORDING EQUIPMENT DIVISION)

Export Enquiries to:

E.M.I. INTERNATIONAL LTD · HAYES · MIDDLESEX · ENGLAND

ES 117

R.S.G.B. BULLETIN

Devoted to the Science and Advancement of Amateur Radio

Vol 32, No. 8

February, 1957

EDITOR: JOHN CLARRICOATS, O.B.E., G6CL

ASSISTANT EDITOR: JOHN A. ROUSE, G2AHL

EDITORIAL OFFICE: RADIO SOCIETY OF GREAT BRITAIN

28 LITTLE RUSSELL STREET, LONDON, W.C.1

Tel: HOLborn 7373

ADVERTISEMENT MANAGER: HORACE FREEMAN

ADVERTISING OFFICE: THE NATIONAL PUBLICITY CO., LTD.,

36-37 UPPER THAMES STREET, LONDON, E.C.4

Telephone: 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.
Copyright reserved throughout the World. Closing date for copy
is the 22nd of the month preceding publication.

CONTENTS

Current Comment	347
Command Transmitters on the Amateur Bands	348
by H. Watson (G3HTI)	
The Command Set Receivers	352
by R. F. Stevens (G2BYN)	
The Airmec type C.864 Communications Receiver	355
Reviewed by W. H. Allen, M.B.E. (G2UJ)	
Two Metres and Down	358
by F. G. Lambeth (G2AIW)	
Worked and Heard on V.H.F.	361
Radio Amateur Emergency Network	361
by C. L. Fenton (G3ABB)	
Annual General Meeting—Informal Report	362
The Way Ahead—Presidential Address	364
by D. A. Findlay, D.F.C., A.S.A.A. (G3BZG)	
Month on the Air	367
by S. A. Herbert (G3ATU)	
Frequency Predictions	368
by J. Douglas Kay (G3AAE)	
Council Proceedings	370
Society News	372
Tests and Contests	373
Contests Diary	374
Letters to the Editor	376
Regional and Club News	378
Silent Key	379
Forthcoming Events	380
New Books	381 and 387
New Members	382

RADIO SOCIETY OF GREAT BRITAIN

Patron: H.R.H. THE DUKE OF EDINBURGH, K.G.

COUNCIL, 1957

President: D. A. FINDLAY, D.F.C., A.S.A.A., G3BZG

Executive Vice-President: L. E. NEWNHAM, B.Sc., G6NZ

Hon. Treasurer and Zone "A" Representative:

W. R. METCALFE, G3DQ

Immediate Past President: R. H. HAMMANS, G2IG

Penultimate Past President: H. A. BARTLETT, G5QA

Ordinary Elected Members:

W. H. ALLEN, M.B.E., G2UJ

C. H. L. EDWARDS, A.M.I.E.E., G8TL

K. E. S. ELLIS, G5KW

F. HICKS-ARNOLD, G6MB

J. H. HUM, G5UM

A. O. MILNE, G2MI

W. A. SCARR, M.A., G2WS

Zonal Representatives:

R. G. LANE, G2BYA

W. H. MATTHEWS, G2CD

H. W. MITCHELL, G2AMG

J. TAYLOR, GM2DBX

General Secretary: JOHN CLARRICOATS, O.B.E.

Deputy General Secretary: JOHN A. ROUSE

Assistant Secretary: MAY GADSDEN

The Radio Society of Great Britain is a Member
Society of the International Amateur Radio Union.

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 Midlands. 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

Maesycloed 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. James Taylor, M.P.S.

(GM2DBX), The Pharmacy, Methilhill, Fife.

Region 14.—West Scotland. D. R. Macadie (GM6MD),

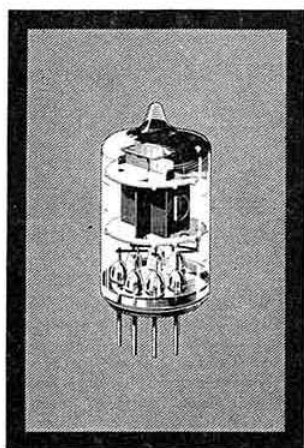
154 Kingsacre Road, Glasgow, S.4.

Region 15.—Northern Ireland. J. W. Douglas (GI31WD),

54 Kingsway Park, Cherry Valley, Belfast.

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

A superior dual control pentode



6AS6

Services type number CV2522

Heater

V_h	6.3	V
I_h	175	mA

Capacitances

	With shield	Without shield	
eg1-a	< 0.02	< 0.025	pF
eg3-a	0.7	0.7	pF
eg1-h + k + g2			
+ g3 + a + s	4.0	3.9	pF
eg3-h + k + g1			
+ g2 + a + s	3.4	3.3	pF
ca-h + k + g1			
+ g2 + g3 + s	3.0	2.2	pF
eg1-g3	< 0.15	< 0.15	pF

Characteristics

V_a	120	120	V
V_{g3}	-3.0	0	V
V_{g2}	120	120	V
V_{g1}	-2.0	-2.0	V
I_a	3.6	5.2	mA
I_{g2}	4.8	3.5	mA
gm (g1-a)	1.85	3.2	mA/V
gm (g3-a)	810	470	$\mu A/V$
ra	-	110	k Ω
V_{g1} ($I_a = 10 \mu A$)	-	7.5	V
V_{g3} ($I_a = 10 \mu A$)	-10	-	V

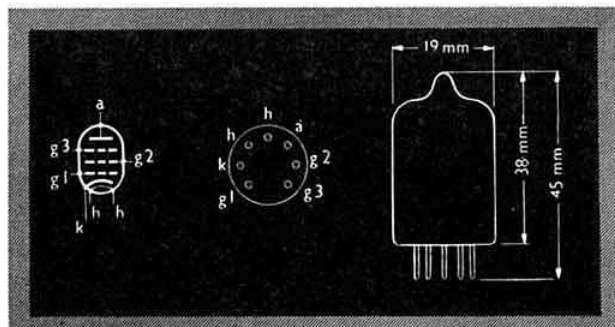
Limiting Values

V_a max.	180	V
p_a max.	1.7	W
V_{g2} max.	140	V
p_{g2} max.	750	mW
V_{g3} max.	27	V
V_h -k max.	90	V

The 6AS6 is a dual control pentode intended for switching or gating applications or for use as a frequency changer.

It is a short suppressor base version of the 6AK5 and is particularly suited for equipment for the American market. Widely used in America and elsewhere, it is manufactured and marketed by Mullard under the American type number 6AS6.

This pentode is designed for operation from 120 volt supplies and is, therefore, convenient for use in conjunction with the 6AK5.



Mullard

COMMUNICATIONS AND
INDUSTRIAL VALVE DEPARTMENT



MULLARD LIMITED • MULLARD HOUSE • TORRINGTON PLACE • LONDON • WC1

MVT304C

Current Comment

Contemporary

A REMARK dropped *en passant* at the Annual General Meeting by Council Member W. H. Matthews is worth making more widely known to members who were not there to hear it. It was a reminder that this year, for the first time, the Society's President is a radio amateur who holds a post-war licence, a man who has, what is popularly known as, a "G3+3" call-sign.

The event is symbolic of the trend of Amateur Radio today, when home Corporate Members with three letter call-signs substantially exceed the numbers of those without. They are the *contemporary* radio amateurs, where the adjective means "of this time" and has nothing to do with furniture!

The opinion is sometimes heard expressed that there is something inherently valuable in being an old-timer—a point of view which has never been shared by the present writer. While it is no doubt true that the old-timer who learned his Amateur Radio long before the G3+3 was ever thought of, has much to contribute in the way of experience—simply because generally he has lived longer—he remains of rather less value to the movement than he might be if he fails to keep abreast of contemporary thought and technique which the post-war licensees seem to take so easily in their stride. Such was the gulf imposed by the six war years, and the tremendous impetus that they gave to radio development, that many an old-timer has been known to confess that he "just couldn't keep up."

Of course, as any sensible amateur knows, both old-timers and newtimers have much to contribute to the movement as a whole. Whether licensed pre-war or post-war, each is complementary but not in any wise supplementary one to the other.

It is good indeed to see the Presidency of the Society vested for the first time in a man with a three-letter call-sign—assuredly the harbinger of many such in the next few years, and a sign of the times, as Mr. Matthews said at the A.G.M.

Members everywhere will wish Mr. Findlay the warmest success as "the first of the new."—J.H.

Video On

WITH almost monotonous regularity the figures issued by the Post Office of the cases of interference they have investigated show the transmitting amateur in an extremely favourable light. Rarely are there more than a hundred or two reported cases of interference to television or radio by amateur stations; by contrast the number of cases of interference by domestic motors of one type or another

amounts in a given period to very many thousands—again with almost monotonous regularity.

The natural satisfaction which amateurs must feel about figuring so regularly at the bottom of the poll needs to be tempered by the thought that *of course* the numbers will be small if not many are on the air!

There is no doubt at all that large numbers of British amateurs abstain from transmitting during television hours, either through fear of causing interference, or perhaps because they like looking at the programmes! If this should be true then the hundred or two TVI complaints may represent a rather larger proportion of those who are active than is commonly believed. Even on the 1.8 Mc/s and 145 Mc/s bands where TVI-proofing is much easier, a noticeable reduction in occupancy is apparent during television hours.

In practice, there is no reason at all why a 150 watt station should not be operated even on the 10 metre band in a populous area throughout television hours, with no resultant irate knocks on the front door from neighbouring viewers. Enough information has been published in recent years to allow any member who is prepared to make the effort to render his station TVI-proof.

The subject has acquired additional and urgent significance for radio amateurs in this country by reason of the new extension of television programme hours to fill the 6-7 p.m. gap on weekday evenings. This, coming hard upon the extension at the other end of the evening to 11 p.m., with indeed television broadcasting going on until midnight at the weekends, means that hardly any television-free evening period remains in which the amateur can follow his hobby, unless he is prepared to hazard his health and livelihood by confining his transmitting activities to the small hours of the mornings.

There is a colloquial phrase for this attitude of mind: *Taking it lying down.*

The passive outlook earns no contacts, nor indeed is it necessary, in the light of the technical information available to aid TVI proofing, and the liberal outlook of the licensing authority who recognises that in many cases the receiver is as much to blame as the transmitter—if not more so.

This does not condone going on the air in the face of a hostile neighbourhood. But between this extreme and the passive one of taking it lying down, there is, as in most things, the reasonable middle course. It can be followed by every member who, while prepared to go on the air whenever he pleases, takes the trouble to make sure that at least *his* equipment is beyond reproach, and that he at any rate shall not figure in those G.P.O. statistics.—J.H.

Command Transmitters on the Amateur Bands

By H. WATSON (G3HTI)*

THE Command series of transmitters, built for the U.S.

Services, can be easily modified for use on the amateur bands. Units are readily available covering 3.5 and 7 Mc/s bands, while some covering other frequencies may come to light occasionally. Although outwardly identical, these units have various circuit arrangements, and anyone attempting to use them should tread carefully until the circuit, and particularly the power connections at the rear of the chassis, have been ascertained.

Circuit

Fig. 1 shows the original circuit of an ex-U.S. Navy unit T19/ARC-5, covering 3-4 Mc/s. This is more or less the basic arrangement of all these units, but a BC-459-A unit, ex-U.S. Army Signal Corps, covering 7-9 Mc/s, showed variations to the p.a. circuit (Fig. 2). Most of these circuit variations make little or no difference to the modifications described here, but a major difference between the two units is the connections to the power input socket. These are shown in Fig. 3(a) and (b) for the T19/ARC-5 and the BC-459-A respectively. Intending users would be well advised to trace out the wiring to this socket before applying power to the unit, because it is quite possible that other variations may exist, e.g., in units (if any) built for the U.S. Air Force!

*19 Hinkler Street, Cleethorpes, Lincs

Modifications

One very attractive feature is that the transmitter can be put on the air (and with a very clean signal) with practically no alteration, or it may be subjected to extensive modification, as pleases the individual. For anyone who is without mains, and uses 24 volt accumulators as a power source, these units are made to measure. For the majority, however, some modification is necessary.

The first consideration is the valve heaters, which are wired in series-parallel to run direct off 24 volts (or 28 volts, as the Americans prefer). The 1625 bases are easily accessible, and it is a simple matter to change the heaters from series to parallel, but the 1626 and 1629 bases are rather difficult to reach; the simplest way to get the transmitter going is to short out R6, which is the wire wound resistor mounted on the back drop of the chassis, on the same side as the 1629. This resistor, marked 7010, is in parallel with the 1629 heater. The 1629 takes 0.15A at 12.6V and the 1626 takes 0.25A at 12.6V, therefore this resistor, R6, carries the difference of 0.1A (value of R6 must be 126 ohms). By shorting out R6, the 1629 is put out of action, and if, at some future date, it is required, then the heaters will have to be re-wired in parallel.

Some qualms were felt about running a.c. through the oscillator coil, but the note is T9. No attempt should be made to change the 1626 heater and cathode wiring

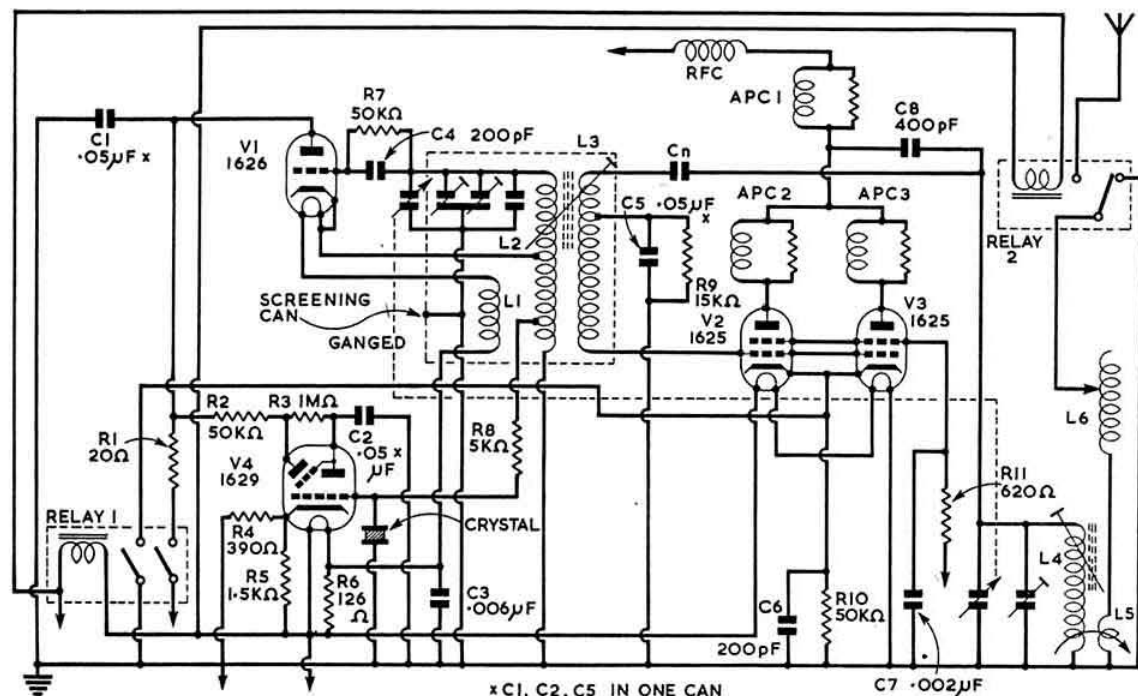


Fig. 1. Original circuit diagram of a T19/ARC-5 "Command" transmitter unit covering 3-4 Mc/s. L1, oscillator heater "choke" coil; L2, oscillator grid coil; L3, p.a. grid coil; L4, p.a. tank coil; L5, variable coupling link coil; L6, aerial loading coil. L1, L2 and L3 are all wound on the same former and mounted inside a screening can.

to eliminate the a.c. from the coil, or the r.f. feedback from the cathode will be lost to earth through the cathode/heater capacity, and the oscillator will cease to function.

Keying

Arranging the oscillator and p.a. valves to work off a 12 volt heater supply is satisfactory, but, unfortunately the relays, which originally worked from the l.t. supply, will not operate below about 17 volts and require d.c. As a.c. is to be used for the heaters some other source of d.c. is necessary. All that is required is 18-20 volts at about 150-200mA. Two 9-volt grid bias batteries in series will operate the relays for quite a long time.

The relay energising supply should be connected between the "hot" side of the l.t., and one side of the key, and the other side of the key to the relay return socket. It will be appreciated that the relay energizing supply, and the key, must be isolated from earth. Should this be inconvenient, then a little further modification is necessary.

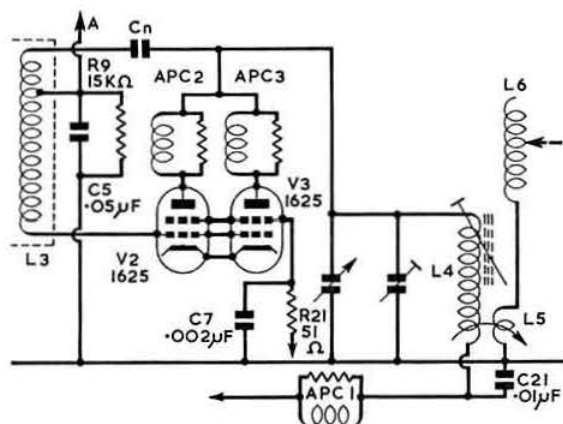


Fig. 2. Variations from Fig. 1 in the circuit of a BC-459-A transmitter unit covering 7-9 Mc/s.

Trace out the positive (white) leads from both relays to pin 1 on the 1625 base furthest from the keying relay, and disconnect them both at the valve base, then connect them both to earth. (Pin 7 on the same valve base is now an earth point.) The key should be connected between the relay return socket and the live side of the relay energizing supply, the other side of which is earthed. Using this method, only the key contacts must be isolated, but since the voltage being keyed is low, "operator protection" is unnecessary, so long as accidental contact with earthed objects is avoided, as this puts a direct short on the relay supply.

The action of the relays should be checked to ensure that they go right over, since they make an appreciable noise when activated by too low a voltage. Once heard, however, there is no mistaking the healthy "clang" as they both go over together. Apart from the necessity for an extra power supply for the relays, the noise is rather a nuisance, so the next step is their removal.

The aerial change over facility can be dispensed with altogether, and a permanent connection made to the aerial terminal. If the keying relay is removed by disconnecting the black lead from the relay bobbin, this lead can be connected to the p.a. cathode, and thus effect the keying. This long cathode lead causes instability, but a 0.01μF condenser from the cathode to earth (C31 in Fig. 5) will cure it.



Above-chassis view of a modified unit, showing the co-axial cable from the coupling link to the output socket on the front panel. Note that the vertical wire on the side of the p.a. tank coil is at high r.f. potential, and great care should be taken that the co-axial cable outer braiding does not touch it.

The oscillator h.t., which was originally keyed simultaneously with the p.a. cathode (by the keying relay) can be wired direct from the power input socket, through R1 to the anode pin of the 1626, so that the oscillator has to be switched externally. Leaving the oscillator running during transmission improves the quality of the radiated signal, and the spacer wave is only very slight, even locally.

Aerial

With the existing coupler, various lengths of wire will be found to load quite efficiently, though a good earth is essential. Theoretically, the best arrangement is a quarter wave (at the highest frequency used) or any odd number of quarter waves. An alternative method is to remove the aerial tuning coil, L6, and run the link output to a co-axial socket on the front panel, in place of the existing "Antenna Post." The output is then fed through co-axial line to a separate aerial tuning unit.

Power Supplies

The 12 volt heaters are a great drawback to these units, but since it is advisable to use separate power packs for the oscillator and the p.a., especially for high power working, two 6 volt heater supplies may be connected in series, and phased correctly, to give 12 volts. The current required is only 1.15A or 1.3A if the 1629 is used.

The oscillator will work down to about 50 volts h.t., but is designed for 150 volt operation; in practice 210 volts has been found to give the best results. The oscillator h.t. supply should be stabilized, or a chirpy signal will result.

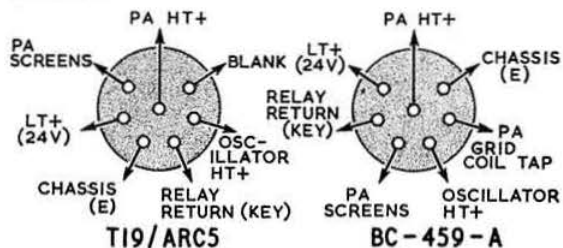


Fig. 3. (a) Power input socket connections of the T19/ARC-5 unit. (b) Power input socket connections of the BC-459-A unit.

The p.a. voltages depend upon the power input desired, and on the power supplies available. With 600 volts on the anodes and 300 volts on the screens, the transmitter runs an efficient 100 watts. A good arrangement was found to be an STV280/40 stabilizer providing 280 volts for the p.a. screens, and 210 volts for the oscillator. A slight chirp which was reported on first trials was cleared by stabilizing the p.a. screen voltage. It must be appreciated that these transmitters are v.f.o./p.a. only, and consequently require careful handling if the quality of the radiated signal is to be good.

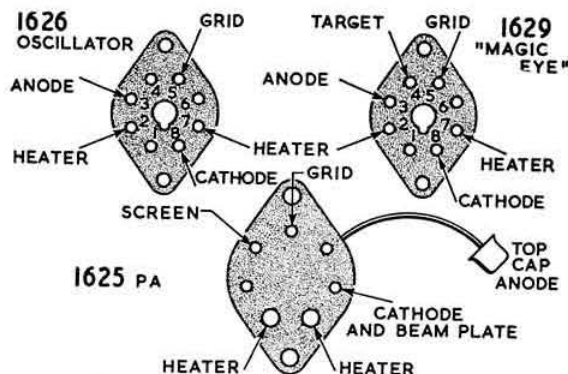


Fig. 4. Valve base connections of the valves used in "Command" transmitters

The "Magic Eye"

Mention was made earlier of the possibility of getting the 1629 tuning indicator working; this is quite simple. First, the 1629 and 1626 heaters must be wired in parallel, then R4 and R5 (Fig. 1) removed, and R31 (Fig. 5), 4,700 ohms, wired from the 1629 cathode to earth. In the original circuit R4 and R5 formed a voltage divider

across the 24 volt l.t. supply, so that about 8 volts positive bias was applied to the 1629 cathode, but by changing the l.t. supply to 12 volts a.c., this bias becomes 4 volts a.c., which causes the 1629 target to blur over about 15 degrees on either side of a 90 degree shadow. The removal of R4 and R5 and the substitution of R31 as a conventional cathode bias resistor provides the necessary bias to close the "eye." Tuning the oscillator to the crystal frequency causes the shadow angle to increase; the point of maximum shadow is the point at which the v.f.o. is tuned to the crystal frequency. A note on the lid of the unit says that if several responses are obtained, the lowest in frequency, and greatest in amplitude, is the correct one.

A small mirror is fitted under the hinged lid which covers the two valves and the crystal at the back of the chassis; if this lid is placed at an angle of about 45 degrees the reflection of the 1629 target can be observed from the front of the unit simultaneously with the tuning dial.

The crystals in these units are not usually within the amateur bands, and to make best use of this calibration check, a band edge crystal would be the most useful. It need not necessarily be an octal based one, but could be mounted on an octal plug (or old valve base) with the crystal connected between pins 3 and 7. The octal based crystals are so connected, with the outer metal shell connected to pin 1.

Calibration

The dial is calibrated in frequency, and the spacing is such that quite accurate frequency setting can be achieved, but of course, for this to be done, the readings must be accurate. The long storage and not always gentle handling of these units makes the possibility of accurate calibration being retained extremely remote. Any modifications carried out can also be expected to cause slight changes in calibration. Add to this the fact that the oscillator valve is a triode (so changes in h.t. voltage cause changes in frequency) and the need for re-alignment will be apparent.

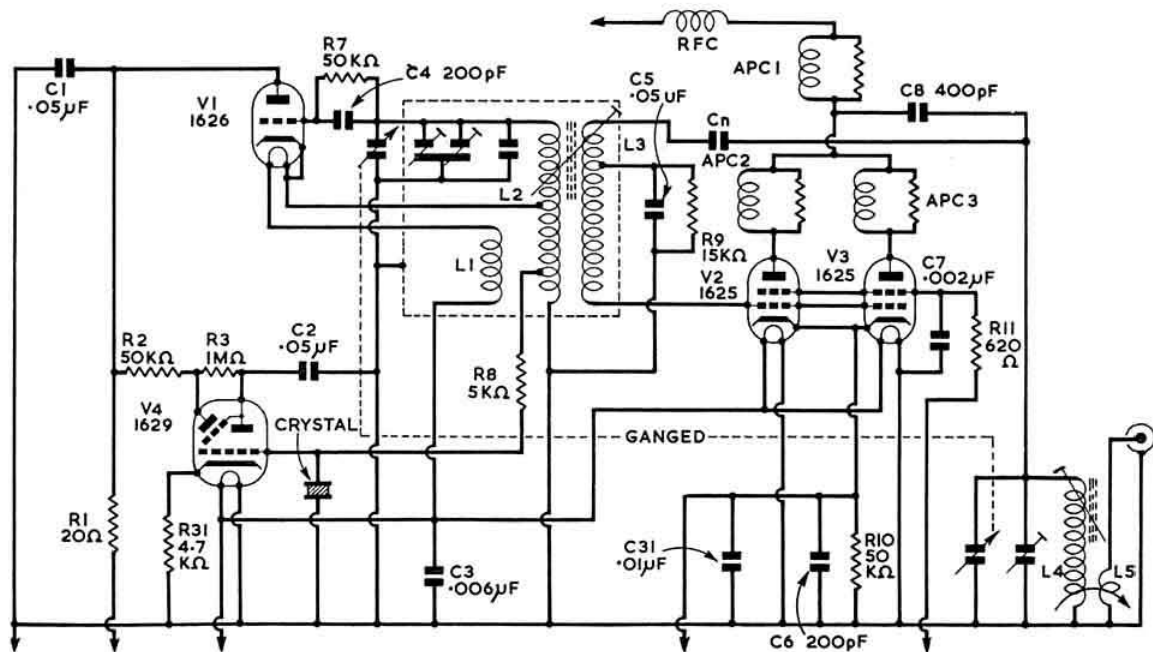


Fig. 5. Final circuit diagram of the T19/ARC-5 unit after all the modifications have been carried out.

The oscillator grid circuit consists of a coil (L2), tuned by the ganged variable, a small fixed capacitor and two trimmers. The fixed and the two trimming capacitors are inside the oscillator screening can which is mounted between the 1626/1629 valves and the 1625s. The trimmers consist of a fairly large capacity screwdriver adjustable variable with a locking arm and screw, and a single vane varied against the same stator, which is accessible through the top of the can. The inductance of L2 can be varied by means of a screw adjusted core, which is also accessible from the top of the can. It is, in fact, one of the "screws with the blue heads," whose settings, according to a warning printed on the top of the can, must not be changed without reference to the instruction book. It should hardly be necessary to do more than adjust the calibration over the portion of the dial covering the amateur band, so little difficulty should be experienced.

About the best source of reference for calibration is a 100 kc/s crystal oscillator, and with the aid of a receiver covering the required band, the v.f.o. signal can be beaten against the harmonics of the 100 kc/s oscillator to give spot checks as required.

First, with the b.f.o. on, set the receiver to the low frequency end of the band (i.e., 3.5 Mc/s for the 80m transmitter) then swing the v.f.o. about 3.5 Mc/s on the dial until the signal is heard. Switch off the b.f.o. and adjust the core of L2 until the oscillator of the transmitter is zero beat with the 3.5 Mc/s harmonic of the 100 kc/s crystal oscillator, when the dial is set exactly on 3.5 Mc/s. Next move to 3.8 Mc/s and adjust the trimmer through the top of the screening can for zero beat when the dial is set exactly on 3.8 Mc/s. Move back to 3.5 Mc/s and re-trim the coil, then back to 3.8 Mc/s and adjust the trimmer again. Repeat this process until the two readings are obtained simultaneously.

Should it be found that the small trimmer will not adjust sufficiently to achieve this, it becomes necessary to adjust the large trimmer, the locking screw of which can be seen through a hole in the side of the can. The easiest way is to remove the can, carefully measure the distance from the locking screw to the spindle on the side of the trimmer, and mark off and drill a $\frac{1}{16}$ in. hole in the can, so that when it is replaced the large trimmer can be adjusted through this new hole. The small amount of movement permitted by the locking arm should be quite sufficient to allow the calibration to be adjusted. All adjustments should be made with the screening can in place.

Once the band edges are calibrated, and providing the unit was in good condition to start with, the setting of the dial at 3.6 and 3.7 Mc/s may be accurate also. However, in units so far modified it has been found that with 3.5 and 3.8 Mc/s accurately aligned, the intermediate 100 kc/s points showed varying errors up to 5 kc/s. Correcting this proved slightly more difficult.

First remove the base plate from the chassis, and set the dial to 3.8 Mc/s. On the end vanes of the oscillator ganged variable capacitor are segments about a quarter of an inch wide. Determine which segment is the next one to be meshed with the stator as the dial is turned to decrease frequency, and bend it slightly towards the stator if the dial reads low on 3.7 Mc/s, and away from the stator if the reading is high. Re-adjust the trimmer through the top of the can for zero beat on 3.8 Mc/s, then swing to 3.7 Mc/s and check the error. Repeat if necessary until satisfactory calibration is achieved. Similarly adjust the next segment which becomes meshed on tuning to 3.6 Mc/s, and check the settings at 3.6, 3.7 and 3.8 Mc/s. The trimmer should need little or no adjustment when setting 3.6 Mc/s, since, when tuned to 3.8 Mc/s, the segment which is adjusted to trim 3.6 Mc/s

is not in close proximity to the stator, and therefore has no effect on the capacity.

When 3.6 Mc/s is correct the 3.5 Mc/s calibration must be re-set. This is done by means of the next segment of the rotor vane. A final check on the four spot frequencies, and perhaps a touch on the coil slug and the trimmer, and the job is done. Any slight frequency shift caused by replacing the top cover can be eliminated by adjusting the trimmer, which is accessible through the slide covered hole in the top of the cover. This process sounds very complicated, but actually it is remarkably easy to achieve calibration to within less than 1 kc/s of the dial markings.

The above process should be carried out with voltage applied to the oscillator of the value which it is intended to use, as a change of 50 volts in h.t. can cause a frequency shift of 4 or 5 kc/s.

P.A. Trimming

The p.a. tank circuit tuning is ganged to the oscillator tuning, and may require trimming up after the oscillator has been calibrated. This is done by means of the large screwdriver-adjustable capacitor immediately behind the p.a. tuning capacitor under the chassis, and also by the adjustable core in the tank coil. (The other "screw with the blue head" mentioned in the warning on the oscillator screening can.)



Front view of the transmitter after modification. Note the aluminium panel covering the "window" above the tuning dial.

The trimmer is accessible through the side of the chassis, there being two holes corresponding with the spindle of the trimmer and the locking screw. The plugs in these holes are only a spring fit, and can easily be removed with a screwdriver. The locking arm on the spindle permits only a degree or two of movement, but this should be quite sufficient.

To trim the p.a., first set the dial to the h.f. end of the band, and the "antenna coupling" control at zero. Apply power to all inputs (reduced h.t. to the p.a. anodes safeguards against damage to the valves during the process of tuning up), press the key and adjust the trimmer for minimum anode current. Lock the trimmer. Do not leave the key pressed for long periods, because in this "dipped" condition the screen current is higher than normal, and damage to the valves may result.

Next, set the dial to the l.f. end of the band, and adjust the coil core for minimum p.a. anode current. Check that the anode current does not rise much above the lowest dip obtained at any setting of the dial within the band; if it appears to rise at the h.f. end, repeat the trimming procedure until the p.a. remains dipped over the whole band.

(Continued on page 375)

The Command Set Receivers

By R. F. STEVENS (G2BVN)*

THE popular and useful Command receivers have been available for several years, but recently a new release has been made and at the present time the various types can be purchased at reasonable prices. Some readers may not be familiar with these receivers, while others may not have access to the many previous articles published about them, most of which have appeared in American radio journals. The purpose of the present article is to acquaint the reader with the units; to give the basic modifications necessary for use in amateur service, and to suggest further alterations designed to improve the performance.

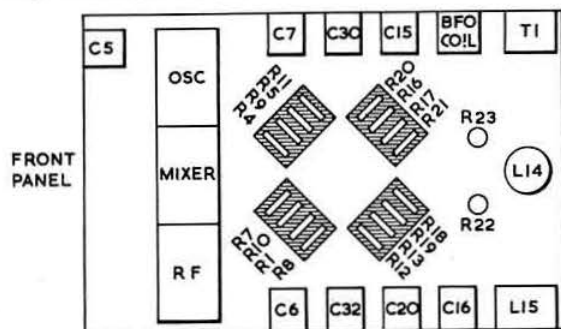


Fig. 1. Underchassis view showing location of principal components.

Types Available

The Command receivers commonly available are the BC453 covering 190 to 550 kc/s. (i.f. 85 kc/s.); the R25 covering 1.5 to 3.0 Mc/s. (i.f. 705 kc/s.); the BC454 covering 3 to 6 Mc/s. (i.f. 1415 kc/s.), and the BC455 covering 6 to 9 Mc/s. (i.f. 2830 kc/s.).

All these units have the same basic six valve super-heterodyne circuit using a 12SK7 r.f. stage; a 12K8 mixer; a 12SK7 in each of the two i.f. stages; a 12SR7 second detector and b.f.o., and a 12A6 output stage. The heaters of these valves are wired in series—parallel for operation from a 25 volt source.

In their original condition, these receivers are stable and reasonably sensitive, although the selectivity of the BC455, and to a lesser extent the BC454, is insufficient by present day standards. However, they may be usefully employed as standby receivers, or in the case of the BC453, as a 'Q5-er' fed from the last i.f. stage of the normal station receiver and thereby providing a dual conversion combination with very high selectivity. The units are also frequently used in mobile operation, although their physical shape introduces mounting problems in the modern car. Where coverage of a band not included in the original frequency range is desired, this may be obtained either by use of a simple converter or modification of the coil pack in the Command receiver.

Basic Modifications to the Receivers

The component references in the text and diagrams are taken from the circuit appearing in the official manual. The circuit has been reproduced frequently in amateur publications and can also be obtained from dealers selling the units. Diagrams showing the location of the main components are given in Figs. 1 and 2.

The initial step is to convert the heater wiring to parallel (6 volts or 12 volts) operation. First of all the heater choke L14 (5546) should be removed, exposing the 3 pin dynamotor plug (J2). The black lead on pin 1 is negative heater and the white lead from pin 2 is positive heater. The latter goes to pin 2 of V6 via a filter condenser C16c (5413). Remove the white lead from pin 7 of V6 and earth this pin; replace the white lead on pin 2 of V6. Pin 7 of V5 is therefore connected to the 'live' heater line. Earth pin 8 of V5. Remove the white lead from pin 2 of V3 and join to pin 7; earth pin 2. Remove white lead from pin 7 which runs to pin 6 on the front socket (J1). Remove the bare wire from pin 2 of V2, fit sleeving and join to pin 7; earth pin 2. Fig. 3 shows the connections after the above alterations have been carried out.

To permit the installation of the front panel controls the socket (J1) at the front of the receiver is removed, complete with box, to allow mounting of the b.f.o. switch, r.f./i.f. gain control and headphone jack on the small front panel.

The lead from pin 6 has already been removed, and the white lead from pin 7 which ran to the heater choke (previously removed) can also be cut out. The remaining leads should be connected thus: pin 1—green—gain control; pin 4—black—phone jack; pin 5—red—b.f.o. switch. The lead formerly connected to pin 2 should be earthed, as should the centre tag of the gain control, one side of the switch and one side of the phone jack.

The b.f.o. switch is of the single pole on-off toggle type. In the 'on' position this switch removes the earth connection from the b.f.o. h.t. line.

The gain control is a 50K ohm variable resistor which completes the cathode circuits of the r.f. and first i.f. valves. This control should be of a compact type and if fitted with a single pole switch, can be used to control the main h.t. supply.

The output transformer T1 (5631) will provide taps of 8,000 ohms impedance (terminal 3) and 600 ohms impedance (terminal 6). The first mentioned value will normally be used with high impedance headphones. The small neon across the primary of T1 strikes at about 80 volts, its purpose being to protect the unit when very strong signals are received.

In the BC453 receiver the bakelite rod seen protruding through the top of each i.f. transformer when the black screw cap is removed, should be carefully pulled out to

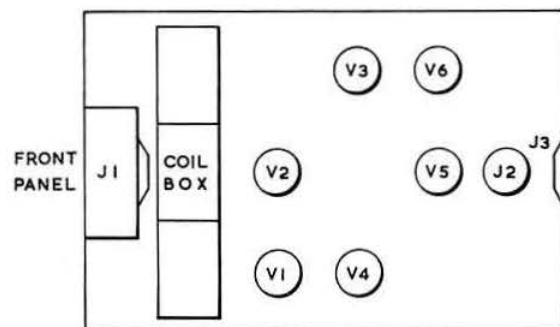


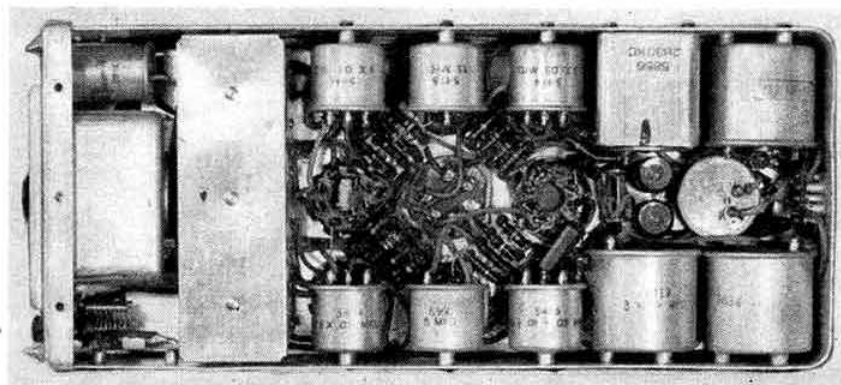
Fig. 2. Underchassis view showing location of valveholders.

*51 Pettits Lane, Romford, Essex

its maximum travel. This has the effect of reducing the coupling and thus giving greater selectivity.

There are several ways in which a tuning knob may be fitted to the toothed drive to the right of the dial, but it is probably easiest to use an extension coupler which can readily be adapted for this purpose by cutting the solid $\frac{1}{4}$ in. extension piece to the required length. A small knob can then be fitted in the usual way.

The simplest way of supplying the Command receivers with the necessary heater power of 12 volts at 0.9 amp or 6 volts at 1.9 amp (when a 6K6 output valve is used)



Underchassis view which, with Figs. 1 and 2, will assist identification of the major components.

and h.t. of 200-250 volts at 50 mA, is to utilize the former dynamotor plug J2. Pin 1 should be earthed; the 'live' heater connected to pin 2 and h.t. positive to pin 3. Alternatively J3 may be removed and replaced by an octal or 4 pin socket.

A Belling-Lee co-axial socket is installed in place of the existing aerial terminal and to accomplish this it will be found necessary to drill only one additional hole.

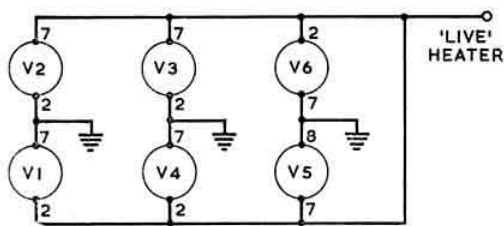


Fig. 3. Heater connections modified for parallel operation.

Further Modifications

When the modifications detailed above have been carried out the receiver will be found to give very good results over the appropriate frequency range. There are, however, further alterations which can be made and which will give improved performance.

The gain control in the original circuit completed the cathode circuits of the r.f. and first i.f. valves. This has been shown in Fig. 4 and it will be seen that the control is now operative on the r.f. amplifier only, which enables overloading to be eliminated whilst retaining the gain of the i.f. stages.

Automatic volume control can easily be added by using the diode of the 12SR7 (pin 5) which is earthed in the original circuit. If the unit is revalved with

6 volt valves the same modifications may be applied to a 6SQ7 or 6SR7. The appropriate circuit is shown in Fig. 5.

If the receiver is to be used on the 21 Mc/s or 28 Mc/s bands either as a 'Q5-er' or by conversion, the need for a noise limiter will be apparent. Several circuits have been tried, including some using crystal diodes, but the arrangement shown in Fig. 6 was found to give best results. A 12H6 is shown but where it is desired to use valves with 6.3 volt heaters, a 6H6 or 6AL5 could be used, or alternatively an EA50, the latter requiring only the small cradle type valve holder which, with care, could be fitted below the chassis. An on-off switch for the noise limiter is unnecessary, but if one is fitted, the leads to it should be individually screened.

Greater audio output may be obtained by the addition of an a.f. amplifier (12J5 or similar) feeding into the 12A6 (or a 6K6 if 6 volt valves are used). If these alterations are made then the noise limiter can be fitted around the original 12A6 valveholder, and two new sockets mounted on the rear platform to accommodate the a.f. amplifier and output stage. A suitable circuit is suggested in Fig. 6 and it will be seen that an audio gain control is now incorporated.

The pitch control in these receivers is located in the b.f.o. coil assembly and needs screwdriver adjustment. To provide easier operation a trimmer, similar to the small aerial trimmer found in the set, was obtained and mounted in the position formerly occupied by the $3 \mu F$ by-pass condenser C5 (7582) on the right hand side of the front panel. One side of this trimmer is connected to pin 6 of the 12SR7, the other side being earthed. If a full range is to be obtained with this control, it will be necessary to disconnect the existing condenser in the b.f.o. coil can (C28).

Miniature rotary switches are now available at very reasonable prices and a 2 pole 3 way unit can be mounted on the front panel to give the following positions: A.v.c. on—A.v.c. off—B.f.o. on. If this is done then the toggle switch controlling the b.f.o. can be eliminated and the rotary switch mounted in its place.

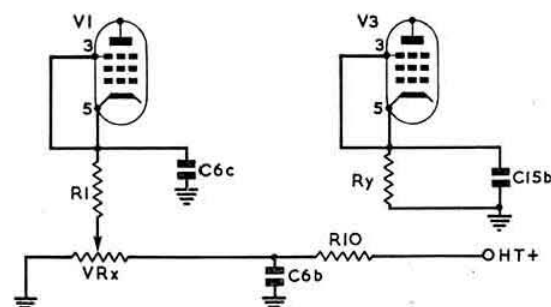


Fig. 4. R.f. gain control circuit after modification. Ry, 1,500 ohms $\frac{1}{4}$ watt. VRx, 50,000 ohms potentiometer. All components except Ry and VRx appear in the original circuit.

Conversion to 28 Mc/s

The BC454 Command receiver can be successfully converted for use on 14, 21 and 28 Mc/s, and one of these units is at present giving excellent results when used in a 28 Mc/s mobile installation. Assuming that the basic modifications have been carried out the conversion consists of modifying the tuning condenser; re-winding the r.f. coils and increasing the gain of the receiver.

All the rotor plates but one in each section of the tuning condenser should be removed. The plate left should be the slotted one so that tracking adjustments may be made; the remainder may be removed by careful flexing with a pair of long nose pliers. Next, remove the plug-in coil pack from the bottom of the receiver when it will be seen that the location of this pack is

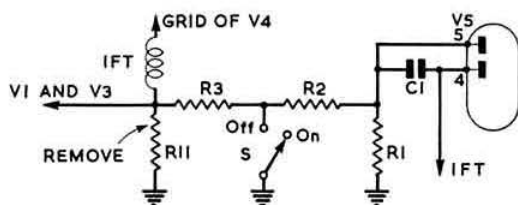


Fig. 5. Circuit showing modifications necessary for a.v.c. C1, 100pF mica; R1, 1 Megohm $\frac{1}{2}$ watt; R2, 0.5 Megohm $\frac{1}{2}$ watt; R3, 0.1 Megohm $\frac{1}{2}$ watt; S, s.p.s.t. toggle; V5, 12SR7. R11 appears in the original circuit (100,000 ohms).

determined by the pin arrangement of the three coil plugs. Remove each coil from its shield can, and the core from each coil, replacing the cores when the alterations have been completed.

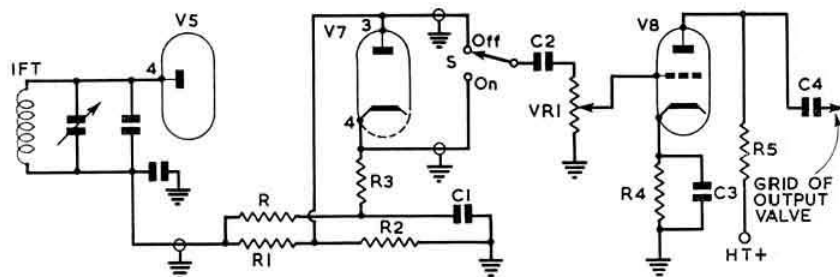


Fig. 6. Circuit showing addition of noise limiter and a.f. amplifier. Unmarked components appear in the original circuit.

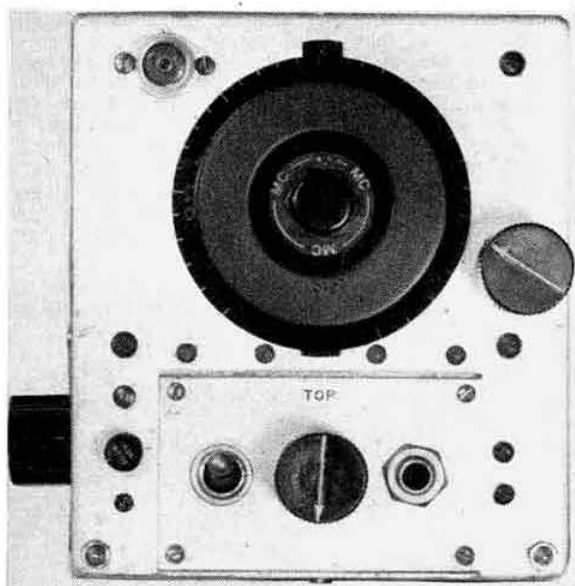
C1, 0.05 μ F;
C2, C4, 0.01 μ F;
C3, 3 μ F (can be C5 of original circuit, previously discarded);

R, 1.2 Megohm $\frac{1}{2}$ watt;
R1, R2, 270K ohms $\frac{1}{2}$ watt;
R3, 820K ohms $\frac{1}{2}$ watt;
R4, 2.2K ohms $\frac{1}{2}$ watt;
R5, 220K ohms $\frac{1}{2}$ watt;

S, s.p.s.t. toggle;
VR1, 1 Megohm potentiometer;
V5, 12SR7;
V7, 12H6 (see text);
V8, 12J5 (or similar).

The r.f. coil should be rewound with 6 turns of 18 s.w.g. enamelled copper wire; the mixer coil secondary with 5 turns; the interwound mixer coil primary with 9 turns, and the oscillator coil grid winding with 5 turns. All these coils should be spaced and the oscillator tuning range should be above the signal frequency. The final adjustments to obtain the required frequency coverage should be made with the condenser shield cover in place.

The gain of the receiver may be increased in several ways but it was preferred to make straightforward valve



Front view of the unit after the basic modifications have been carried out.

substitution rather than rewire the various stages. If, however, there is no objection to the latter procedure, the installation of a 6AK5 r.f. stage will, with correct circuit constants, give enhanced performance on 28 Mc/s. 12SG7 valves were substituted for the existing 12SK7 type in the r.f. and i.f. stages, and the screen volts were increased by fitting a 20,000 ohm 10 watt resistor in place of R23, the existing bleeder resistor on the

screen grid line. If desired, some further improvements may be effected by connecting the heaters of the two i.f. stages in series and using two of type 6AB7 in place of the original 12SK7s.

This article has dealt with only a few of the many possible modifications to these versatile and useful receivers. The references which follow will provide additional information on this subject.

(Continued on page 375)

The Airmec type C.864 Communications Receiver

Reviewed by W. H. ALLEN, M.B.E. (G2UJ)*

IT may be said right away that the Airmec C.864 although not primarily designed with the Amateur Service in mind does all that can be asked of a communications receiver. It is an outstanding instrument which can be recommended without reserve whether the chief interest in reception is local or DX, 'phone, c.w. or s.s.b.

The Circuit

Up to 1 Mc/s the receiver operates as a simple super-het having an i.f. of 85 kc/s; above that frequency a first i.f. of 800 kc/s is introduced, a second mixer effecting a change from 800 to 85 kc/s.

A massive turret, with good contacts and a completely shake-proof locating mechanism carries the coils for the r.f., first mixer and oscillator stages for the seven ranges covered by the receiver. These stages are followed by the second mixer, the hexode section of which acts as an i.f. amplifier at 85 kc/s for signal frequencies up to 1 Mc/s and as second frequency changer above that range. Between this valve and the first 85 kc/s i.f. stage is arranged a variable band-pass filter comprising five ferrite cored coils and providing total bandwidths of 10, 6, 3 or 1.5 kc/s.

The two i.f. valves are aperiodically coupled and in the anode circuit of the second there is a further tuned circuit feeding the signal and a.v.c. diodes. Balanced injection from the b.f.o. is employed to these diodes with



The Airmec type C.864 communications receiver. The monitor speaker is at the top left and the S meter just above the dial at the right-hand side.

the result that the a.v.c. is unaffected by its presence and is thus available, together with the S-meter, for either 'phone or c.w. reception. This arrangement also

*32 Earls Road, Tunbridge Wells, Kent.

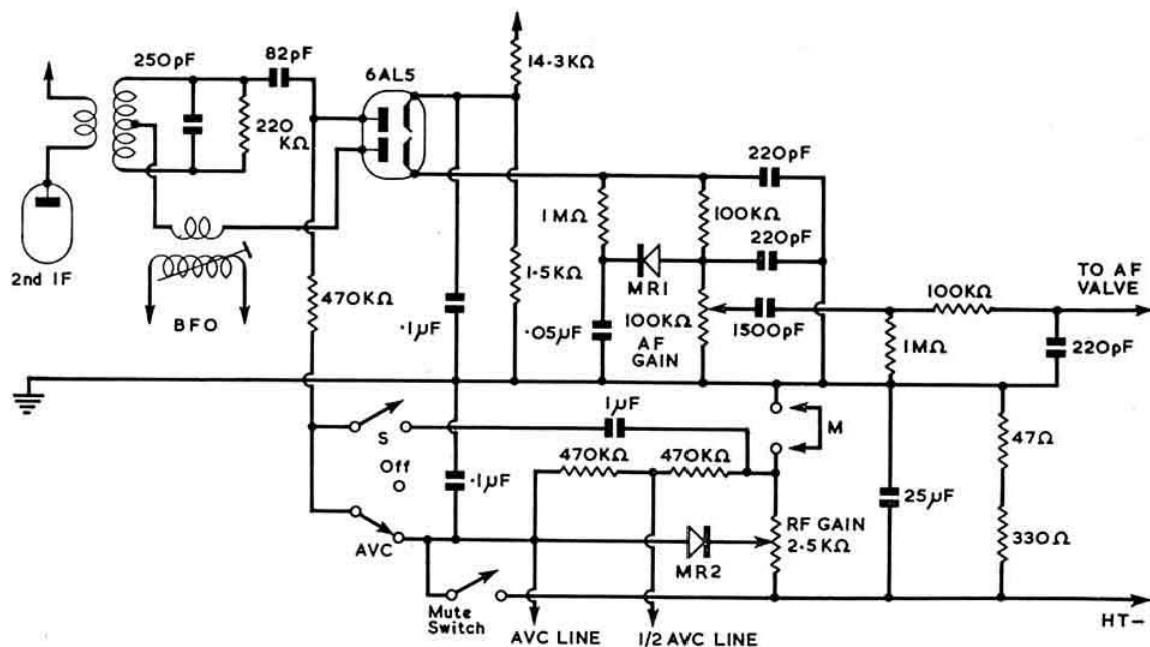


Fig. 1. Circuit diagram of signal and a.v.c. rectifiers, gain controls, noise limiter and muting arrangements on the C.864. The method of b.f.o. injection will be seen together with the muting link (M). The switch contacts (S) add capacity to increase the time constant of the a.v.c. system for c.w. and m.c.w. reception

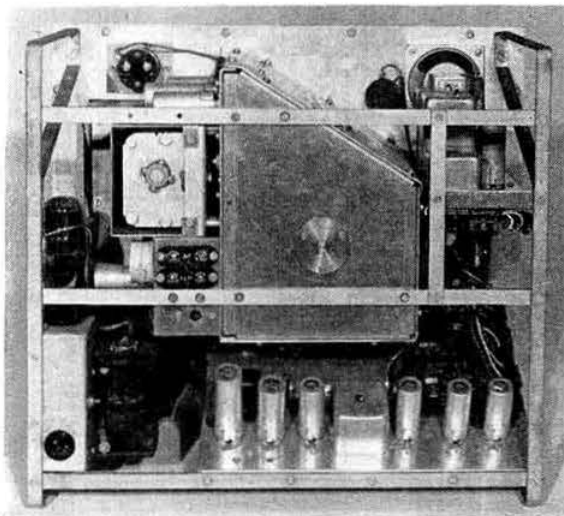
results in much less b.f.o. hiss with a significant improvement in the signal-to-noise ratio on c.w. and s.s.b. transmissions. The service switch effects the necessary increase in the time constant of the a.v.c. system when set to "C.W." or "M.C.W." This, together with other interesting features of the design, will be found in Fig. 1.

After demodulation, the signal passes via a germanium diode noise limiter to the a.f. stages and thence to the output stages. Negative feed-back is applied from the secondary of the output transformer to the cathode of the first a.f. amplifier and has the effect of maintaining the output voltage substantially constant over a wide range of load impedances. The a.f. response is flat within 3 db over the band 200 to 4,500 c/s with a fairly sharp fall-off at either end.

A built-in crystal oscillator enables a frequency check to be made every 100 kc/s throughout the range of the receiver. To assist in distinguishing the required harmonic, particularly at the higher frequencies, the primary of a transformer tuned to 500 kc/s in the anode circuit of the oscillator valve increases the strength of the crystal harmonic at each multiple of 500 kc/s. The presence of a crystal diode across the secondary of this transformer ensures that the output is rich in harmonics, the circuit being so arranged that their strength does not vary appreciably throughout the entire range of the receiver.

The "Service Switch" provides two crystal check positions: "Internal", used for scale checking, when the aerial is disconnected from the input of the receiver and the b.f.o. switched on, and "External" when the crystal oscillator is energized and the receiver operates in its R/T condition for checking the 100 kc/s crystal harmonics against an external standard.

The power supply is standard and has provision for input voltages of either 100 to 130 or 200 to 250. Consumption is approximately 90 watts and a neon stabilizer supplies the first and second oscillators and the b.f.o. A resistance in the negative line provides the various bias supplies.



An interior view of the Airmec communications receiver showing the instrument-style construction.

Special Features

One of the features which can make or mar a communications receiver is the dial, and in this respect the C.864 scores heavily. The frequency calibrations for the seven bands plus a logging scale are printed on a strip of white film $4\frac{1}{2}$ in. wide and four feet long which is illuminated from the rear and wound on and off a pair of rollers, just over 3 in. being visible at one time. The gear train between the tuning control and gang condenser has a ratio of 90 to 1 and the scale movement for 100 kc/s varies between $2\frac{1}{2}$ inches at 1.8 Mc/s to $\frac{1}{2}$ inch at 21 and $\frac{1}{2}$ inch at 28 Mc/s. In practice no difficulty was experienced in precise tuning of weak signals at the highest frequency and with the selectivity at maximum.

The actual tuning control is a disc marked with 100 divisions (for use in conjunction with the logging scale) and is provided with a handle. This was found to take quite a little getting used to and one of the few suggestions we have to offer is that the disc should be replaced by a substantial knob carrying the logging scale calibrations on a skirt. A handle on the knob would still be necessary to enable rapid excursions to be made from one end of a range to another with the low gear ratio employed.

As previously mentioned, the scale may be checked at every 100 kc/s point throughout its range, any discrepancy being corrected by means of an adjustable cursor. A further aid to frequency checking is provided by the fine tuning control which in effect is a variable first i.f. tunable over 50 kc/s on either side of its normal setting. This is accomplished by a three gang condenser which tunes the second oscillator and the primary and secondary of the transformer coupling the two mixers. The slow motion dial operating this condenser carries an accurate frequency scale thus providing means for interpolating between any two 100 kc/s points on the main dial; with its aid the receiver may be set, or the frequency of a received signal read, to within 2 kc/s anywhere from 1 to 30 Mc/s.

The main function of the fine tuning device, apart from its use in frequency measurement, is as an aid to selectivity and a most impressive single-signal effect may be obtained on c.w. reception by off setting this control slightly to one side or the other of its normal position.

The design of the 85 kc/s band-pass filter is such that the degree of selectivity may be changed without risk of losing the signal which remains in the middle of the pass band whether the control is set for 10, 6, 3 or 1.5 kc/s total bandwidth, these figures being the limits for a 6 db reduction in signal strength. The skirt selectivity of the filter is excellent and the overall effect "cleaner" than is the case with many crystal filters. The gain does not vary appreciably with variation of selectivity.

A.v.c. is applied to the r.f., both mixers and the first i.f. valves, r.f. gain control being effected by varying the bias on the a.v.c. line. The gain control is particularly smooth in operation and the a.v.c. proved capable of dealing satisfactorily with all signals encountered, including the B.B.C. European Service transmitter at a distance of 8 miles.

Details of the r.f. gain and a.v.c. systems will be found in Fig. 1.

On test the S-meter which reads the anode current of the r.f. valve appeared to be a little less optimistic than the instrument found in most amateur communications receivers.

Muting of the receiver during transmission is accomplished by placing additional negative bias on the a.v.c. line, and two alternative controls are provided. That on the "Service Switch" renders the receiver completely inoperative but a switch, or relay contacts may be connected in place of a link adjacent to the aerial and earth terminals. When this connection is opened the muted sensitivity of the receiver may be adjusted for 'phone or c.w. monitoring during transmission.

Construction

The conventional panel and chassis design has become so standardized that it comes as a pleasant surprise to find a receiver constructed otherwise. In the Airmec there is a very substantial panel approximately 18in. by 15in. by 1in.-thick finished in black anodizing and fitted with two chromium plated handles extending from top to bottom at each side. The various sections of the receiver—power supply, variable first i.f. and 85 kc/s band-pass filter, b.f.o. and i.f. valves and the audio section—are mounted on separate chassis secured to a well-braced metal framework which is itself bolted to the panel. This results in an extremely rigid assembly which has the further merit of very easy accessibility. All components appear to be of good quality and the assembly and wiring is of first-class instrument standard. The ventilated steel case, finished in grey crackle and with folding handles on the top, may be forward mounted on a standard 19 in. rack. When standing on a table the receiver occupies a space of only 10 in. from front to back, measured over the projecting panel handles.

Conclusion

Being able to use the receiver for some weeks enabled a very thorough test of its capabilities to be made both on the amateur and lower frequency bands. The general impression gained was of an instrument which had been thoroughly developed and tested for the job it was designed to do. After an initial warm up the frequency drift was negligible as evidenced by its excellent

Airmec Type C.864 Communications Receiver Brief Details

Valve Line-up		Frequency Ranges	
R.f.	6BA6	15 to 45 kc/s	Single conversion
First mixer	12AH8	100 to 300 ..	
First oscillator	6BA6	300 to 1,000 ..	
Second mixer	12AH8	1 to 3 Mc/s	Double conversion
I.f.	2 x 6BA6	3 to 10 ..	
Det./A.v.c.	6AL5	10 to 20 ..	
B.f.o./First a.f.	12AX7	20 to 30 ..	
Output	6BW6	Input impedance 75 or 400 ohms	
Crystal calibrator	6BA6	unbalanced. Output 2 watts into 3 ohms, 20 milliwatts into 600 ohms	
Rectifier	5Z4G	or 50 milliwatts into internal 2½ in. loudspeaker.	
Voltage stabilizer	CV287		

performance in the reception of s.s.b. signals where the tunable first i.f. and variable band-pass filter showed to particular advantage.

The gain was found to be remarkably constant over each band and no i.f. breakthrough or image interference was found on any range above 1 Mc/s, i.e., when the double conversion circuit was in use. Some breakthrough of 85 kc/s signals was, however, noticed in the 100 to 300 kc/s range at times, but as this fault was not present on two other models of the receiver it was possibly due to a maladjustment of the signal frequency circuits of the receiver under test. When using 'phones the hum level was a little high but not in any way troublesome with an external 3 ohm impedance speaker: again this effect was not present in the other two models mentioned. The single germanium noise limiter lacked the "killing" power of the conventional series/parallel thermionic type, but was effective on all but the most intense impulse interference.

The sensitivity was very good on all ranges and well maintained right up to 30 Mc/s; no mean feat when it is remembered that the lowest frequency range covered by the receiver extends to 15 kc/s.

The receiver is manufactured by Airmec Limited, High Wycombe, Bucks.

Top Band Transistor Transmitter Results

MR. N. J. Waite, G3K0X, of Grange Park, London, N.21, has been operating on Top Band for nearly a year with an input of about 0.1 watt to a transistor transmitter. During that time he has worked G, GC, GD, GI, GM and GW, which may well be a record for the British Isles. The most distant contact was with GM3KHH in Elgin at 430 miles. The transmitter normally uses an OC51 point contact transistor but junction types have been tried. Operation is on 1830 kc/s c.w.

Stereosonic Reproduction Lecture

ON February 20, 1957, at Northampton Polytechnic, St. John Street, London, E.C.1, Messrs. H. A. M. Clark, G. F. Dutton and P. B. Vanderlyn will lecture to the Radio Section of the I.E.E. on "The Stereosonic Recording and Reproducing System." The meeting will commence at 5.30 p.m. and is open to R.S.G.B. members by courtesy of the I.E.E.

Mr. Clark is a Vice-President of the R.S.G.B. and Chairman of the Technical Committee.

What's My Line?

MR. RON E. HORSNELL, for many years G2YI, succeeded in beating the B.B.C. *What's My Line?* panel on Sunday, January 20, 1957. Mr. Horsnell is employed by the Post Office and his "line" was given as "A Detector of Unlicensed Television Sets."

EI and YU on Four Metres

FROM I.R.T.S. comes the good news that the amateurs of Ireland may now apply for permission to use the band 70.575 to 70.775 Mc/s. Mr. Harry Wilson, EI2W was granted the first of the new licences. His operating frequency is 70.662 Mc/s.

S.R.J. announce that Yugoslav amateurs are now permitted to use the band 72-72.8 Mc/s. This concession brings Yugoslavia into line with France and Soviet Russia, the only two Region I Administrations represented at the Atlantic City Conference to assign this band specifically to the Amateur Service.

"Speech Amplifiers"

IN the article "Speech Amplifiers" by G. L. Benbow, M.Sc., A.M.I.E.E., on page 458 of the May, 1956, R.S.G.B. BULLETIN, the expression for the gain at any given frequency with respect to that at medium frequencies should have been shown as

$$\frac{R_g}{\sqrt{R_g^2 + \frac{1}{\omega^2 C_e^2}}} \times 100\%$$

We are indebted to R. D. H. Jones, CPIAP, of La Paz, Bolivia, for drawing attention to this mistake.

TWO METRES AND DOWN

Aurora Opening—Danish I.G.Y. Plans—Activity Period Success

By F. G. LAMBETH (G2AIW)*

Aurora Opening

DURING the evening of January 21, 1957, there was an aurora opening on two metres, undoubtedly the outstanding v.h.f. event of the past month. Many operators suddenly found continental and other distant signals coming in when their beams were pointed north or north-west-wards, a sure sign of auroral propagation. The opening, which lasted for about two hours, was characterized by the poor quality of signals. Phone transmissions were unreadable though strong, while c.w. varied from "spark" to T6, as the following reports show.

G5BD (Mablethorpe) says the first intimation he had of the phenomenon was a roaring noise on television sound with black patches on the vision (48-51.75 Mc/s) at 20.30 G.M.T. A check of 2m found about a dozen "rusty" T3 carriers when beaming due north with no intelligible speech on them. Eventually at 21.00 G3KFD (Worcestershire) was raised, unreadable on phone but RST593 on c.w. which dropped to 443 on turning the beam. With the beam still north ON4HN, G6NB, GW8UH and DL3YBA were all heard with T6 signals. At 21.55 F3YE (Le Mans) followed by F8IR (Montargis) were worked 566 each way but these signals disappeared when the beam was turned. '5BD thinks this suggests that 2m signals have a very high angle of radiation which only needs a suitable reflector to produce "super" DX. At 22.33 DL3YBA was still 566 in an otherwise empty band, and at 22.35, with the beam turned south-east, ON4BZ was heard with a perfect T9 note calling GM6KH. At that moment the TV interference stopped and the aurora effect disappeared sharply. At no time did '5BD hear any station north of him—stations heard "all T6-ish" were G2YB, '3EMU, '3KHA, '2WJ and '3DA. G5KG was worked normally from 22.15-22.30 G.M.T., so that the phenomenon lasted approximately two hours. Tests made on 435 Mc/s during this period were fruitless.

G3HRH (Welwyn Garden City) also reports the aurora occurrence, and mentions in particular DL3YBA who was coming in at 22.15 at S9+++ like a local using spark. The beam was toward Scotland. G3HRH thinks that many stations did not appreciate the implications of the phenomenon before it was over; i.e., that the beam had to be pointed northward and not towards the Continent.

G3KHA (Bristol) reports the band became suddenly alive between approximately 21.00 and 23.00 G.M.T. The general effect was that of a reflecting surface somewhere up north which not only reflected but also disturbed signals. Signals from the east including ON, DL, etc., were best received with the beam pointing north. Phone signals were quite unreadable except for the locals, and c.w. had a nasty T1 note. Northern stations were very strong. ON4BZ (direct path) was nearly T9, but

with G3KHA's beam pointing north signals became T1 also. The effect of the aurora fell off quite rapidly at about 22.35 G.M.T. At that time DL3YBA had just come back to '3KHA, but by the end of the over he had faded out and was not heard again. ON4BZ continued to be heard calling "CQ GD" but was by then on his proper bearing and T9—his signals disappeared at about 22.50 G.M.T.

G2WJ (Great Canfield, near Dunmow) worked DL3YBA off the aurora, copy being 100 per cent. He says the opening was one of the most interesting he has ever heard and he spent two fascinating hours listening.

B.R.S.19162 (Dewsbury) noted the peculiar effect of flutter and fading on quite local stations on January 21, probably due to the magnetic storm and auroral effects.

Via **G5KW**, it is learnt that auroral and heavy temperature inversion effects were noted on January 20 by **G3KFX** (Ipswich). A station believed to be HB9EO was heard, as well as an unknown OK station working a DL9. '3KFX himself worked five DL stations all in the neighbourhood of Hanover.

A late note from **GM6WL** reports that **GM6KH** (Hamilton) heard G phone and c.w. signals very mutilated and difficult to read though loud on January 21. He then heard an ON4 and DL3YBA on c.w. No QSOs resulted, however, and the effect disappeared. '6KH has received reports from G3FAN (I.O.W.) and '3JHM (Worthing) on his own signals.

Members wishing to know more about auroral propagation will find "Aurora and Magnetic Storms" in QST for June, 1951, and "More About V.h.f. Auroral Propagation" in QST for January, 1955, of considerable interest. Although a.m. is generally unreadable, recent experience in North America suggests that phone contacts via the aurora may be practicable using single sideband. Voices are said to have an eerie, ghost-like quality.

International Geophysical Year

In connection with the International Geophysical Year (July 1, 1957, to December 31, 1958) the Danish Society, E.D.R., plan to operate a specially designed station daily from approximately one hour before to one after sunset. The aerial will be at least a three element beam on a 120ft tower firing northwards, fed by a transmitter running 100 watts input to a QQE06/40.

The object will be to encourage amateurs in Germany, Eire, Great Britain, Norway, Finland, Belgium, Holland and Sweden to attempt c.w. contacts by auroral propagation and to report on them for analysis by IGY experts.

The station will use the call OZ7IGY and will transmit the message "PSE RPRT EDR BOX 79 COPENHAGEN DE OZ7IGY" in slow Morse on 144.00 Mc/s. It is expected that OZ7IGY will be brought into operation during March, 1957.

*21 Bridge Way, Whitton, Twickenham, Middlesex.

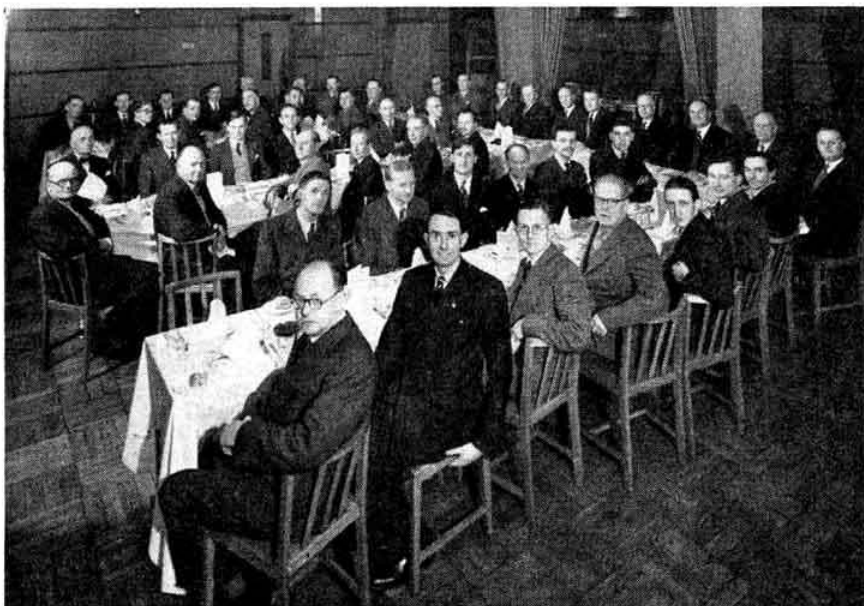
London U.H.F. Group Dinner

About 50 members and friends attended the Fifth Annual Dinner of the London U.H.F. Group on January 11, 1957, at the Bedford Corner Hotel. Dr. R. L. Smith Rose (D.S.I.R.) and the President of the R.S.G.B. (Douglas Findlay, G3BZG) were the Guests of Honour. Mr. Barnard of *Wireless World* was among the other guests, and Phil Thorogood, G4KD, was in the chair. Others present included Council Members W. H. Allen, G2UJ, and K. E. S. Ellis, G5KW. Many well known v.h.f./u.h.f. personalities were also there and a pleasant evening was enjoyed by all. During the evening Dr. Smith Rose gave one of those inspiring talks which we have come to associate with him. G5BD (who made the long journey from Mablethorpe), G3HT (oldest member and youngest grandfather present), '5KW, '2UJ, '2AHL, '3HBW and '2AIW also spoke.

A Month of "Activity Nights"

Faithful followers of this feature will recall that the idea of having a two metre activity period on Monday evenings sprang from a contact between G5KG and G5UM about six weeks before Christmas 1956. The "activity night" was duly inaugurated at the beginning of December. For the first Monday or two about ten stations in the London area responded to the call and then the snowball began to grow. The record turnout so far seems to have been on January 14, when G5KW made no fewer than 25 contacts during the evening.

"Monday Night at 8" is now a well established date for two metre operators not only in the Home Counties, where the movement began, but throughout most of Britain—and thanks to the propaganda efforts of G5KW the news was passed on to our friends on the Continent and seems to have spread as far east as SM! Any member who has not dusted off his two metre equipment for some years will experience a pleasant surprise if he activates it between 8 and 10 any Monday evening.



The London U.H.F. Group Dinner was held on January 11, 1957, at the Bedford Corner Hotel, Tottenham Court Road.

Two Metre News

The 2m band has been rather in the doldrums lately, apart from the Activity Nights and auroral opening on January 21. Although there have been one or two bright spots, notably January 7 and 19/21, the overall picture is more or less what is expected during the winter. As Continental stations can be worked even in January, however, there are always interesting possibilities for the keen worker.

B.R.S.21136 (Ruislip) has sent a list of calls heard which is larger than one would expect—53 stations being logged during the month. On January 7 he heard 40 stations. **B.R.S.18572** (Mitcham) also mentions January 7 when G3JZQ (York) was heard for the first time. **B.R.S.20162** (Selsdon) says conditions were largely "average winter or below" and only on one occasion (January 7) could they be said to better this conclusion. On that occasion 49 stations in 20 counties were heard. Over the period as a whole, 115 stations were logged.

B.R.S.6327 (Earlsfield) reports for January 19/20 only and his list includes two PAOs.

G3LHA (Coventry), although a fairly new call, has been monitoring the v.h.f. bands for 7 years, which makes him quite an old-timer. The transmitter in use is 6J6-TT11-832-832 p.a. at 28 watts. The previous oscillator (6AG7, grid/plate) gave TVI trouble, so the new arrangement (parallel 6J6 Squier) was put in with good results. The aerial is a 3 element indoor Yagi, delta matched and about 23 ft. high. Much European and G-DX has been heard and worked with this arrangement. The converter is a G2IQ-type about 7 years old, modified and now crystal controlled, into a BC454. Operation commenced on 2m on September 26 last and since then 34 counties and 6 countries have been worked. G3LHA would welcome skeds with stations in Oxford or Glamorgan. He worked G3HBW (Bushey) at S9+ at 15.30 on January 18 and says he was amazed to hear a 2m station at that time—the highlight of his month! This was followed by a spell of very good conditions during the evenings of January 18 and 19. G3KPT and '3KHA (Bristol), '5KG (Essex), '5KW, '3CO (Wrotham), '3IRA (Swindon) and '5MA (Bookham) were all good signals.

G2JF (Ashford, Kent) is another who mentions that the Monday night activity period is going off very nicely. **G5BM** (Highnam) has temporarily deserted v.h.f. for the lower frequencies but expects to be back by April. **G3WW** (Wimblington) has also left 2m and 70 cm temporarily, which is a little surprising after 7½ years; but the slots will go up again on a 30 ft. mast when the warmer weather comes.

G5KW (Chelsfield) reporting on the January 7 activity period, remarked that this was the most lively one so far, in fact 45 to 50 stations

were workable in the Home Counties, PA0FB, 'WAR and ON4BZ were also contacted by several Gs. Several new stations on the band had their first Continental QSOs. Apart from this '5KW found conditions excellent to the north, with G5YV and '6XM very strong, G3KHA (Bristol), G3KFX (Ipswich) and '3FAN (I.O.W.) were also good signals. ON4BZ reported that Paris stations were working east-west as far as the French west coast.

G3KHA (Knowle, Bristol) says the period was quite an eventful one for the time of year. The weekend, January 18-20, saw quite fair conditions with many stations active.

G5MR (Hythe, Kent) found 2m conditions good on the morning of January 20 with ON4BZ coming in.

Two Metre News from Scotland

GM6WL thinks it would be a good idea to emulate in Scotland the Monday Activity Night. At the moment far too many people come on the band at odd times, listen a little, and then QRT because they can hear no one. Someone else does the same at a different time with the same result. They then make for the easy chair opposite the television set; the resultant TVI being anything but electrical! Stalwarts like **GM3NG**, '6KH and '3GUO are on practically every evening, always ready to do tests on 2m or 70 cm. Stations active lately include **GM2CHN**, '2CQI, '2DPW, '3NG, '3GAB, '3GUO, '4HX, '3INK, '6ZV, '6KH, '3DIQ, '3DDE, '5VG, '6WL (all in Glasgow), '4PW (Prestwick) and '6XV (Larbert). There was a goodly turnout on New Year's Eve, all the above being on at the same time for once!

Seventy Centimetre News

G3HBW (Bushey) and '5BD (Mablethorpe) have been running a sked since November 16 after a fortnight's interruption due to converter trouble at '5BD. These were resumed on December 11. From then up to the time of writing there have been tests on 28 evenings, '3HBW being received at Mablethorpe on no less than 26 occasions. The two failures were almost certainly due to causes other than propagational. **G5BD's** QRP transmitter (QQV03/20 tripler) was heard in Bushey on six occasions. **G3HBW's** transmitter gives about 60 watts output. Aerials are a 4-over-4-over-4-over-4 at **G5BD** and a corner reflector at **G3HBW**. Two metres is used as a link, and signals over the 122 miles path are rarely below S9 although in this midwinter period some patches of poor conditions have been struck—**G3HBW's** 70 cm signals have varied between 439 c.w. and S9+ phone. **G3HBW** points out (apropos **G3IPV's** remarks in the December BULLETIN) that tropospheric scatter is a mechanism which is hardly affected by atmospheric effects and signals vary only very slightly in their mean value at different times throughout the day and year although there is very rapid and deep fading. In other words, if a contact can be made by tropospheric scatter at a given time with a given station, it should be possible to do it at any other time as well; no "good conditions" being required. This is the whole point of long distance tests, to decide whether or not scatter is being used.

G3LHA (Coventry) agrees with **G6LT's** remarks regarding 70 cm and says operators can't all afford QQV06/40s or 3/20s. He suggests one must have a reasonable amount of power to do any good on this band. **G6NB** and **G2FNW** have been worked with $\frac{1}{2}$ watt of r.f. from a CV82 but both are well placed geographically. The same results could not be generally obtained.

Seventy Centimetres in Scotland

GM2CQI, who is making progress with his QQV06/40 tripler, has been heard by '6KH, '3NG and '6WL. **GM2CHN** has a converter working. Although very badly screened, he has heard **GM3GUO**, '6ZV and '6WL. **GM5VG**, one of the first Gs to work on 70 cm, is returning to the band after a long break. He is building a transmitter from scratch having obtained a QQV06/40A and 03/20A. Meantime he is trying out a **G3BKQ**-type converter into an Eddystone S.640, with a 20 element stack. Good phone signals have been received from '6KH and '3NG, '3GUO also being faintly received.

Four Figures on "Seventy"

Just a year ago **G5UM** persuaded **G5DT** to give him some statistics on his 70 cm operation during the previous years. These figures were brought up to date during the course of a contact on January 24 last. 1951, 318 contacts; 1952, 425; 1953, 610; 1954, 855; 1955, 1206; 1956, 1512.

It might be mentioned that **G5DT** has now worked 73 different stations in the U.K. and 3 on the Continent on 70 cm—and this despite increasing attention to the 23 cm band! Indeed an impressive record of sustained u.h.f. activity.

Six Metre News

An unusual QSO took place recently between **G2FT**, '5BD and **W1FOS**. The American station was received by '2FT on the Holme Moss channel of his television receiver. As '2FT was unable to use 28 Mc/s, he phoned '5BD and a three-way QSO, 50 Mc/s—28 Mc/s—land line ensued! **G5MR** had his first 50/28 QSO on January 8—with **W4HJQ** in Kentucky, signals being S9 both ways on phone. It was the second G for **W4HJQ**.

Four Metre News

Referring to the new Wednesday activity period, **B.R.S.20162** (Selsdon) thinks results so far are not very encouraging. We suggest that a little more publicity will lead to an improvement. '20162 says that from his observations and from what he has heard, interest in 4m is not very great. Many who have tried the band have run into TVI and find that what they can do on 4 they can do better on 2. This is, of course, a matter of opinion, and the writer would be glad to hear from other users. **A.1373** (Mill Hill, N.W.7) was lucky enough to borrow an S27 receiver. Listening on 4m he has heard so far **G2DD**, '5DS, '2ABD, '3HRH and '3IUL. The aerial is a 13 ft. whip 20 ft. high which has been found better than a half-wave dipole at 25 ft. **B.R.S.18572** (Mitcham) has heard 12 stations so far. He was especially surprised to hear **G3FAN** as the aerial is only a dipole 16 ft. above ground. He uses an old 2m converter suitably modified. **G3HRH** (Welwyn Garden City) finds that, as a general rule, due probably to poorer aerials and lower power, 4m signals are about an S point down on relative 2m signals. '3HRH asks us to stress that the TVI problem is by no means insuperable.

Southern Rhodesia Amateurs on Four Metres

JUST before this issue closed for Press news reached Headquarters that amateurs in Southern Rhodesia are now authorized to use the band 70.2-70.4 Mc/s, but the concession holds good only to December 31, 1957. A maximum input power of 100 watts (the legal limit in Southern Rhodesia) may be employed.

Worked and Heard on V.H.F.

Two Metres

G2JF (Wye, Ashford, Kent) December 19-January 17.
Worked: G2CIW, 2DPK, 2DSW, 2FM, 2FMJ, 2UJ, 3ANB, 3CO, 3FCO, 3GHO, 3HXS, 3BHW, 3HRH, 3INU, 3JN, 3JWQ, 3KFX, 3KBS/A, 3MI, 3WV, 4IB, 5BD, 5KW, 5KG, 3NF, 5OX, 5YV, 8DH.

G3BFP/A (Selsdon) December 19-January 9 (Wednesday evenings only).
Worked: G2AJ, 2FMJ, 3EOH, 3JR, 5YH, 6LL.

G3HRH (Welwyn Garden City) January 1-23, 1957.
Worked: G2IF, 2HDY, 3CO, 3FD, 3EMU, 3EOH, 3BHW, 3IRA, 3KHA, 3LCK/A, 5KG, 5KW, 5MA, 5YV, 6XX. Heard: DL3YBA, GM6KH, GW8UH, ON4HN, PA0FB (all by auroral reflection).

G3LHA (Coventry) January 1-20, 1957.
Worked: G2ANS, 2FJR, 2FNW, 3BA, 3CO, 3FTN, 3FUW, 3HAN, 3BHW, 3IRA, 3KEF, 3KHA, 3KV, 3KPT, 3LDW, 4MK, 5JO, 5KG, 5KW, 5MA, 5ML, 6NB, 6XM, 8VZ. Heard: G2ATK, 2DCI, 2FMO, 2HCG, 2JF, 2NV, 2YB, 3ABA, 3ALC, 3CKQ, 3DKF, 3EJO, 3ENY, 3FAN, 3GHO, 3GWB, 3HAZ, 3IIT, 3JWQ, 3JXN, 3JZG, 5PP, 5YV, 6AG, 6CI, 6XA, 6YW, 8KW, G13GXP.

B.R.S.6327 (Earlsfield) January 19-20, 1957.
Heard: G2AHP, 2ANS, 3EYV, 3FAN, 3GDC, 3GDR, 3GHI, 3BHW, 3IIT, 3JN, 3JXN, 3KPT, 5BD, 5KW, 5MA, 5UM, 5YV, 6XM, PA0FB, 0GER.

B.R.S.20162 (Selsdon) December 19-January 13.
Heard: G2AHP, 2ANS, 2AOK, 2CD, 2CIW, 2DD, 2DDD, 2DVD, 2FM, 2FMJ, 2FNW, 2GG, 2HCG, 2HDY, 2JF, 2RD, 2UJ, 2WJ, 2WS, 2XV, 2YB, 3ABA, 3AEX, 3ALC, 3ANB, 3AST, 3BII, 3BTC, 3CGQ, 3CNF, 3CO, 3CVO, 3DF, 3DOR, 3ECA, 3EJO, 3EOH, 3EYV, 3FAN, 3FCO, 3FMP, 3FP, 3FQS, 3FUH, 3GDR, 3GFD, 3GHI, 3GHO, 3GOZ, 3HAZ, 3BHW, 3HRW, 3HRO, 3HXS, 3IEX, 3IIT, 3INU, 3IRS, 3IRW, 3IUL, 3JN, 3JON, 3JR, 3JTO, 3JWQ, 3JZW, 3KEQ, 3KEQ/P (Sussex), 3KFX, 3KHA, 3KLI, 3KPT, 3KQC, 3KOR, 3LCK, 3LCK/A (Southgate), 3LIA, 3MI, 3PV, 3V, 3WS, 3WV, 4IB, 4KD, 4PS, 5BD, 5BQ, 5DT, 5JO, 5KG, 5KW, 5MA, 5NF, 5OX, 5RD, 5UM, 5WV, 5YH, 5YV, 6AG, 6LL, 6NB, 6NF, 6OX, 6RH, 6XM, 6XX, 6YP, 8KW, 8LN, 8RW, 8SK, 8SM, 8UQ/P (Bucks), 8VZ.

January 7.
Heard: G2CIW, 2FNW, 2FM, 2HDY, 2JF, 2UJ, 2WS, 3BTC, 3CNF, 3CO, 3CVO, 3DOR, 3EJO, 3EOH, 3EYV, 3FAN, 3FD, 3GFD, 3GHI, 3GHO, 3BHW, 3HPS, 3HRH, 3HRO, 3IIT, 3JR, 3JWQ, 3JZW, 3KFX, 3KHA, 3KPT, 3KQC, 3MI, 5BD, 5BQ, 5KG, 5KW, 5MA, 5NF, 5UM, 5YV, 6LL, 6XM, 6XX, 8KW, 8LN, 8RW, 8SK, 8VZ.

B.R.S.21136 (Ruislip) December 17-January 17.
Heard: G2AJ, 2AJS, 2DD, 2DVD, 2FM, 2TP, 2UJ, 2WS, 3BFP/A, 3BTC, 3CO, 3CGQ, 3GHI, 3HRH, 3HJZ, 3HXS, 3JN, 4IB, 4KD, 5MA, 5RD, 6AG, 6NF, 6OX, 6RH, 8KW, 8LN, 8RW, 8SK.

Four Metres

B.R.S.18572 (Mitcham) December/January.
Heard: G2ABD, 2DD, 2WS, 3CLW, 3EOH, 3EYV, 3FAN, 3HRH, 3IUL, 5DS, 5KW, 6NB.

G3BFP/A (Selsdon) December 19-January 9 (Wednesday evenings only).
Worked: G2FM, 3BTC, 3CLW, 3EOH, 3HRH, 3IUL, 5DS, 5KW.

Heard: G2ABD, 2AOL, 2HCG, 2WS, 3BTC, 3EOH, 3EYV, 3CLW, 3FAN, 3HRH, 3IUL, 5DS, 5KW.

G3HRH (Welwyn Garden City) January 1-23, 1957.
Worked: G2ABD, 2DD, 3BFP/A, 3CLW, 3EOH, 5DS, 5KW, 5MA.

MONDAY NIGHT AT 8 IS TWO METRE ACTIVITY TIME

Everyone who has two metre equipment in operation should switch it on between 8 and 10 p.m. every Monday evening, whether conditions seem likely to be good or not.

Monday night is two metre activity night. See how many stations you can work, and report the results to G2AIW (V.H.F. Editor).

AND WEDNESDAY NIGHT, TOO

Listen on 70.2 to 70.4 Mc/s on Wednesdays. This is 4 metre activity night.

Radio Amateur Emergency Network

By C. L. FENTON (G3ABB)*

THE need for E.C.O.s and County Controllers continues, and, whilst appointments are made from time to time, they in no way meet the demand. The most pressing vacancy is for a Controller for the City and County of London, but many other County Controllers are required throughout the United Kingdom. Notwithstanding the strong R.A.E.N. membership already existing, it is proving quite difficult to get members to volunteer as organizers for their own particular county. The Hon. Secretary will be grateful for any offers of help which may be forthcoming.

The results of the 1956 R.A.E.N. Rally were published last month. It is hoped to make awards to the leading competitors in the near future.

News from the Groups

The Middlesbrough group decided at a meeting held on December 12, 1956, that co-operation with the East Yorkshire groups should be sought during the first quarter of 1957, and that a joint exercise with the B.R.C.S. should be carried out in February. The Wirral Group reports a shortage of mobiles, although suitable equipment is being slowly accumulated. Sixteen stations participated in a Christmas Day net, and praise is given for the generally high standard of operating procedure.

An evening telephony exercise was carried out by North Norfolk members on January 10, in two phases, the first simulating conditions of sea flooding, and the second a major accident. G3JNR, G3JYG (who also operated as /P and /M), and G3HRK (who also operated as /P and /M) participated. When operating as /P, walkie-talkie sets working with an input of 0.5 watt to a 6 ft. whip were used. Thanks are due to the non-licensed members who assisted with reports and log-keeping, and to members outside the area who reported on the signal strengths of the mobiles.

The participants make the following comments for the information and guidance of others:—

- (1) The exercise proved most successful as a first attempt.
- (2) The bad weather conditions added considerably to the normal difficulties of working walkie-talkie at night.
- (3) The assistance of a non-licensed member at each station, for log-keeping, etc., is invaluable.
- (4) Strict adherence to R.A.E.N. procedure is essential to the smooth running of a net.
- (5) Even a small group can provide an efficient emergency communications system.
- (6) The 1.8-2 Mc/s band is eminently suited for local working at all times, and for longer ranges given good conditions.
- (7) Emergency equipment should be regularly tested and maintained, and ALL operators must be familiar with the operation of ALL equipment.

E.C.O. Appointments

H. S. Chadwick (G8ON) has been appointed E.C.O. for Worksop and Retford.

A. G. Blackmore (G3FKO) has resigned as E.C.O. for Bath on moving to Bristol. M. White (G3BTU) has resigned as E.C.O. for Retford, Notts.

The County Controller for Worcester, K. T. Whithorn (G3BDS) has moved to 279 Oldbury Road, Worcester.

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

Annual General Meeting

Informal Report on the Proceedings at the Thirtieth Annual General Meeting

THE 30th Annual General Meeting of the Society took place on December 14, 1956, in the Lecture Theatre of the Electric Lamp Manufacturers' Association, Savoy Place, Victoria Embankment, London, S.W.1. It was the first A.G.M. not to be held in the Lecture Theatre of the Institution of Electrical Engineers.

Following the formal reading of the notice convening the meeting, the adoption of the Minutes of the 29th A.G.M., and the approval of the Annual Report of the Council, the President (Mr. R. H. Hammans) read a Supplementary Report covering the period from the end of the last Society year. He then invited questions from members present.

Mr. Newton wanted to know why there was no reference in the Report to the work of the Society's V.H.F. Committee. In reply, Mr. Scarr, Chairman of the Committee, said that as there had been no outstanding development during the period no comment appeared necessary.

Mr. Deacon expressed surprise that there was no reference in the Report to the outstanding recommendations made in connection with Amateur Radio by the delegates to the Stresa I.A.R.U. Region I Conference. The President said that there was no reference in the Report as the Conference had been reported upon at length in the Society's journal. Mr. Deacon replied that he felt that the conclusions reached should have been included in the Annual Report because of their importance to all members. The President told Mr. Deacon that his comments would be noted.

Mr. Newton enquired whether the Council had ratified the decisions taken at the Stresa Conference regarding the Region I V.H.F. Committee. The President said that the Society most certainly supports the International V.H.F. Committee. Mr. Milne, who is Hon. Secretary of the I.A.R.U. Region I Bureau, explained that there were, in fact, only two Committees at the Stresa Conference, the Administrative and the Technical. The V.H.F. Committee proper was only formed at the Conference and had not held its first meeting when the Conference ended. Mr. Newton said that the matter was now clear in his mind.

Accounts

Before Mr. Findlay moved the adoption of the Audited Accounts, Mr. Shields enquired what effect longer television hours were expected to have on the Society financially and whether falling membership would mean increased subscriptions. Mr. Findlay said that the Society is showing a small surplus this year and had, over the last four years, got back to a position where we were "out of the red". At the moment no increase in the subscription was envisaged and no further drop in membership anticipated. In fact, membership income was rising slightly. Mr. Findlay then moved and Mr. Green seconded the adoption of the Audited Accounts. The motion was carried unanimously.

Election of Council

The President then announced the names of the candidates who were successful in the ballot for the Council. He went on to congratulate those elected and thanked the other candidates for allowing their names to be put forward. He also thanked the scrutineers for their work in connection with the ballot.

Auditors

Mr. Findlay proposed, and Mr. Herdman seconded, that Messrs. Edward Moore & Sons should be re-appointed Auditors at a fee of 100 guineas. The motion was carried, Mr. Lawson, T.R. for Croydon, abstaining.

Other Business

The President then announced that no formal notice had been given of any other business, but he would be pleased to allow time for an informal discussion.

Planning the 1250 Mc/s Band

Mr. Newton wanted to know what the Society's V.H.F. Committee intended to do about planning the 1250 Mc/s band, and drew attention to the present situation in which amateurs in Scotland, France and Southern England are operating in widely different segments. Mr. Newton went on to say that the Committee appeared to be out of touch and he wondered how it proposed to maintain contact with v.h.f. enthusiasts and obtain their opinions on matters under discussion. Liaison seemed to be lacking.

Mr. Scarr stated that he had raised the question of 1250 Mc/s band planning at the London Meeting at the I.E.E. on November 30, 1956, and had taken a careful note of what was said by people working on that band. There appeared to be no unanimity of opinion as to possible frequency allocations for differing types of transmission. The Society's V.H.F. Committee had met on the Tuesday of that week and he could assure Mr. Newton that definite action had been taken by the Committee.

Mr. Milne stated that as Region I Secretary, he had already received a letter asking him to bring the matter to the notice of other European Societies.

Representatives' Lists of Members

Mr. Mourtou asked whether Area Representatives could be informed by Headquarters direct of new and lapsed members. He said that of 60 cards he received when he took over his area, 14 related to members who regularly attended meetings and 3 to members in the Services. Of the remainder, 4 of those listed could not be traced and 39 were persons whose membership had lapsed. When interviewed one said it was "9 years since I played with wireless". Mr. Lawson and Mr. Yeomanson both said that a similar state of affairs existed in their areas in South London and records were hopelessly inaccurate.

Mr. Glaisher said that the cards for the Croydon area were checked against the Headquarters lists before he handed them over to Mr. Lawson.

Mr. Mourtou said that he was not complaining about Headquarters and in fact, he had received every help from the staff.

The General Secretary explained at length the system of distributing the card index via Regional Representatives at their own request and said the continual changes of address were the greatest problem. A new card file is usually produced by Headquarters every two or three years although at the moment it has not been brought up to date for about four years. Many of the card files held by R.R.s were no doubt very much out of date. It was virtually impossible to keep them up to date and the problem was aggravated by shortage of staff. Even

if the files were corrected every year they would still be 5 or 10 per cent out of date at any given time. Any T.R. could, upon application, obtain from Headquarters, a list of members who, according to the Society's records, are in his area.

Stresa Conference

Mr. Deacon wished to know from where the Society's Representatives at the Stresa Conference derived their authority and what mandate they had from the members of the Society.

The President, replying, said that they were appointed by the Council to represent the Society but all the decisions taken at the Conference had to be confirmed by each Member Society. These had been endorsed and ratified by the R.S.G.B. Mr. Hammans drew attention to the distinction between the two Representatives of the Society who were appointed by the Council and those who attended as members of the Region I International Committee.

Mr. Deacon asked whether it would not have been possible to get the opinions and recommendations of the Regional, County, Town and Area Representatives as well as the general membership before the Conference. The President said the Council was always glad to receive suggestions through the scheme of Representation. The Society's Representatives at the Conference had, in fact, a pretty shrewd idea of members' opinions and what could be achieved for the benefit of European Societies as a whole and for this Society in particular.

Mr. Deacon suggested that the Council should, in future, before such a Conference, ask, by invitation to R.R.s, D.R.s, and T.R.s, and notice in the BULLETIN, for suggestions from members for the guidance of representatives to the Conference. The President thanked Mr. Deacon for his valuable suggestion and said that it would be borne in mind.

R.A.E.N.

Dr. Gee expressed surprise at the interpretation given in the Supplementary Report to the concession made to R.A.E.N. by the Post Office in connection with handling third party messages for the British Red Cross Society. He wished to ask the General Secretary, who was present at the relevant meeting with the Post Office, if he thought that it really was an accurate statement of the attitude of the Post Office to the concession which had been granted. He understood, from the discussion, that the attitude of the Post Office was clearly that its own services must not be abused. If adequate communications were available obviously one would use the Post Office facilities. If the services were not there R.A.E.N. would handle third party messages. He asked the General Secretary if it were not true that the Post Office had clearly given permission for R.A.E.N.—Red Cross exercises. (Exercises with the Red Cross are now permitted by Section 1 (1) (c) of the Amateur (Sound) Licence—EDITOR.)

Dr. Gee felt that the magnitude of these concessions should have been pointed out and said that, in his opinion, they were entirely due to the work of Lt.-Col. Dunn through his contacts. Dr. Gee said that he hoped that the membership appreciated the responsibility to the Red Cross the concessions placed on the Amateur Radio movement as the Red Cross had been told that the amateurs could provide communications for them. It would be a poor show if the Red Cross was ever let down by the radio amateurs.

Replying, the General Secretary stated that it was not his responsibility to interpret licence conditions. The wording of the paragraph in the Supplementary Report

was not his and was deliberately written that way, for very good reasons, by the Council the night before the A.G.M. It was, of course, possible that the question of R.A.E.N.-Red Cross co-operation would be dealt with more fully by the Council in its next Annual Report. The Supplementary Report was the President's own idea and was intended to bring members up to date with the events of the last 5½ months.

Dr. Gee said that he was not satisfied and assured the meeting that the Council would be hearing more about the matter from the R.A.E.N. Committee.

R.S.G.B. Call Book

Mr. Furby drew attention to the present *Call Book* which he suggested was hopelessly out of date and enquired when a revised edition would be available as it was of great importance to v.h.f. workers. The General Secretary said that this year was the first since 1947 that there had been no Amateur Radio Exhibition and also the first November since 1952 that no new *Call Book* had been published. Earlier in the year when it became known that there was to be no Exhibition about 1,000 copies of the 1956 Edition were still in stock and there appeared to be no need to reprint as stocks had to be cleared. Mr. Tyndall was unfortunately unable to continue as *Call Book* Editor but another member had been invited to take over. Mr. Clarricoats hoped that the next edition would be published in time for the National Radio Show, 1957.

First Post-war Licensed President

Mr. Matthews drew attention to the fact that the President of the Society for 1957 (Mr. D. A. Findlay, G3BZG) would be the first President to hold a three letter post-war call-sign. He said he believed this was, therefore, an important turning point in the history of the Society (Applause).

The informal discussion then ended and the President proceeded to present the awards and trophies as reported in the January issue of the R.S.G.B. BULLETIN. (This report is based on a tape recording of the whole proceedings made by Mr. Eric Yeomanson, G3IIR.)

Sun-powered Portable Radio

ACCORDING to a report in the *Financial Times*, the Admiral Corporation of U.S.A. is marketing a portable transistor radio receiver which derives its power from the sun. During the day sunlight is collected by a bank of 32 light-sensitive wafers; at night the set uses six torch batteries. The price of the receiver is about \$150.

DX Television Predictions for March 1957

Prepared by J. Douglas Kay (G3AAE)

Barbados	1300-1815	Colombo	0800-1530
Buenos Aires	1130-1900	Perth (W.A.)	0730-1100
Rio de Janeiro	1000-1900	Cairo	0800-1630
Santiago	1200-1730	Accra	0800-1900
Cyprus	0815-1530	Capetown	0800-1830
Aden	0700-1730	Dakar	0830-1830
Baghdad	0700-1600	Johannesburg	0800-1830
Bahrein	0700-1630	Nairobi	0700-1800
Tel Aviv	0730-1615	Salisbury	0730-1815
Bombay	0730-1500		

All times G.M.T.

These predictions are based on the BBC Band 1 sound frequency of 41.5 Mc/s. The vision frequency is 45 Mc/s.

The Way Ahead*

By D. A. FINDLAY, D.F.C., A.S.A.A. (G3BZG)

IT has now become a tradition that the newly-elected President should deliver an Address to the membership at the first Ordinary meeting of the Society held after he takes office.

When I was nominated for the office of President I felt very proud indeed that my colleagues had so honoured me; I was even more proud when my nomination was unanimously accepted by the membership.

Today, as I look at this Chain of Office, bearing the names of all the past Presidents, including such illustrious names as Oliver Lodge, Campbell Swinton, Erskine Murray, Gerald Marcuse, Bevan Swift and Ian Fraser, I feel very humble and at the same time, very aware of the responsibilities that go with the privileges of being President of your Society. My task, however, is made much easier by the knowledge that I shall always be able to call on past Presidents for their advice.

In recent years, the subject matter of the Presidential Address has varied, but in every case the thought has been the same—and here I cannot do better than to repeat Herb. Bartlett's words of two years ago—"What can I do to further the cause of Amateur Radio?" This thought occurs to us all at different times and very frequently the Council is required to give an answer to a problem or to formulate a policy which is, in fact, only this question asked in different words. On such occasions it helps a great deal if we can sense the feelings of the membership in the matter under consideration.

I know from experience gained over the past few years that the members think deeply, not only on the technical aspects of our hobby, but also on the administrative and international aspects of our work. In this connection, I have asked the Council if I may put to you some of the matters that will be considered during 1957 so that you may go away and discuss them among yourselves. You will then be in a position to make known to the Council your feelings at meetings and by correspondence.

Membership

As you know the membership of the Society has dropped from its post-war peak of 14,000 in 1948 to just over 8,000 at the end of June 1956. Since then there have been signs of an increase—small but definite—but greater efforts are needed to attract more members into the Society. In particular we must attract the younger generation. An increased membership will strengthen the hand of the Society in negotiations with the authorities both in this country and internationally. Furthermore, the Radio Industry looks to the Society to promote an interest in electronics so that younger members will be encouraged to study some aspect of this vast subject and thus become the technicians of the future.

I therefore ask you to do two things—firstly, encourage all potential members to join the Society and when they have joined see that they take an interest in its affairs, and secondly, put forward for consideration any ideas that you think could be used to foster interest in the Society and to increase its membership.

*Delivered to the Members present at the Ordinary Meeting of the Society held at the Institution of Electrical Engineers, London, on January 25, 1957.

The Council

It is now some three years since the Articles of Association were revised and in that time a few difficulties have arisen as was inevitable. One of the main problems confronting the Council is that of the regular monthly meeting which must be held in accordance with the Articles. At present the Council consists of sixteen members, all of whom attend meetings, together with the General Secretary and his Deputy. This means that accommodation has to be found for 18 people at Headquarters, or alternatively outside accommodation must be obtained which is an expensive and not very satisfactory proposition. In addition, the cost to the Society of bringing sixteen members together twelve times a year is very considerable. There is also the point that there may be potential Council Members living in the Provinces who are not in a position to be absent from their employment during the week twelve times a year.

To overcome these problems it has been suggested that the administration of the Society could be dealt with quite satisfactorily through the medium of a Management Committee consisting of, say, seven members, who would meet monthly. The full Council would then meet at an outside venue for one whole day every three months. There are obvious advantages and disadvantages in this arrangement. It could be argued that it would be better that policy matters should be considered at greater length than is sometimes possible at an evening meeting. Again, it could be argued that the arrangement would be more economical.

On the other hand some may say that the proposal would deny to certain Members of Council the right to participate in the management of the Society and that it might tend to place too much control in the hands of a small body of members. However, it is a matter for consideration by the members of the Society and before any change is made they must signify their approval.

R.A.E.N.

The recent news that radio amateurs may handle third-party messages on behalf of the British Red Cross Society was received with great pleasure. This concession, however, brings with it a very great responsibility. It means in particular that there must be in existence an organization that can go at a moment's notice to the help of the Red Cross.

The efforts of the R.A.E.N. Committee and R.A.E.N. members are acknowledged and must have the highest praise. It is not right, however, that these enthusiastic volunteers should lay themselves and the Society open to criticism should a situation arise in which, through no fault of their own, they may not be able to give the expected assistance. For this reason, the Council must consider what further assistance can be given to help the R.A.E.N. organization to function effectively in the event of an emergency arising.

Scheme of Representation

The present Scheme of Representation has been under consideration recently as it is felt that the Scheme, com-

prising a chain of Regional, County (or District), Town (or Area) Representatives, is not functioning satisfactorily in all cases. It has been said that the T.R. is only appointed to enable the N.F.D. entry to be certified and this may be true in some cases. It is certain, however, that T.R.s do not always function because they have not received the information that they should have on the activities of the Society. This may be due to failure on the part of the Society in not making sure that the channel of information is kept open, which in turn may be due to a failure to realise that a system that was satisfactory before the war, will not now be able to cope with the present number of members.

It has been suggested that there is no need for a local group under the T.R. and that it would be better to have only a local club with its own Committee. Where Clubs and Groups exist very often the members of the Club are also members of the R.S.G.B. Group. Additionally the Clubs are frequently also affiliated to the R.S.G.B.

It has also been suggested that the status and privileges of Affiliated Societies should be increased so that they are in one particular aspect, more or less equal to local Groups. Various solutions have been suggested at times and this problem is again being discussed by the Council. It is certain, however, that very energetic action must be taken to ensure that, just as the BULLETIN is a means of communication outwards so is the Scheme of Representation a means of communication inwards.

Amateur Radio Handbook

When reading the Supplementary Report of the Council to the members present at the Annual General Meeting last month, Mr. Hammons mentioned that the Council had, a few weeks earlier, decided to proceed with the preparation of a new edition of *The Amateur Radio Handbook*. To some of us the *Handbook* is unknown as stocks were exhausted 10 years ago. To other members, however, the word *Handbook* conjures up memories of Cranwell or some other war-time training establishment where the R.S.G.B. *Handbook* became the trainee's "Bible." The Second Edition sold to the tune of 180,000 copies to say nothing of the 120,000 copies of the Supplement. Both books became best sellers because they were cheaply priced and informative.

It is the intention of the Council during the coming year, with the help of the Handbook Sub-Committee, under the Chairman and General Editor Stan Lewer to produce a first class technical manual which will take its place with the A.R.R.L. and "Radio" Handbooks.

It is pleasing to know that a group of very keen young members have offered to help with the preparation of technical material for the new *Handbook*.

Convention

It is now three years since the last National Convention was held in Bristol. Before the war the London Convention was a highlight of the Society's year but since the war it has been the custom to hold a National Convention once every three years in different parts of the country.

This year marks the beginning of the International Geophysical Year. It would therefore be most appropriate if we could hold a National Convention in some suitable centre.

The idea of holding V.H.F. Conventions in different parts of the British Isles has already captured the imagination of v.h.f. enthusiasts. The rise in maximum usable frequencies should lead to increased interest in the v.h.f. and u.h.f. bands—interest which will be stimulated by the new series of v.h.f. conventions now being planned.

A suggestion to arrange a Convention in London for the DX fraternity is beginning to bear fruit and we hope to make an announcement about it shortly. Such a Convention would be unique in R.S.G.B. circles.

Technical Visits and a Technical Library

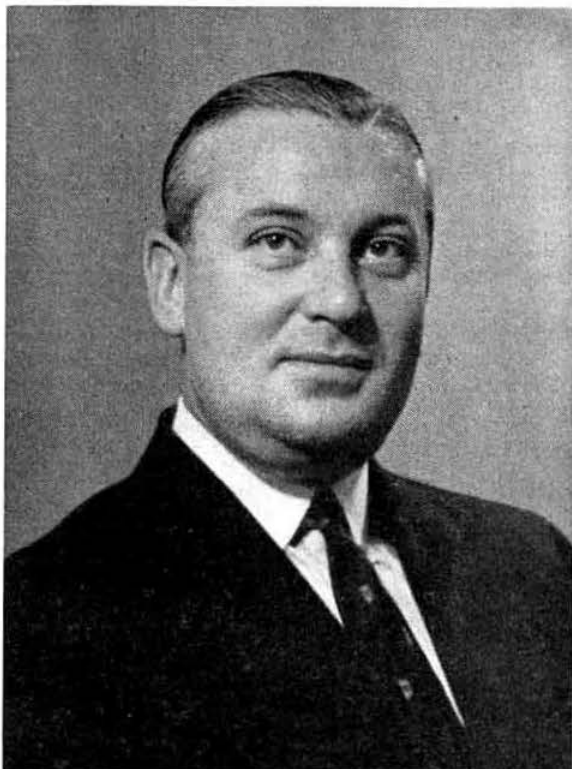
Before the war a number of visits were organized to places of technical interest. I believe the time is opportune to revive this form of activity but before the Council proceed further they would like to know that visits would be supported. I am aware that local Groups do organize such visits but it may be that the Society can gain

access to places of interest not open to local Groups.

Every week Headquarters receives from abroad a vast quantity of technical literature ranging from small duplicated circulars to magnificently produced magazines of the highest technical standard. It is manifestly impossible for the limited staff at Headquarters to do much more than glance through those periodicals which are printed in English.

I should like to see the Society in the possession of a properly documented technical library which would be available to all members. Such a project would have to depend on the generosity of one or more members who would be prepared to house the books and periodicals.

Some years ago the BULLETIN published each month, under the title *Contemporary Literature*, a précis of the more important articles that had appeared in the con-



Douglas A. Findlay, D.F.C., G3BZG
President, 1957

temporary Amateur Radio Press. It is too much to hope that members can again be found who would be prepared to study the foreign literature and prepare monthly precises of the major contributions?

Exhibitions

During recent years the Society has "shown the flag" with great success at exhibitions of various types in many parts of the country.

The current year will no doubt provide the Society with further opportunities of letting the man-in-the-street know what we think he is missing by not becoming a radio amateur.

Present plans are that the Society shall sponsor a Radio Hobbies' Exhibition in London next October. In addition it is probable that we shall again exhibit at the National Radio Show at Earls Court in August. In the same month an International World Scout Jamboree will be held at Sutton Coldfield to mark the 50th anniversary of the formation of the Boy Scout Movement, and the 100th anniversary of the birth of its founder Lord Baden Powell. It is intended that an Amateur Radio station, manned by members of local societies, shall operate from the Jamboree site.

International Affairs

Last year saw an I.A.R.U. Conference in Stresa. There will be another International Telecommunications Union

Conference in a year or so and the Council must be in a position to press the claims of amateurs to retain the present frequency allocations, as it is certain that strong pressure will be applied by all services for larger shares of the frequency spectrum. In order that the position can be maintained the Council will, in the coming months, make the strongest representations to the proper authorities to get the various intruders in the amateur bands shifted to their assigned frequencies. Only by insisting on our rights now, can we hope to be in a strong position when any re-allocation of frequencies is made.

The Way Ahead

May I for a few moments dwell on another topic. We are passing through troubled times and the way ahead is not as clear nor as smooth as we would wish. We as radio amateurs are fortunate that in this country our hobby knows no international restrictions and we are free to communicate with all the world, regardless of race or politics. This is, therefore, a fitting time for us, in our own particular way, to spread the spirit of goodwill and friendship to all our contacts wherever they may be.

In conclusion, may I send to all members my best wishes for 1957 and may we have a peaceful and prosperous year.

Somerset County Meeting

THERE was an attendance of sixty, which included the wives and children of members, at the Somerset County meeting held at the Angel Hotel, Bath, on January 12, 1957, under the chairmanship of the newly-elected Region 9 Representative W. J. (Bill) Green, G3FBA.

The meeting attracted visitors from a wide area, including R. S. Hiscocks, G6LM (Devizes), W. J. Leader, G3BRR (Wootton Bassett), P. Tolman, G3EKS (Gloucester), G. R. Pearce, G3AYL (T.R. for Swindon), Roy Poeton, G3CTN (Bristol) and Frank Johnstone, G3IDC (R.A.F. Locking) the last three all with parties.

Included in the programme were two films on ultrasonics loaned by Mullard Ltd. and a display of Eddystone equipment including the new 888 Receiver and f.m. feeder unit, loaned by Stratton & Co. Ltd. and demonstrated by J. N. (Jerry) Walker, G5JU. The ladies' competition was won by the XYL of G3BRR.

Numerous gifts, donated by manufacturers, were included in a draw for prizes; Mrs. Green distributed those won by the men, whilst Frank Johnstone, G3IDC, performed a similar duty in respect to those won by the ladies.

Many of the ladies met each other at the meeting for the first time but by the end of the day much "XYL DX" had been worked.

Unfortunately Herb. Bartlett, G5QA, was prevented from attending, due to a business engagement but he sent a message of greetings via the R.R.

The arrangements for the meeting were in the hands of Jack Russell, G2ZR, T.R. for Bath, who is to be congratulated on the unqualified success of the event—

Anchorage Amateur Radio Club

MR. T. E. WILSON (G6VQ), of Stainton, Westmorland, is the first European amateur to be awarded the special certificate issued by the Anchorage Amateur Radio Club. Details of the certificate appeared in the April, 1955, issue of the BULLETIN.

The Deutschland Diploma (DLD)

THE German Society, D.A.R.C., has recently announced a new award, the Deutschland Diploma (DLD), the object of which is to encourage contacts with German amateurs, particularly on 80 metres.

There are three classes, the DLD-100, DLD-150 and DLD-200. To claim the award, foreign amateurs must provide proof of contact on 80 and/or 40 metres with stations in 100, 150 or 200 localities in Germany (including the Saar). The districts and localities are identified by DOK Numbers which must be shown on the QSL cards submitted. Contacts since January 1, 1956, are valid provided they confirm minimum reports of RST338 or RS33. DM districts may be included in place of DOK localities.

Claims for the award should be sent, with 10 I.R.C.s and supporting QSL cards, to Rudi Hammer (DL7AA), Fuchsienweg 51, Berlin-Rudow.

French DX Contest

THE Telegraphy Section of the French (R.E.F.) Society's DX Contest will commence at 12.00 G.M.T. on March 2 and end 36 hours later. The Telephony Section will be held during the same period on April 13 and 14. Contest exchanges will consist of the usual RST (or RS) report followed by the number of the QSO (e.g., 579014).

Entries should be sent to Lucien Aubry, F8TM, Traffic Manager, R.E.F., P.O. Box 42-01, Paris R.P., France, from whom further details can be obtained.

The Television Society Exhibition—1957

THE Television Society Annual Exhibition will be held at The Royal Hotel, Woburn Place, London, W.C.1, from March 5th to March 7th (noon to 8 p.m.). Admission will be by ticket only, obtainable from the Hon. Secretary, 164 Shaftesbury Avenue, London, W.C.2. The opening day is reserved for members of The Television Society.

Twenty-five companies including the B.B.C. have taken space. The outstanding exhibit will be the first demonstration at an exhibition of colour television to N.T.S.C. standards.

G.M.T. Unfortunately, if he appeared early, up came ZD8JP on almost the same frequency, but much stronger; consequently, the multitude calling 'JP' put paid to the chances of the 'PN Brigade. Equally frustrating was the performance at a later hour, when the appearance of AC5PN coincided with that of PJ2ME, whose attendant Ws made their presence felt in no uncertain manner. Incidentally, ZD8JP is on a cable station and will be at Ascension for some two years. Around midnight, there have been openings to parts of the Far East and DX such as UA0KFC (Sakhalin Is.) has been worked, while earlier, from about 18.30 onwards, a variety of distant calls have been available, ranging from VK and ZL—with ZL4CK a consistent signal—to EA9DF (Rio de Oro), KC4USV, VP8BO (Shackleton Base) and LU2ZS (Media Luna Is., South Shetland).

Late afternoon openings have been to VQ8AB (1409, 16.00), FB8ZZ (17.45), HZ1TA (phone, 7.00), FR7ZC (17.15), LX1DP, UM8KAA (14100, 14.00) and VK9CK (Port Moresby, 14.00). Early risers may well have heard a formidable noise around 14320 kc/s as Europeans attempted to attract the attention of FO8AD. UPOL4 has revealed his QTH as the "Nord Pol," so now we know where he is.

During the week-end of the B.E.R.U. Contest, OH1RT/0 and OH1ST/0 were very active on 14 Mc/s c.w. from Aland Is., between Finland and Sweden.

Forty Metres

Once again, the keen types have been digging through the YUs, IIs and UB5s and coming up with various catches, but the prize this time must go to G80J, for an early morning QSO with UA0KSI (Wrangel Is.), who would be super DX on any band. Echo effect was

severe, but it was RST589 both ways for a solid QSO. '80J finds that early morning QSOs with W5, '6, '7, '0 are easy and he has worked U.S.A., as late as 11.00 G.M.T., though G QRM is heavy by then. VE8OW replied to a "CQ" at 10.20 one morning.

B.R.S.20106 says JA8AT and other JAs have been working Scandinavia around 14.00 and he has heard 3W8AA from 15.30 up to about 18.00. ET2US, VP2LU, UA0AG and TA1YI were among other DX logged. **B.R.S.20317** heard 3W8AA frequently, peaking 17.00-18.00 when the 3W8 used 7003, '010 and '015 kc/s. Bill also logged FG7XC (21.50), HH3DL, XE3AH, YI2RM, ZD6BX (18.00), VP6RG, UH and UI on the key. He points out that last month's reference to CR10AA being W1ABB is wrong as he is in fact W1AAB.

Eighty Metres

Here the field gets much smaller. **B.R.S.20317** came upon two new ones in TF5TP and UA9CR (18.35), plus VEs and Ws between 21.30-23.30, while **B.R.S.20106** logged 9S4, TF3KA, VE and W, including W5DF (08.15). **B.R.S.20416** heard several W1 and W2 stations one night on phone, with signals averaging RS58/9.

One Sixty Metres

Top Band is attracting considerable interest now, both from a DX and from a more local point of view. G3KOX (N. London) is a keen user of the band when he is home from University and he was one of the lucky ones to work UB5WF and also ZB1HKO, both around 05.00. W1BB has been on, but at 05.40 on several days he has been blotted out by a broadcasting station on 1806 kc/s—believed to be the third harmonic of Radio Lyons. '3KOX has heard that this particular signal can be read up to 3010 kc/s. G3LEQ (Tun-

Frequency Predictions for March, 1957

PREPARED BY J. DOUGLAS KAY (G3AAE)

BAND	NORTH AMERICA	CENTRAL AMERICA	SOUTH AMERICA	SOUTH AFRICA	NEAR EAST	MIDDLE EAST	FAR EAST	AUSTRALIA
M.U.F.	37 Mc/s 1615	44 Mc/s 1430	44.5 Mc/s 1600	47.5 Mc/s 1400	45 Mc/s 1200	45 Mc/s 1000	41 Mc/s 1200	36 Mc/s 0800
28 Mc/s	1130—2030	0930—2130	1000—2230	0800—2200	0700—2000	0730—1800	0730—1730	0730—1200
21 Mc/s	1000—2300	0830—0000	ALL DAY	0730—0200	0600—0200	0700—2300	0700—2100	0700—1800 2200—0200
14 Mc/s	ALL DAY	1800—1000	1800—1000	ALL DAY	ALL DAY	1200—0200	1200—0200	0600—0000
7 Mc/s	2000—0800	2200—0400	2300—0400	0000	2200—0400	2200	2300	1800
3.5 Mc/s	2200—0300	0600	0400	0000	2300	2300	2300	1800

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

bridge Wells) has worked some good GDX on phone, but he missed GM3COV (Thurso). He finds activity low from the south east; possibly the European fish-phones is the trouble! **G3GZA** writes that he will operate again as **GM3GZA** from the Outer Hebrides from February 2 to June 1. He will also use 28 and 21 Mc/s for the first time, as well as the other bands and will doubtless give Ross and Cromarty to lots of county chasers. QSL to D. J. West, c/o S.T.O., M.T.C.A., Mangersta Radio Station, Uig, Isle of Lewis, Scotland. **B.R.S.20317** heard ZB1BJ on about 1817 kc/s (06.15), HB9CM, OK and Ws '1BB, '2EQS and '3RGQ.

News from Overseas

G6CJ (Stoke Poges) learns from **VK2DI** that the VK1 situation is now cleared up, with all the Antarctic Bases now using the prefix VK0. **VK9AJ** is, of course, on Cocos-Keeling. **B.E.R.S.195** (North Fairfield, Vic.) throws further light on the subject. He says the 1957 Expeditions have a mass of amateurs in them, viz. *Macquarie Is.*, with **VK0AA**, 'CJ; *Vestfold Hills*, with **VK0AB** (ex-VK1AC). *Mawson* with **VK0s** 'DC (ex-VK1DC), 'RR (ex-VK1RR), 'ZM (ex-VK1ZM), 'PK (ex-VK1PK), 'DJ (ex-VK1DJ), 'JP, 'AS and 'AC. The R.A.F. Detachment at Labuan have three active calls—**ZC5VN**, 'SGL and '5JM. They are looking for Gs on 14 Mc/s c.w. from 13.00 G.M.T. During the Olympic Games, visitors to W.I.A. headquarters included **XE2JK**, **YA1AA**, **OH2NB**, **W0PBR**, **ZM6AS** and **ZLs** '2SK, '2MN, '2ABJ, 'ABR. Eric was struck by the spirit shown during the Games, as 100,000 voices cheered the winners, regardless of race or creed. Recent DX for him on 14 Mc/s is **F88AE**, **FK8AS**, **KM6AX**, **VR2DA** (ex-VK2PA) and new ones **FL8AB**, **VP3ZA** and **ZD2GWS**, making him 230C and 40Z confirmed. The last QSL was from **VK9TW** (Nauru) and Eric says he didn't pay a dollar for it, either!

Egypt. **G3ADZ** (Havant) assures everyone who worked **MD5ADZ**, 'AMO or 'DNQ during their recent spell from Port Said on 14 Mc/s c.w. that they will QSL. Be patient, though; QSLs must be printed and the gentlemen concerned, having just been "demobbed," have lots to do, quite apart from radio! **G3ADZ** is in a new QTH and will be active mostly on Top Band, although he has 100 watts c.w. on 3.5 to 28 Mc/s also. **B.R.S.18017** (Warwick) was with the **MD5s**, as were **G3FQN** and several **B.R.S.** members. Now that he is home again, John is content to listen to the locals, but at a guess, it won't be long before he is back chasing DX!

Cyprus. **ZC4AA** says that after the recent close-down, activity is likely to increase, as the G.P.O. are ready again to issue licences to people with the necessary qualifications; at least five new calls are expected. Tony himself leaves this month for home and he hopes to appear soon with a GW call. Peter Lovelock (**G3III**/B.E.R.S.928) who is one of the operators at **ZC4AM**, says business there has been brisk. They have worked **ZD9AE**, **VP8AO** (Shackleton Base) and strings of **W6s**, but an SU1 refused to answer them (which is not surprising, perhaps!). **ZC4AM** is ready to go on Top Band, but Peter hears from **ZC4PW** (a reliable source) that authority is not likely to be forthcoming, which is bad luck for **ZC4GF**, too. The lads at '4AM appeal for U.K. stations to answer their "CQs." They are always willing to talk with home. A recent trip to VS9, via YI and MP4 brought confirmation that YI2AM is definitely off the air, while in the Persian Gulf, the R.A.F. lads on Masirah Is. are "rarin" to go. All they really need is official permission, which has been awaited now for some little time. On other airfields in the area, there seems little interest, though, **VS9AD** at Khormaksar

has one good transmitter, but his receiver is unserviceable! However, **G3ATU** was told by Lee Grant (**ST2NG**) that he would leave the Sudan for Aden and would be active as **VS9NG**, probably some time in February. Lee is not only very expert—he is also extremely keen, so there should be no trouble henceforth with **VS9** QSOs.

G6CL passes a note from **W4HYW**, via **G6PJ**, that **HH2OT** is on again after three years. QSL via **W4HYW**. **G3JNX** (Manchester) is off to Canada, where he hopes to get a VE3 call. Meanwhile, he will be on from **VE3DDP** (Toronto) and **VE3DXT**. John Knight (**W6YY**) proffers more topical pointers: *Wrangel Is.*—**KV4AA** says **UA0KSI** is there (which the **G8OJ** QSO confirms) and **JA1ACB** says **UPOL12** is operating from *Wrangel* also. As far as is known, there has been no previous activity from this point. **UA1OE** says "There is no, no, no, no station in Franz Josef Land!" **SV0WT** hopes to be in Crete a week before the A.R.R.L. Contest. Meanwhile, there is no activity there. **ZL0XX** is as spurious as he sounds, but **ZL2GX** tells us not to ignore **ZL5AA**, '5AB and '5AC, who are expected on shortly from Antarctica. **ZD8SC** says **ZD8JP** is active on 14 Mc/s c.w. from Ascension Island with a B2. **ZD8SC** regrets that neither he nor **ZD8JP** can acknowledge listener reports.

Christmas Island (Pacific)

Last-minute news is that three stations should now be active from this rare spot. The calls **VR3E** and **VR3F** have been issued and another is expected. They will use 14 Mc/s and above. Full details next month.

Things to Come

Recent news that the R.A.F. Bases in Ceylon are to be replaced by a Base on the Maldives Is. sounds promising indeed. Reg Tibbets (**W6ITH**) quotes a report that an air-base and a radio communications station will be built in the Group. With the R.A.F. there, it seems likely that the Maldives will be on the air. Reg has news also of negotiations between Washington and Brazil for the right to build a Base on Fernando de Noronha, an island in the Atlantic, 225 miles off Brazil, on the guided-missile range which stretches between Florida and Ascension Is. Final agreement is expected soon, so this looks like another new one.

Pakistan Radio

Arthur Milne (**G2MI**) has been in correspondence with a friend in Pakistan who has contacts with Authority, and they have an undertaking from the Administration that Pakistan Radio will vacate 7010 kc/s as soon as a free frequency can be found. Meanwhile, operations are to be restricted to two periods—one from 12.45 to 13.20 G.M.T., with a programme directed to Kashmir and Baluchistan and the other from 16.00 to 16.45, directed to Iran. '2MI would be interested to hear of any transmissions on 7010 kc/s outside these hours.

Which seems a happy note on which to end for this month. By now, the F-layers should be bursting with energy and DX should be pouring in, so please let us hear all about it by the first post on February 23, at the latest. Till then, good hunting and 73.

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, at 12.30 p.m. on

Fridays, February 22 and March 15, 1957.

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

Council Proceedings

Résumé 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 Thursday, December 13, 1956, at 6 p.m.

Present.—The Executive Vice-President (Mr. D. A. Findlay in the Chair), Messrs. W. H. Allen, C. H. L. Edwards, K. E. S. Ellis, J. H. Hum, W. H. Matthews, W. R. Metcalfe, A. O. Milne, H. W. Mitchell, L. E. Newnham, W. A. Scarr, J. Taylor, John Clarricoats (General Secretary), and John A. Rouse (Deputy General Secretary).

Apologies for Absence

Apologies for absence were submitted on behalf of the President (Mr. R. H. Hammans), Messrs. H. A. Bartlett, F. Hicks-Arnold, and R. G. Lane.

Radio Hobbies Exhibition

It was reported that the Manager of the Seymour Hall, London, was not yet in a position to confirm, or otherwise, the tentative booking made by Mr. Thoroughgood for the holding of a Radio Hobbies Exhibition during the week October 20-26, 1957.

Mr. E. Brown, G3ESP

The Secretary reported that the *Yorkshire Post* and other newspapers published a report on December 6, 1956, to the effect that, after consulting the Postmaster General, the Member for Brightside, Leeds (Mr. E. R. Winterbottom, M.P.) had informed Mr. E. Brown, G3ESP, that he "is quite free to transmit again." The Secretary reported further that the information given in the *Yorkshire Post* had been conveyed to a representative of the Radio Services Department of the G.P.O. who had stated that the Post Office had no knowledge of any recent developments in the case.

Mr. Metcalfe informed the Council that he had not yet received an opinion on the case from Queen's Counsel, but he submitted a letter from his solicitors in which the opinion was expressed that "there is nothing that Mr. Brown or his mother-in-law can legally do. Council houses are excluded from the operation of the Rent Restriction Acts and therefore the Corporation can, provided they first of all serve a Notice to Quit appropriate to the terms of the letting, claim an Order for possession from the County Court. Mr. Brown's mother-in-law could have no Defence to any claim and the County Court Judge would have no alternative but to make the Order."

It was agreed to bring the terms of the solicitor's letter to the notice of Mr. Brown and the Hon. Secretary. Sheffield Amateur Radio Club.

Membership

(a) Resolved (i) to elect 53 Corporate Members and 11 Associates; (ii) to grant Corporate Membership to three Associates who had applied for transfer.

(b) The Secretary reported that of the 688 members whose subscription became due on September 1, 1956, 89 became overdue on November 30, 1956. Of this number 19 were London, 47 were Country and 16 were Overseas Corporate Members and seven were Associates. Of those overdue 11 London, 19 Country and 14 Overseas members held an Amateur Radio licence.

(c) The Secretary reported that nine of the 89 members referred to in (b) above had written to resign. Of this number two had resigned for personal reasons, four had lost interest in Amateur Radio, and three had resigned for various reasons (gone abroad, on National Service, etc.).

Applications for Affiliation

Resolved to grant affiliation to the Mitcham and District Radio Society.

Council Ballot Paper

Resolved to adhere to the practice of placing an asterisk against the names of the persons nominated by the Council to serve on the Governing Body.

Badges for Associates

Resolved to issue a badge free of charge to each newly-elected Associate.

QSL Bureau

Resolved to grant honoraria totalling £87 3s. 0d. to 11 QSL Bureau Sub-Managers.

Staff Christmas Boxes

Resolved to give a Christmas box to the value of approximately £2 2s. 0d. to each member of the staff with more than six month's service.

European V.H.F. Contest 1957

Resolved to inform the Hon. Secretary, I.A.R.U. Region I Division that the Council of the R.S.G.B. agrees to organize the European V.H.F. Contest for 1957 under the rules laid down at Stresa in June, 1956.

R.A.E.N. and Bristol Group

The Secretary, submitted a letter from Mr. Bartlett, together with correspondence from Mr. D. F. Davies (Hon. Secretary, Bristol Group) and Mr. C. L. Fenton (Hon. Secretary, R.A.E.N. Committee).

It was agreed to bring the correspondence to the notice of the R.A.E.N. Committee when it met on December 15, 1956.

The Secretary was authorized to write and advise Mr. Bartlett that the Council does not endorse the views expressed by Mr. Fenton in his letter to Mr. Halliday. (Mr. Halliday was, until recently, E.C.O. for Bristol.—Ed.)

"The Morse Code for Radio Amateurs"

It was reported that 5,000 copies of this new Society publication were delivered to Headquarters on December 11, 1956.

Resolved that a letter of thanks be sent to the author of the booklet, Mrs. M. Mills, G3ACC.

Boy Scout World Jamboree

It was reported that the Midland Amateur Radio Society and the Slade Radio Society were planning to operate an Amateur Radio station from the World Jamboree site at Sutton Coldfield in August, 1957.

The Secretary reported that he had written to the Region 3 Representative for further information concerning a suggestion that the R.S.G.B. should man and pay for the cost of a stand erected in the same marquee as the radio station.

DX Listener's Century Award

The Secretary submitted a rough draft of a design for the new DX Listener's Century Award. Resolved to approve the design.

Cash Account

Resolved to accept and adopt the Cash Account for November, 1956, as prepared and submitted by the Secretary.

Reports of Committees

Membership and Representation Committee

Resolved (a) to accept a recommendation of the Committee in respect to the printing of a special application form for use by overseas members. (The new form will not require the applicant to obtain the signatures of two Corporate Members to propose him.—Ed.)

(b) to give further consideration at the January, 1957, meeting of the Council to five other recommendations concerned with the present Scheme of Representation.

It was agreed to give consideration at the January, 1957, meeting of the Council to a proposal made by Mr. Drudge-Coates that the Council should appoint a Services' Liaison Officer.

Contests Committee

Resolved to accept recommendations of the Committee in respect to (i) the Low Power Contest and (ii) the award of the Maitland Trophy.

V.H.F. Committee

Resolved (a) to accept recommendations of the Committee in respect to (i) the holding of a National V.H.F. Contest to coincide with the Region I International V.H.F. Contest on September 7-8, 1957, using the rules applicable to the international event to be held on these dates; (ii) the holding of 1250 Mc/s tests during 1957; (iii) the holding of two 70 Mc/s Contests during 1957, one in May or June and one in or near to November; (iv) inviting the members of the 1956 London V.H.F. Convention Sub-Committee to organize the V.H.F. Convention to be held in London on May 25, 1957.

(b) to refer the question of planning the 1250 Mc/s band to the I.A.R.U. Region I V.H.F. Committee in due course.

(c) to recognize formally the office of V.H.F. Manager to the Society and to appoint Mr. F. G. Lambeth to that office.

Letter from Hungary

The Secretary submitted a letter which had been received from the Chairman of one of the Hungarian Amateur Radio Groups in which he appealed for radio equipment to replace that which had been damaged or destroyed during the recent fighting in Hungary.

It was agreed to inform the Group concerned that whilst the present time is not opportune to make an appeal for equipment the Society will be pleased to consider the matter later on.

The meeting terminated at 8.50 p.m.

LONDON MEETINGS

The following programme of meetings at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, has been arranged.

March 1, 1957: "MODERN AMATEUR COMMUNICATION RECEIVER DESIGN," by R. G. Lane (G2BYA).

March 29, 1957: "MOBILE OPERATION." Discussion opened by F. W. Crabtree (G3BK) and R. G. Shears (G8KV).

Meetings commence at 6.30 p.m. preceded by buffet tea from 6 p.m.

B.E.R.U. 1957

ALTHOUGH some of the best-known calls of yesterday are no longer heard in DX contests their places have been taken by a new generation of amateurs whose operating skill leaves nothing to be desired.

B.E.R.U. 1957—held over the 48 hours period that constituted the last weekend in January for those living in the United Kingdom—brought the best conditions for many a long day. Towards the end of the contest very high numbers were being exchanged by some of the leaders of past years, for example, VQ4AQ, Senior winner in 1956 and earlier contests, was offering 500, while the 1956 Low Power winner, ZS6R, was up in the 200's.

G6CJ—valiant warrior of every B.E.R.U. Contest since No. 1—rattled up well over 230 contacts—scored in 36 hours of ding-dong battle with such other fast workers as G5RI, G5DQ and G8KS. Among Dud's catches were six VE7s in a row on 14 Mc/s—"they just popped up through a hole"—so he says!

G6CJ and G8KS scored with VK9XK in Papua. Other nice DX for them both came from MP4BBE, MP4BBL, VP8AI and AP2RH.

Propagation conditions were good throughout the weekend on 14 Mc/s; in fact that band was open for DX throughout the whole 48 hours. Conditions on 21 and 28 Mc/s were also quite good—but neither 7 nor 3.5 Mc/s produced anything outstanding, although the DX must have been there because ZC4IP and VQ4AQ were worked from England on 5 bands.

Both G6CJ and G8KS commented on the high number of Canadian participants and the shortage of VKs. A fair number of ZLs were heard but fewer than in recent years.

Dud Charman's forecast is that last year's Senior and Junior winners (VQ4AQ and ZS6R) may have pulled off the 1957 event. Senior event challengers are likely to be ZC4IP and VE3KE.

Congratulations

TO Mr. Charles Ian Orr-Ewing, O.B.E., M.P., B.Sc., M.I.E.E. (ex G5OG) on his appointment to the office of Parliamentary Under-Secretary of State for Air in the Macmillan Government.

Mr. Orr-Ewing served with distinction in the Royal Air Force during the 1939-1945 war, rising to the rank of Wing Commander. He received the O.B.E. for his war services.

In November 1951, when Parliamentary Private Secretary to the then Minister of Labour and National Service, Mr. Orr-Ewing opened the R.S.G.B. Amateur Radio Exhibition. In recent years he has served on the Board of Cossor Ltd.

Grant of Arms to British Institution of Radio Engineers

THE British Institution of Radio Engineers has been granted Armorial Bearings and Supporters. The Shield of the Coat of Arms makes allusion to the pioneers of radio science, Professor James Clerk Maxwell and Heinrich Hertz, while the supporters are those of the 7th Duke of Devonshire, who endowed the Cavendish Laboratory, Cambridge, and of Admiral The Earl Mountbatten of Burma, who played an important part in the founding of the Institution and who was President from 1946 to 1948. The Shield is surmounted by the Head of Mercury, Messenger to the Gods. In addition a new motto has been adopted, "Scientia pro Hominibus"—Science for the good of mankind.

Society News

Presidential Address

FIVE Past Presidents (Messrs. F. Charman, B.E.M., G6CJ, L. Cooper, G5LC, R. H. Hammans, G2IG, S. K. Lewer, B.Sc., G6LJ, and W. A. Scarr, M.A., G2WS) and three Vice-Presidents (Messrs. H. A. M. Clark, B.Sc.(Eng.), M.I.E.E., G6OT, D. N. Corfield, D.L.C.(Hons), A.M.I.E.E., G5CD, and J. W. Matthews, G6LL) were present at the Ordinary Meeting held on Friday, January 25, 1957, at the Institution of Electrical Engineers, London, W.C.2, when Mr. Douglas A. Findlay, D.F.C., A.S.A.A., G3BZG, was installed as the twenty-third President of the Society.

The installation ceremony was performed by the Immediate Past President (Mr. R. H. Hammans), who invested the new President with the handsome Chain of Office donated to the Society a few years ago by Mr. W. J. Butler, G5LJ.

Council Members W. H. Allen, M.B.E., G2UJ, K. E. S. Ellis, G5KW, and J. H. Hum, G5UM, were also present, together with about 100 other members. Apologies for absence were submitted from Past Presidents H. A. Bartlett, G5QA, and A. O. Milne, G2MI.

Following the installation ceremony Mr. Findlay delivered an Address to the membership. (The Address is reproduced elsewhere in this issue—Editor.)

At the conclusion of the Address, Past President F. Charman, B.E.M., G6CJ, lectured on "Aerials for the Radio Amateur" using a number of ingenious models to demonstrate radiation patterns. (A description of some of the new aerials shown by Mr. Charman will be published in a future issue of the BULLETIN—Editor.)

Messrs. Chapple, G6SC, Furby, G3EOH, and Ramsey, G3ARM, took part in the brief discussion that followed the lecture, after which Mr. H. A. M. Clark proposed a vote of thanks to Mr. Charman and his colleague, Mr. Vaughan, who had assisted in the demonstrations.

Radio Amateurs' Examination

MEMBERS who wish to sit for the Radio Amateurs' Examination, set by the City and Guilds of London Institute, to be held on Friday, May 10, 1957, from 6.30 to 9.30 p.m., should apply without delay to their local technical colleges who will make the necessary arrangements with the Institute. The closing date for such arrangements is February 28, but in exceptional circumstances entries may be accepted, subject to a late fee, up to March 31, 1957. In cases of difficulty candidates should apply to the Director of Education for the county concerned.

The fee for the examination is £1.

R.S.G.B. Certificates

THE 1,000th British Empire Radio Transmission Award was issued to Mr. Robert G. Wyatt, G3HFJ, on January 24, 1957. As at the same date 133 Empire DX Certificates and 3,313 Worked the British Empire Certificates had been issued. Of the latter number 2,689 were for A1 and 624 for A3 operation.

Second Top Band Contest 1956

THE Victor Desmond Trophy has been awarded for the year 1956 to Mr. G. E. Read (G3ERN) in recognition of his achievement in winning the Second 1956 Top Band Contest.

Certificates of Merit have been sent to Messrs. W. R. Stevenson (G3JEQ) and J. Banner (GW3ZQ) who were placed second and third respectively.

Committees of the Council 1957

THE following members have been appointed to serve on the Committees of the Council for the year 1957:—

Contests. Council Member: W. H. Matthews (G2CD); Non-Council Members: R. S. Biggs (G2FLG), E. S. G. Fish (G2HCZ), S. E. Fryer (G3ERO), J. P. Hawker (G3VA), T. L. Herdman (G6HD) and A. W. Timme (G3CWW).

DX Convention. Council Member: A. O. Milne (G2MI); Non-Council Members: G. A. Bird (G4ZU), F. Hooson (G3YF), J. D. Kay (G3AAE), F. G. Lambeth (G2AIW), P. R. Solder (G5FA).

Exhibition. Council Members: W. H. Allen (G2UJ), C. H. L. Edwards (G8TL); Non-Council Members: J. E. Hunter (G6HU), F. G. Lambeth (G2AIW), G. W. Norris (G3IC), B. J. Rogers (G3IL), J. Royle, R. L. Royle (G2WJ), G. M. C. Stone (G3FZL), and E. W. Yeomanson (G3IIR). Co-opted: F. F. Ruth (G2BRH).

Finance and Staff. Council Members: H. A. Bartlett (G5QA), K. E. S. Ellis (G5KW), C. H. L. Edwards (G8TL), J. H. Hum (G5UM), W. R. Metcalfe (G3DQ), A. O. Milne (G2MI) and W. A. Scarr (G2WS).

G.P.O. Liaison. Council Members: R. H. Hammans (G2IG), A. O. Milne (G2MI), L. E. Newnham (G6NZ); Non-Council Member: H. A. M. Clark (G6OT).

Membership and Representation. Council Members: H. A. Bartlett (G5QA), W. H. Matthews (G2CD), W. R. Metcalfe (G3DQ), H. W. Mitchell (G2AMG) and J. Taylor (G6M2DBX).

Radio Amateur Emergency Network. Council Members: C. H. L. Edwards (G8TL), W. R. Metcalfe (G3DQ), L. E. Newnham (G6NZ); Non-Council Members: A. C. Dunn (G2ACD), C. L. Fenton (G3ABB), A. C. Gee (G2UK), E. Arnold Matthews (G3FZW), F. R. Peterson (G3ELZ), C. T. Wakeman (G4FN) and D. F. Willies (G3HRK).

Technical. Council Members: W. H. Allen (G2UJ), C. H. L. Edwards (G8TL), R. H. Hammans (G2IG), F. Hicks-Arnold (G6MB), J. H. Hum (G5UM); Non-Council Members: H. A. M. Clark (G6OT), D. N. Corfield (G5CD), F. J. H. Charman (G6CJ), A. H. Koster (G3ECA), S. K. Lewer (G6LJ) and J. W. Matthews (G6LL).

V.H.F. Council Members: W. H. Allen (G2UJ), K. E. S. Ellis (G5KW), J. H. Hum (G5UM), W. H. Matthews (G2CD), W. A. Scarr (G2WS); Non-Council Members: D. Furby (G3EOH), F. G. Lambeth (G2AIW), G. M. C. Stone (G3FZL).

The President is an ex-officio member of all Committees.

R.S.G.B. Recorded Lecture Library

THE latest addition to the Library, a lecture on "World-wide Communication" by Les Parnell, G8PP, is now available for use on standard twin-track machines. The recording was made and the tape has been loaned to the Society by a member who uses the pseudonym "Joe Marctu."

Applications to borrow the tape should be addressed to Mr. E. Fish, G2HCZ, 107 Eton Road, Ilford, Essex. As the demand is high, early application for the loan of tapes of recorded lectures is advisable.

Don't Forget

IF you use a wireless set fitted in your motor car you must have a separate wireless licence. The use of a portable wireless set in your car is covered by the wireless licence for your home.

A motor car wireless licence costs £1 from any Post Office.

Tests and Contests

Second 1.8 Mc/s Contest, 1956

ABOUT 150 G3 stations were in evidence on this popular occasion whilst the G4s, G5s, G6s and G8s varied in number between six and a dozen. Of the G2s, which include the pre-war A.A. call-signs, about 30 were recorded as being active. Three Germans, not including a "phoney," and two OKs were worked and that old supporter HB9T was heard. Three GDs, one GC and one GI were worked and the usual small complement of GMs and GWs were active in the contest. Those contestants who sensed and reported that activity was lower were, unfortunately, correct, as there were about 100 fewer stations active as compared with the corresponding contest last year. It will be remembered that in 1955 the contest was run in two sections, long and short, which have been separated into different contests in 1957.

Even the number of contestants was down, and as our American friends would say "we hit a new low." For comparison, previous years' figures were 1953: 73; 1954: 77; 1955 (long and short combined) 78; first 1956: 69. Last year the comments mentioned that activity did not build up until later, whereas this year it was observed by a number of contestants that it "petered out" around 0400-0500. One wonders whether the fall in numbers for this contest may not be traced to the return of activity on 10 metres—only those who didn't take part, but could have, can supply the answer.

Comments are always welcome and as they are written while the memory of the contest is still fresh they enable the Committee, together with their own observations, to assess "what the customers want." The written comments of contestants appear to be much better informed than the observations made on occasion at Society meetings, where presumably either the commentator has forgotten the contest facts or has other motives.

From the Committee's point of view, Top Band contests are good contests because with a fair body of contestants judging is much more accurate. Even so, with more logs, whether as full entries or only for checking, an improvement could still be made. At this point it is opportune to thank those who so kindly sent check logs.

By examining the tabulation of results the very close scores of the leading stations must give rise to the thought as to whether these positions would be maintained with a 100 per cent. check. The Committee, however, have very little doubt because so few points have been lost by the leading stations, due to their excellent log-keeping. It is also interesting to note the relative change of position of some of the regular entrants. G6BQ, an entrant for 20 years and previously a leader, is now down the list, having moved house and in so doing settled in an area with a number of Top Band enthusiasts with newer calls. His case is interesting for those who claim that those living in populous amateur areas are better off in this contest. Those members of the Committee with ages between 40 and 60 take great courage from Mr. Box's remarks that having now passed 40 years of age he thinks that his powers may be on the decline.

The Leaders

G3ERN. G. R. Read of Harlow, Essex, has, after working up the list in previous years, now reached the top with a final score of 147 points from 141 contacts.

His equipment consisted of a v.f.o.-b.a.-p.a. transmitter, HRO receiver and half-wave end-fed aerial.

G3JEQ. W. R. Stevenson of Great Bookham, Surrey, is only one point behind with 146 points from 144 contacts. He used a "G5RV" transmitter with single 807 p.a., AR88 receiver and half-wave end-fed aerial.

GW3ZV. J. Banner of Rhigos, South Wales, scored 145 points from 145 contacts, using a single 807 e.c.o., AR88 receiver and a long wire aerial.

For those interested (and what contestant is not?) here are brief details of the equipment used by some of the other leading stations:—

G3BMY. V.f.o.-b.a.-p.a. (807), CR100 receiver, half-wave end-fed aerial.

G3HVX. V.f.o.-b.a.-p.a. (807), 16 valve home-made superhet receiver, 240ft. end-fed aerial.

G3FUR. V.f.o.-b.a.-p.a. (807), S.640 receiver, 6 element collinear 14 Mc/s beam (6 half-waves in phase plus 128ft. phasing section) and 200ft. long wire.

G6BQ. E.c.o.-triplex-p.a. (6L6). Home-built superhet plus BC453 Q-5'er. Aerial 180ft. plus 50ft. series tuned.

Result of Second 1.8 Mc/s. Contest, 1956

Posn.	Call Sign	Points	Posn.	Call Sign	Points
1	G3ERN	147	36	G2JF	74
2	G3JEQ	146	37	G5NS	71
3	GW3ZV	145	38	G3BWW	70
4	G3BMY	142		G3JFT	70
5	G3HVX	139	40	G3DWW	69
6	G3FUR	137	41	GM6IZ	68
7	G6BQ	128	42	G3KAX	67
8	G3KKZ	126	43	G3LCH	66
9	G3GZB	122		G5JU	66
10	G3JVR	111	45	G3KYU	65
11	G3JIS	107	46	G3GDW	64
12	G3COJ	106	47	G2HDR	63
13	G5MR	105	48	G2DCG	62
14	G2AOL	104	49	G6OO	61
15	G3ELZ	101	50	G3GWX	59
	G4DC	101	51	GM3KKH	55
17	G3CSZ	100		G3HIF	55
	G8ON	100	53	G2HCZ	54
19	G6UT	96		G5AO	46
20	G5MP	92	55	G3JIN	44
21	G3HLW	91	56	G3LCV	37
22	G3HTI	90	57	G8KU	36
23	G3HES	86		G3HZG	36
24	G3CWW	84	58	G3KSU	36
25	G4XC	83		G3JEM	32
26	G2XP	82	61	G3JIM	30
27	G3CHN	81	62	G3KOF	29
	G6VC	81	63	G2DHY	27
29	G2JB	80	64	G3GLV	25
	G2KK	79	65	G2HCD	24
30	G3IYT	79	66	G3FVW	21
	G2BLA	79	67	G6QM	15
33	G8BN	78	68		
34	G2FHF	76	69		
35	G2TH	75			

Check logs are gratefully acknowledged from G2LR, 2ZR, 3CIL, 3EEM, 3IYQ, 3JBN, 3JII, 3KGU, 3LBK, 4KS, 8ML/M, GM3DVX.

Low Power Contest 1956

THE Contests Committee regrets that due to an error in the checking of the entries received for this contest a considerable deduction was made from the score claimed by Mr. V. C. Curling (G6VC) of Northfleet, Kent.

Mr. Curling's score should have been 1935 points, which places him in third position.

First 1.8 Mc/s Contest, 1957

THE Contests Committee has received a number of requests that 1.8 Mc/s Contests should start a little later than has been the practice in recent years, and it has been decided that, as an experiment, this contest shall start one hour later, at 2200 G.M.T. Comments on this change from competitors will be welcomed by the Committee. As previously announced, this contest is of short duration, and will therefore run from 2200 to 0300 G.M.T.

The attention of Scottish members is drawn to the fact that the Maitland Trophy will be awarded to the GM station scoring the highest number of points in this contest and in the November, 1956, contest. Further details of this trophy will be found on page 325 of the January issue.

Rules

1. The contest is open to all fully paid-up Corporate members of the R.S.G.B., resident in G, GC, GD, GI, GM and GW.
2. The contest will start at 2200 G.M.T. on Saturday, March 2, and end at 03.00 G.M.T. on Sunday March 3, 1957.
3. Entries, preferably on one side only of foolscap or quarto paper must be set out as shown below:—

FIRST 1.8 Mc/s CONTEST 1957

Name Claimed score
Address Call-sign
Transmitter Receiver
Aerial system

Time G.M.T.	Call-sign of station worked	Report and serial no. SENT	Report and serial no. RECEIVED	Claimed score	Leave blank
2210	G2—	599001	599004	1	
2214	G3—	599002	599006	1	

Declaration: I declare that my station was operated strictly in accordance with the rules and spirit of the Contest and I agree that the ruling of the Council of the R.S.G.B. shall be final in all cases of dispute.

Date..... Signed.....

4. Details at the top of the entry must be completely filled in and the declaration signed, otherwise the entry may be disqualified.
5. Entries must be addressed to the Hon. Secretary, 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, March 11, 1957.
6. Proof of contact may be required.
7. The contest is confined to two-way telegraphy contacts, and only the entrant will be permitted to operate his station during the contest.
8. An exchange of RST reports and a self-assigned three-figure serial number starting between 001 and 100, and increasing by one with each successive contact, will be required before points may be claimed. All reports must be acknowledged with "R."
9. Only one contact with a specific station during the contest will count for points. For purposes of this rule, G2—, G2—/A, G2—/P and G2—/M are all regarded as the same station.
10. The system of scoring will be as follows:— (a) contacts with stations in the British Isles (G, GC, GD, GI, GM and GW) score one point each; (b) contacts with stations outside the British Isles score 3 points each.
11. The power input to the final stage or to any preceding stage of the transmitter must not exceed 10 watts.
12. The Somerset Trophy will be awarded to the station in the British Isles with the highest total score, and Certificates of Merit will be awarded 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 Second 1956 Contest.

PACC Contest 1957

RADIO amateurs throughout the world are invited to participate in the 1957 PACC Contest organized by the Dutch National Society, V.E.R.O.N. The Contest will take place during the last weekend of April (Telegraphy Section) and the first weekend of May (Telephony Section). Both Sections of the contest will begin at 12.00 G.M.T. on the Saturday and end at 23.59 G.M.T. on the Sunday. Only c.w.-to-c.w., and phone-to-phone contacts

(with both stations on the same band) will count for points. All bands from 3.5 to 28 Mc/s may be used. Contest exchanges will consist of the RST (or RS) report followed by the number of the contact, beginning with 001. In addition Dutch stations will transmit two letters indicating the province in which they are located.

Entries must be posted before June 15, 1957, to P.v.d. Berg, PA0VB, Contest Manager, V.E.R.O.N., Keizerstraat 54, Gouda, Holland, from whom fuller details may be obtained.

Helvetia 22 Contest

HBIEU with a score of 219,006 points was the leading Swiss competitor in the 1956 Helvetia 22 Contest. DL1BZ (11,280) led the European entry and W4KVX (3,225) the outside Europe entry. G3KAY (3,192) finished 23rd, G8TS (1,560) 48th, G3GSZ (1,350) 51st and G3ISV (1,242) 55th.

The Contest attracted an entry of about 220.

Contests Diary

1957

- February 23-24 - A.R.R.L. DX Contest (C.W. Section)¹
March 2-3 - First Top Band
March 2-3 - U.B.A. Contest (Telegraphy Section)¹
March 2-3 - R.E.F. DX Contest (Telegraphy Section)
March 9-10 - A.R.R.L. DX Contest Phone Section)¹
March 23-24 - A.R.R.L. DX Contest (C.W. Section)¹
April 13-14 - U.B.A. Contest (Telephony Section)¹
April 13-14 - R.E.F. DX Contest (Telephony Section)
April 27-28 - P.A.C.C. Contest (Telegraphy Section)
May 4-5 - P.A.C.C. Contest (Telephony Section)
May 5 - D/F Qualifying Event (organizers to be announced later).
May 5 - First 144 Mc/s Field Day
May 26 - D/F Qualifying Event (Rugby).
June 1-2 - National Field Day²
June 16 - 420 Mc/s
June 22-23 - First 70 Mc/s Contest
June 23 - D/F Qualifying Event (South Manchester).
July 6-7 - 144 Mc/s
July 14 - D/F Qualifying Event (Peterborough).
August 18 - Second 144 Mc/s Field Day
August 25 - 1250 Mc/s Tests
September 1 - Low Power Field Day
September 7-8 - European V.H.F. Contest³
September 7-8 - National V.H.F. Contest³
September 8 - D/F National Final
October 5-6 - Low Power
November 9-10 - Second Top Band
November 16-17 - Second 70 Mc/s Contest
November 23-24 - 21-28 Mc/s Telephony

¹ See page 329, R.S.G.B. Bulletin, January, 1957.

² For rules, see page 230, R.S.G.B. Bulletin, November, 1956.

³ Both under Region 1 I.A.R.U. rules.

⁴ For details, see page 329, R.S.G.B. Bulletin, January, 1957.

Command Transmitters on the Amateur Bands

Continued from page 351

In operation the coupling coil is advanced until the p.a. draws the required current, or until the maximum r.f. output is obtained. Over coupling will give a greater d.c. input, but efficiency falls off rapidly, and any harmonics which are present in the p.a. tank circuit are more easily radiated.

Telephony

To use telephony with these transmitters the simplest method is that for which they were originally intended, i.e., screen modulation. For this it becomes necessary to reduce the screen voltage to 150 volts maximum so that the standing input obtainable is correspondingly lower. The screen is fed through the secondary of a modulation transformer. A few watts of audio will fully modulate 50 watts input.

When setting up on 'phone, the coupling and aerial tuning must be adjusted until the p.a. anode current kicks upwards when modulation is applied, otherwise the radiated signal will be badly distorted, and probably unintelligible. It will be found that slightly more coupling than the optimum for maximum r.f. output is necessary to achieve good modulation.

TVI

Lacking a television receiver, the author can make no claims about the TVI aspect of the Command transmitter, but *Television Interference*, Third Edition (Remington Rand Laboratory of Advanced Research) carries on page 75 a short note on this subject, which broadly speaking, advocates the removal of the aerial tuning coil, as mentioned earlier, complete screening of the unit, with an aluminium plate over the front window, and copper mesh over the inside of the louvers, and the by-passing of all the supply and keying leads with 0.01µF disc ceramic capacitors at the power socket.

The 3.5 Mc/s unit has been on the air under the call-sign G3HTI for several months, with very satisfactory results from a poor aerial.

The Command Set Receivers

Continued from page 354

References

- "The Lazy Man's Q5'er," Technical Topics, *QST*, January, 1948.
- "Putting the BC455 on 10," Gilbert, *CQ*, September, 1948.
- "BC453 for Better Selectivity," Wingfield, *Short Wave Magazine*, September, 1948.
- "A Double Conversion Receiver for \$30," Allen & Engelman, *CQ*, February, 1949.
- "BC453 as a Q5'er," *CQ*, June, 1949.
- "Improving the Q5'er," Rogers, *Short Wave Magazine*, November, 1949.
- "I.F. Regeneration on the BC455," Donald, R.S.G.B. BULLETIN, March, 1951.
- "Noisy Tuning in the BC453," R.S.G.B. BULLETIN, April, 1952.
- "Bandspread Dial for the Command Receiver," Bostwick, *CQ*, March, 1953.
- "Command Set Receiver for 6 and 10," Faulkner, *QST*, September, 1953.
- "The ARC5 Repackaged," Bernard, *CQ*, March, 1955.
- "The Novice Q5'er," Stoner, *CQ*, January, 1956.
- The Mobile Manual for Radio Amateurs*, A.R.R.L. Mobile Handbook, Cowan Publishing Corporation.

For Your Bookshelf and Shack . . .

R.S.G.B. PUBLICATIONS

- R.S.G.B. Amateur Radio Call Book Price 2/6 (by post 2/10)
- Certificates and Awards - Price 2/6 (by post 2/10)
- A Guide to Amateur Radio (Sixth Edition—Revised) Price 2/6 (by post 2/10)
- The Morse Code for Radio Amateurs Price 1/- (by post 1/3)

- ★ ★ ★
- Valve Technique - - - - Price 3/6
- Simple Transmitting Equipment - - - - Price 2/-
- Transmitter Interference - - - - Price 1/3
- V.H.F. Technique - - - - Price 1/-
- Special Offer. Members may purchase the set of four booklets for 4/6 (post paid)

AMERICAN PUBLICATIONS

Orders for the following American publications can only be accepted from residents in the United Kingdom and British Empire. Prices quoted include cost of postage and packing.

- *Radio Amateur's Handbook 1957 Edition (available February) - - - - 34/- (A.R.R.L.)
- *Mobile Manual for Radio Amateurs - - - - 24/6 (A.R.R.L.)
- *CQ Mobile Handbook - - - - 24/- (Cowan Publishing Corp.)
- *Antenna Book 7th Edition - - - - 19/- (A.R.R.L.)
- *Radio Amateurs' Mobile Handbook - - - - 18/- (Cowan Publishing Corp.)
- *Single Sideband for the Amateur - - - - 14/- (A.R.R.L.)
- *Single Sideband Techniques - - - - 13/- (Cowan Publishing Corp.)
- *Hints and Kinks (Volume V) - - - - 10/- (A.R.R.L.)
- *Course in Radio Fundamentals - - - - 10/- (A.R.R.L.)
- *How to become a Radio Amateur - - - - 4/6 (A.R.R.L.)
- *Learning the Radiotelegraph Code - - - - 4/6 (A.R.R.L.)
- QST (A.R.R.L.) Yearly Subscription - - - - 36/-
- CQ (Cowan Publishing Corp.) Yearly Subscription - - - - 44/-
- *Usually available from stock. All prices for American publications are subject to alteration without notice.

R.S.G.B. MEMBERS ONLY

- Society Tie (all silk) - - - - 16/6
- Blazer Badge - - - - 7/-
- Car Badge (R.S.G.B. Emblem) - - - - 5/-
- Car Badge (R.S.G.B. Emblem with Call-sign) (5 characters)† - - - - 6/6
- Car Badge (De Luxe Type)† - - - - 17/6
- Call-sign Lapel Badges (5 characters)† - - - - 6/-
- Rubber Stamp (R.S.G.B. Emblem) - - - - 7/6
- Stereo Block (R.S.G.B. Emblem) - - - - 5/6
- Miniature Pennants (R.S.G.B.)
- 10" long for bicycle - - - - 5/9
- 12" long for car - - - - 7/9
- Headed Notepaper (R.S.G.B.) per 100 sheets - - - - 6/6

†Delivery 3-5 weeks.

MISCELLANEOUS ITEMS

- Two Metre Zone Map - - - - 6d.
- R.A.E.N. Message Pads - - - - 2/-
- Log Books (Webbs') - - - - 4/-

All prices include postage unless otherwise stated.

R.S.G.B. Sales Dept., New Ruskin House, Little Russell Street, London, W.C.1

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.

V.H.F. Minibeam

DEAR SIR.—G4ZU's interesting article (December, 1956, issue) is in one respect misleading. He says that a "good directional system can readily provide an improvement in signal-to-noise ratio of 20 db or more at the receiver," and repeats this figure a little later. No gain figures are given for the aerial described so that it may be inferred that it should have 20 db.

A double stacked 10 element array (20 elements total) yields only 12-13 db gain and the usual figure for a 3-element array is 5 db for narrow beams, while the average gain of a broadband beam is less. These figures are referred to a dipole, but G4ZU may be using some other reference. Could we have some figures please, giving gain, back-to-front ratio and v.s.w.r. versus frequency?

Where the feeder is not carefully matched it can modify the optimum frequencies and the overall gain of the system, reflections taking their toll of precious db mismatch losses.

While a v.s.w.r. of 3:1 results in only 25 per cent. loss (nearly 3 db) of the transmitter power, unless the transmitter itself is correctly matched to the characteristic admittance of the feeder over the working range, the actual output power of the transmitter becomes a function of feeder length (cyclic in half-wave length increments of the feeder) and the power in the aerial can drop over 6 db from optimum match. Such circumstances can explain the extremes of opinion and experience expressed by amateurs about v.h.f. aerials, and underlines the importance of having measuring gear.

Feeder losses. Assuming correct matching, 100 feet of ribbon feeder can introduce a loss of 2 db while the same length of coaxial will lose about 4½ db (nearly the gain of a 3 element beam). A balanced matching network or a balun transformer at the transmitter need not introduce more than ½ db loss so the ribbon is at least 2 db better overall. The detection of standing waves on a ribbon is a simple matter and greatly facilitates adjustments while the extra trouble involved in installing a ribbon feeder is small compared with the total labour in the station.

While the figures given are for particular cables at 80 Mc/s they are typical of installation.

I must declare commercial interest both in measuring gear and aerials, but plead that this supports my comments which are all based on measurement.

Yours faithfully,

South Ockendon, Essex. J. I. BROWN (G3EUR).

DEAR SIR.—I have read with interest the letter from Mr. J. I. Brown (G3EUR) and should like to comment on the various points he has raised.

Firstly, the improvement in signal-to-noise ratio when changing from a dipole to a beam is dependent mainly upon the increased discrimination against solar hiss, random noise, man-made interference, and unwanted signals in general. The fact that an aerial has a front-to-back and front-to-side ratio of 20 db or more certainly does not mean that it has a power gain anywhere approaching this magnitude! It is in fact quite possible to have an aerial with a most impressive front-to-back ratio but no power gain at all.

However, as stated in my article, an improvement of at least 20 db is to be expected in signal-to-noise ratio, particularly in a noisy location, when a dipole is replaced by a three element beam. The term "noise" is used in its customary sense as covering all signal voltages arriving at the receiver, other than the desired signal.

Mr. Brown states that he has been unable to obtain more than 5 db gain with the three element narrow band beams which he has apparently built and tested. I can only assume that there is something basically unsound either

with the design of his beams or his method of measurement, as it is well known that even a two element beam will give a gain of 5½ db when correctly tuned, and the figure for a three element wide spaced beam is normally 7½ to 8½ db.

If G3EUR cares to study the design of the "V.H.F. Minibeam" more closely he will realize that it is only broadbanded on 5 and 6 metres. On the transmitting frequency in the 70 Mc/s band it operates as a narrow band beam and there is no reason why the gain should be any less than a comparable three element beam designed for operation on this band only. A three element array will normally exhibit as much as 30 db f/b ratio, and the theoretical gain is 9 db over a dipole in free space (see *Radio Handbook*, 14th ed., page 422).

It is agreed that correct feeder matching is important at these frequencies. The special design of the driven element provides adjustment for matching any feeder between 50 and 100 ohms so that an unusually low s.w.r. can be obtained at the normal transmitting frequency in the 70 Mc/s band.

On the two lower bands where the beam is normally used for reception only, the s.w.r. is a function of the receiver input impedance. Once this has been correctly adjusted, the s.w.r. on reception will be exactly 1:1 over the whole extent of both these bands.

It is clear, therefore, that Mr. Brown's comments on s.w.r.s of 3:1, "cyclic half-wavelength increments of feeder length," etc., have no real bearing on the case, and his statement that 25 per cent. loss of transmitter power represents nearly three db is completely untrue. It is actually little more than one db.

On the subject of feeder losses I should like to disclaim any sort of bias either for or against 300 ohm ribbon. Considerable quantities of this material are, in fact, being used by amateurs for feeding my original three band Minibeam which was specifically designed for use with 300 to 450 ohm feeder! However, correspondence I have received during the past year convinces me beyond doubt that a large number of amateurs have a distinct preference for coaxial feeder systems, and I am not satisfied that this preference should necessarily be discouraged, particularly for v.h.f. work. Mr. Brown's figures of 4½ v. 2 db would seem to indicate that coax. has twice the loss of 300 ohm ribbon but this is not borne out by my own experience. I think he must have chosen a very good piece of ribbon and a very poor piece of coax. to try and prove his argument. Handbook figures for 52 ohm RG17/U show an attenuation of only 0.85 db per 100 ft at 100 Mc/s and RG11/U (75 ohm) is 1.9 db, against a figure of 2.2 db for 300 ohm ribbon when clean and dry. The losses with ribbon tend to increase as the line weathers and may reach double the quoted figure in time. Anyone who is particularly set on using 300 ohm ribbon with the "V.H.F. Minibeam" can do so merely by reversing the upper and lower elements of the folded radiator.

In closing, I should like to offer my apologies to any other readers who, like Mr. Brown, found my article confusing or difficult to understand. The only excuse I can offer for the shortcomings is that the aerial was designed, tested, and an article prepared for publication all in the space of about ten days. It was only as a result of really high pressure work on the part of the Editorial staff that the article was squeezed into the December BULLETIN while 70 Mc/s was still "in the news."

Yours faithfully,

Croydon, Surrey. G. A. BIRD (G4ZU).

RF26 and 27 Units

DEAR SIR.—With regard to the notes on page 263 of the December, 1956, BULLETIN entitled "Improving the RF26 and 27 units," and in particular note No. 7, the substitution of a 5K bias resistor would bring the gain of the r.f. stage down to practically nothing. The existing resistor of 150 ohms, which represents the maker's recommendation, has been found, with the aid of a noise generator, to be the optimum value.

It seems probable that the modification which can reduce the excessive mixer noise of these units, more than any other single step, is to change the 100pF coupling condenser between the r.f. and mixer stages to a value of 27 or 33pF. This reduces the damping effect, and it may be advantageous to tap down the grid coil.

There are other modifications, particularly to the r.f. stage, which can easily be made, and I have successfully converted a RF26 unit to a sensitive converter covering 50-52 Mc/s. With the aid of this unit over 20 crossband W and VE QSOs from 28 to 50 Mc/s have been made recently.

Yours truly,
R. F. STEVENS (G2BVN).
Romford, Essex.

N.F.D. Rules

DEAR SIR,—I completely agree with G4XC and Co. on the subject of the new rules for N.F.D. I too wonder why the power limit has been raised at a time when conditions are improving, and despite the ever-rising scores of winning stations. With more bands to complicate the issue, and the cancelling of Leading "A" and "B" Station awards, less and less encouragement is being given to the smaller groups. The "Highest Score on Each Band" awards are not a good substitute, as almost any Group could achieve this distinction by hogging one band at the expense of all others.

I can confirm G2FYT's views on the dying interest in National Field Day, and am convinced that it will not be revived until some steps are taken to limit, in fact, the input to the required figure. I am sure that if a poll were taken it would reveal that the great majority believe some stations guilty of using high power. Such mistrust may lead to antagonistic emulation.

Two suggestions that would help clear the air are:

- A ruling on the types of valve which should be used in the p.a. and buffer stages, and
- A sworn statement from each operator that these valves were used at the given input, instead of subjecting only the T.R. (who cannot be on both stations all the time) to a spell of soul-searching.

Yours faithfully,
JOHN J. YEEND (G3CGD).

V.H.F. Novice Licence Proposed

DEAR SIR,—Each month on opening the BULLETIN I can be sure of seeing two items: (a) a plea for a larger membership of the Society and (b) a moan from the v.h.f. fraternity about lack of activity on 144 Mc/s and 420 Mc/s. May I make a suggestion that will help both causes? It is that the Society should negotiate with the P.M.G. for the issue of novice licenses with operation restricted to 144 and 420 Mc/s.

I know there are a number of persons who have the technical ability but just don't get down to learning the code. I believe that most people who have been allowed to operate on the air for say 6 to 12 months probationary period would hate to have their stations closed down for a simple thing like not learning the code, and would accordingly buckle down to it and see that they did obtain the necessary speed to pass the test. I hasten to add, however, that the novice should pass the technical exam before being allowed on the air!

Speaking from memory, I believe that the R.S.G.B. was asked some years ago to support a resolution from the Wireless Institute of Australia asking for an issue of novice licenses, but declined on the ground that such a concession would cause further congestion on the bands. This, of course, could not apply to the v.h.f. bands, I can assure you. Congestion on those bands would be welcome after the long deathly silences that are being endured at the present time.

So far as the Society is concerned, I should imagine most novice licence holders would want to become full members even if only to use the QSL bureau.

The novice system operates very well in the U.S.A. and one has only to listen to the "Klubbs" of the Iron Curtain countries to realise that a similar method of attracting interest is being practised there.

Great Britain needs more and more technicians if we are to hold our place in the world today so let us do what we can to attract more people—especially the younger ones—to the most fascinating of all hobbies and thereby gaining knowledge that will perhaps be of use to the country as well as themselves.

Yours faithfully,
J. A. WARD (G4JJ).
Barnsley, Yorks.

Long Wire Aerials

DEAR SIR,—I am surprised at the number of Top Band operators who claim to be using "long wire" aerials. It does not seem to be generally realized that the term is not synonymous with the "the longest end-fed aerial I can manage" which is the sense in which one usually hears it applied.

A "long wire" aerial is one which is a multiple of a half-wave (A.R.R.L. Handbook and others). On this basis the minimum length of a Top Band "long wire" is one wavelength, i.e., 528 feet!

It is clear, therefore, that the description of an aerial as, say, "a 132 ft. long wire" could be much more correctly rendered as "a wire 132 ft. long."

Your faithfully,
DAVID W. WOODERSON (G3HKX).
Bexleyheath, Kent.

J.H.'s Low Poll

DEAR SIR,—I refer to "Current Comment" January 1957. As an unsuccessful candidate for Council I agree wholeheartedly with his regret that the poll was so low, but I am rather astonished that he cannot offer any real reason for this lamentable state of affairs.

It is certainly interesting that all four nominees of the retiring Council have been elected. I wonder what the result would have been if such block nomination was prohibited. It does seem strange and almost unlawful that, in such a Society as we have, a few members, some due to demit office, should be given power and privilege over their fellow members in this matter of nomination. There is no doubt that such a block nomination has power behind it and I would submit that the rules controlling nominations for the Council be made strictly applicable to all Corporate Members regardless of office held.

What do my fellow-members think about this matter?
Yours faithfully,
EDWARD G. INGRAM (GM6IZ).
Aberdeen.

R.S.G.B. News Bulletin

Overseas Service Proposed

DEAR SIR,—VQ4RF in a recent contact with the writer suggested that the R.S.G.B. News Bulletin should be broadcast on either 21 or 28 Mc/s for the benefit of overseas Corporate Members of the Society. Is there any support for this suggestion?

VQ4RF mentioned during our QSO that he did not know that the 70.3 Mc/s band had been released until a month after the news was first announced over GB2RS.

Yours faithfully,
A. H. B. BOWER (G3COJ).
Maidenhead, Berkshire.

Defective Components

DEAR SIR,—Apropos the letter "Defective Components" (page 334, January issue), I recently obtained four 35 T valves and having been bitten before, they were immediately tested on arrival. All four were useless! One had a dead short from grid to heater while the others were "soft" in lesser or greater degree. Some firms are evidently cashing in on useless surplus so look out!

Yours faithfully,
J. MACINTOSH (GM3IAA, ex-VSIAA).
Cradlehall, Inverness.

Worked All GM Award

DEAR SIR,—May I, on behalf of the Aberdeen Amateur Radio Society, thank you for the paragraph in the January "BULLETIN" announcing the W.A.G.M. Award? The response has been immediate. These local Awards depend greatly on the publicity afforded by the Amateur Radio journals.

Yours faithfully,
A. G. ANDERSON, GM3BCL (WAGM Manager).
Aberdeen, Scotland.

To the Point

DEAR SIR,—Note for pirates: G3KQ is still active.
Yours faithfully,

J. BURLEIGH SCOTT.
Parkstone, Dorset

Regional & Club News

Aldershot and District Radio Society.—Members of the Aldershot and District Radio Society deeply regret the passing of their Honorary President, Capt. A. M. H. Fergus (G2ZC). Meetings are held on alternate Wednesdays at "The Cannon," Victoria Road, Aldershot, the next being on February 27 at 7.30 p.m. Recent lectures have included "The Antennamatch" by Frank Hicks-Arnold (G6MB). A dinner is to be held next month and details may be obtained from the Hon. Secretary, A. E. Redman (G2FNQ), 19, South Street, Farnham.

Barrow Radio Society. The officers of this newly formed Society are *President*—S. B. Cooper, A.M.I.E.E., *Hon. Secretary*—R. Kendall; *Hon. Treasurer*—A. Shannon. A lecture on Aerial Design will be given by I. Waddington, B.Sc., at the meeting to be held on February 21. The Society meets at Barrow Technical College where a course for the R.A.E. has been run for the past three years. The address of the Hon. Secretary is 23 Southport Drive, Barrow-in-Furness.

Bristol.—A lecture on "Radio Astronomy" was given by A. F. Collins, F.R.A.S., F.B.I.S., at the January meeting. Those present included the former Regional Representative Herb. Bartlett (G5QA) and his successor, Bill Green (G3FBA). The ballot to decide the best lecture given by a local member during 1956 resulted in E. C. Halliday (G3JMY) being awarded the G5FS Memorial Challenge Trophy for the second year in succession. Forthcoming lectures include "Seventy Centimetres and Down" by G3KHA on February 22 and "Simple Test Equipment for the Amateur" by G3JMY on March 22. *Hon. Secretary*: D. F. Davies (G3RQ), 51 Theresa Avenue, Bishopston, Bristol 7.

British Amateur Television Club (Chelmsford Group).—Meetings have been arranged for March 14 ("A Home-made 3 cm Microwave Link" by P. Burrage), April 11 ("Transistor Pulse Circuits" by J. Howe) and May 9 ("A Test Card C Monoscope Unit" by J. Royle) all at 10 Baddow Place Avenue, Great Baddow, Essex. Visitors will be welcome. *Hon. Secretary*: D. S. Reid, 4 Bishop Road, Chelmsford, Essex.

Bury Radio Society.—At the meeting on March 12 (8 p.m.) at the George Hotel, Kay Gardens, G8GF will give a talk on receivers.

Chester and District Amateur Radio Society.—At the A.G.M. it was decided to encourage junior members who have no income by granting them free membership. Meetings will be held on March 12 (talk on "Allied Subjects") and March 19 ("A Home-made Double Superhet"). A Top Band Net takes place on the first Tuesday in each month. *Hon. Secretary*: D. Rickers, 97 Ruabon Road, Wrexham.

Crystal Palace and District Radio Club.—The A.G.M. will be held at Windemere House, Westway Street, S.E.19, on February 16 and the Annual Dinner at the Half Moon Hotel, Herne Hill, on February 23. *Hon. Secretary*: G. M. C. Stone (G3FZL), 10 Liphook Crescent, Forest Hill, London, S.E.23.

Derby and District Amateur Radio Society.—Membership rose to 100 during 1956. Meetings are held every Wednesday at the Derby College of Art, forthcoming arrangements being February 20—Discussion on N.F.D. by local R.S.G.B. members and Open Night with the Club Transmitter, G3ERD; February 24—Top Band Telephony Contest for transmitting and listening members from 09.00 to 12.00 G.M.T.; February 27—Members' Surplus Equipment Sale; March 6—Talk on a trip to U.S.A. by T. Darn (G3FGY); March 13—Mullard film strip "The Story of Television." The Annual Dinner and Social will be held at the Iron Gates Grill on Friday, March 1, commencing at 7.15 p.m. Tickets, price 10/- each, can be obtained from the *Hon. Secretary*: F. C. Ward (G2CVV), 5 Uplands Avenue, Littleover, Derby.

Enfield and District.—In addition to regular meetings, the group publishes an enterprising and informative monthly newsletter, *The Lea Valley Reflector*, which chronicles not only the activities and experiments of individual members but also contains many interesting technical contributions. Details of other activities can be obtained from the T.R.:

H. Hyman (G3IZQ), 89 Brantwood Road, Tottenham, London, N.17.

Gravesend Radio Society.—At the recent A.G.M. the following were elected: *President*—L. Belger (G3JLB); *Chairman*—P. Jobson (G3HFL); *Hon. Secretary and Treasurer*—F. Allen (G3JUV), 4 Cobham Street, Gravesend; *Committee Members*—E. Woods (G3FST), D. Mills (G3LEI) and R. Appleton. Meetings are held on Thursdays at 7.30 p.m. at 36 Pelham Road.

London Members' Luncheon Club.—At the January meeting, the Chairman (Stanley Vanstone, G2AYC) welcomed VK3WZ, W3RUA/MM and KN4MA1, all of whom were visiting London briefly. The club will meet again on February 22 and March 15 at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, W.C.1, at 12.30 p.m. for 1 o'clock. Members intending to be present are asked to ring G2FUX (Ruislip T263) or R.S.G.B. Headquarters (HOLborn 7373) at least 24 hours in advance if possible.

London U.H.F. Group.—The Group's first "Junk Sale" will take place at the Bedford Corner Hotel, Tottenham Court Road, W.C.1, on March 7, commencing at 8 p.m. All v.h.f. and u.h.f. enthusiasts are invited to attend. *Hon. Secretary*: A. J. Worrall (G3IWA), 169 Kent House Road, Beckenham, Kent.

Midland Amateur Radio Society.—At the meeting in the Midland Institute, Paradise Street, Birmingham, on February 26, at 7.30 p.m., J. A. Browning, Grad. I.E.E., will lecture on "Selenium Rectifiers." All interested amateurs are cordially invited to attend. *Hon. Secretary*: C. J. Haycock (G3JJD), 360 Portland Road, Edgbaston, Birmingham 17.

Norwich and District Radio Club.—At the A.G.M. the following officers were elected: *Chairman*—E. D. Greebe (G3LFU); *Hon. Treasurer*—O. F. Simkin (G3HYJ) and *Hon. Secretary*—Henry Staff (G4KO), 59 Charles Avenue, Thorpe, Norwich. Meetings are held every Friday at "The Golden Lion," St. John Maddermarket, commencing at 7.30 p.m. R.S.G.B. members in the City and County are invited to attend.

Prestatyn and District.—Slow Morse instruction and technical assistance for members taking the R.A.E., a talk on Amateur Television, a Junk Sale and a Quiz are planned. Details of meetings can be obtained from R.R. (GW2CCU).

Scarborough Amateur Radio Society.—The following were elected at the A.G.M. on January 10: *Chairman*—M. Watson (G3JME); *Hon. Treasurer*—Fred Powell; *Hon. Secretary*—Percy Briscoe (G8KU), "Roseacre," Irton, near Scarborough. A ten watt transmitter for Top Band and 3.5 Mc/s, built by G2YS, as well as a receiver presented by G3JY, have recently been installed. As a result, it is expected the club call G4BP will be heard more frequently on these bands. The future programme includes Morse instruction and help for those taking the R.A.E. Visitors and prospective members are always welcome at the meetings on Thursdays at 7.30 p.m. at Chapman's Yard, Waterhouse Lane.

Sheffield and District Amateur Radio Society.—This society also held its A.G.M. during January when the following were elected: *Chairman*—C. W. Pettifer (G2DPQ); *Hon. Treasurer*—E. W. Seymour; *Hon. Secretary*—G. R. Cobb (G3IXG); *Committee Members*—R. D. Cox (G2FFG), D. M. Silveston (G3GDH), J. H. Brunt, G. R. Johnson and R. Boyer. It was reported that several new members had been recruited and that of the 52 meetings held during the year only two—during the holiday season—had been poorly attended. Meetings are held at Digswell House on Fridays at 8 p.m. when visitors are always welcome. Refreshments are available.

Slade Radio Society.—The first issue of the society's new magazine *Contact* has just been published and is a worthy addition to the many similar publications of local radio societies. On February 15 there will be a demonstration of high quality sound reproduction by Whiteley Electrical Radio Co. Ltd., and on March 1 a lecture on "Circuit Applications of Transistors" by J. Chandler and A. Wates of the British Thomson-Houston Co. Ltd. E. A. Matthews (G3FZW) is due to talk about R.A.E.N. on March 15. Instructional and constructional classes are held on Tuesdays and Wednesdays. Meetings are held at the Church House, High Street, Erdington, Birmingham 23, commencing at 7.45 p.m. *Hon. Secretary*: C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.

Spen Valley and District Radio and Television Society.—There was an attendance of about 50, including the Mayor and Mayoress of Dewsbury, at the Annual Dinner on January 12. The Swindon Cup has been awarded to N. Pride for outstanding work for the society. Members recently attended a Mullard Film Show. Forthcoming meetings are on February 20 (A.G.M.), March 6 (Display of Members' Gear) and March 20 (Talk on f.m. receivers) at the Temperance Hall, Cleckheaton. *Hon. Secretary:* J. Stubbs (G3KNA), 3 Maws Street, Hartshead Moor, Cleckheaton, Yorks.

Stockport Radio Society.—The A.G.M. will be held at the Blossoms Hotel, Buxton Road, on March 13. Dates of ordinary meetings will be found in *Forthcoming Events*. Attendances have been somewhat reduced recently owing to petrol rationing. *Hon. Secretary:* G. R. Phillips, 7 Germans Buildings, Buxton Road, Stockport.

Thames Valley Amateur Radio Transmitters' Society.—At the A.G.M. the following were re-elected for 1957: *President*—Leslie Cooper (G5LC); *Vice-President*—Alan Mears (G8SM); *Hon. Treasurer*—Graham Leicester (G3IKC); *Hon. Secretary*—Ken Rogers (G3AIU), 21 Links Road, Epsom; *Committee Members*—G. Billson (G6GB), E. A. Dedman (G2NH), Frank Hicks-Arnold (G6MB). Recent talks have included "Some Personal Experiences of the Battle of the River Plate" by Lt. Cdr. A. Monk, D.S.C., R.N. (Ret'd.). A summer social and visits to Harwell and the B.B.C. are planned.

Thanet Radio Society.—The society is taking part in the Broadstairs Hobbies Exhibition at Charles Dickens School, Broadstairs Road, Broadstairs, from April 24 to 27. The G.P.O. has allotted the special call-sign GB2SB for the exhibition station. It is hoped to show as many different aspects of Amateur Radio as possible. The annual dinner-dance will be held at the San Clu Hotel, Ramsgate, on March 2. The President and General Secretary of the R.S.G.B. have been invited to attend. *Hon. Secretary:* J. Barnes (G3BKT), 18 Grange Road, Ramsgate.

Torbay Amateur Radio Society.—The Annual Social and Dinner will be held at Oswalds Hotel, Babbacombe, on February 23, at 7.30 for 7.45 p.m. Tickets price 8/6 each may be obtained from G2GM, 32 Shiphay Lane, Torquay. At the January meeting, the R.S.G.B. Recorded Lecture "Radio in the Antarctic" was given. *Hon. Secretary:* L. H. Webber (G3GDW), 43 Lime Tree Walk, Newton Abbot.

Wirral Amateur Radio Society.—Meetings at the Y.M.C.A., Whetstone Lane, Birkenhead, on the first and third Wednesdays each month continue to be well attended. On January 16, The Association of North Western Radio Societies held a Constructional Contest, the open section being won by G3CSG with his N.F.D. transmitter. *Hon. Secretary:* H. V. Young (G3LCI), 9 Eastcroft Road, Walsley.

Silent Key

GEORGE BRYCE (GM3JOB)

We record with deep regret the death on January 3, 1957, at the age of 45, of George Bryce (GM3JOB) of Ayr. "Geordie", as he was known to the local group, was a keen and active amateur, particularly on 3.5 Mc/s, where his cheery voice and good natured banter won him many friends throughout the country. His efforts in the furtherance of the Amateur Radio movement found many outlets and he was ever ready and willing to assist his fellows to the limit of his ability. He was largely responsible for the establishment of the Ayrshire Amateur Radio Club, formed with an eye to attracting the more junior would-be "Hams." Radio also played a considerable part in his day-to-day work as Sergeant in the Mobile Patrol of Ayr Burgh Constabulary where also he was much respected by his colleagues. His nature was such that despite some months of a painful illness he consistently endeavoured to present a cheerful exterior, always looking forward with eagerness to the day when he would be able to get back behind the wheel of his beloved "Jaguar." His passing comes as a sad blow to all who counted themselves as his friends and the Amateur Radio movement is the poorer for it.

Our deepest sympathy goes out to his widow and family in their sad bereavement.

GM4PW.

An Invaluable Aid

The Author draws on many years of experience in teaching the Morse Code to produce a series of unique exercises. Each of the nine lessons includes a set of special words to be sent in a specified time.

The Morse Code for Radio Amateurs

A New R.S.G.B. Publication

Written by MARGARET MILLS, G3ACC

Price 1/- (By Post 1/3)

R.S.G.B. SALES DEPT.
New Ruskin House, Little Russell Street,
London W.C.1

M.U.F.s are Rising

Take advantage of the present spell of good radio conditions by working for some of the beautifully produced Operating Certificates offered by the R.S.G.B. and other Amateur Radio organisations.

Amateur Radio— Certificates and Awards

A New R.S.G.B. Publication

Gives full details of more than 70
of the World's best known Operating
Certificates and Awards.

Price 2/6 (By Post 2/10)

R.S.G.B. SALES DEPT.
New Ruskin House, Little Russell Street,
London, W.C.1

Forthcoming Events

REGION 1

- Bury (B.R.S.).** — March 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.** — Tuesdays, 8 p.m., over Gordon's Sweetshop, St. John's Road, Waterloo.
- Isle of Man (I.O.M.A.R.S.).** — February 20, March 6, 20, 7.30 p.m., Manor Guest House, Victoria Road, Douglas.
- Lancaster (L. & D.A.R.S.).** — March 6, 7.30 p.m., George Hotel, Torrisholme.
- Liverpool (L. & D.A.R.S.).** — Tuesdays, 8 p.m., Room G, Wavertree Community Centre, Penny Lane, Liverpool, 18.
- Manchester (M. & D.R.S.).** — March 4, 7.30 p.m., Brunswick Hotel, Piccadilly, Manchester.
- Manchester (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.).** — February 27, March 13, 27, 8 p.m., Blossoms Hotel, Buxton Road.
- Warrington (W. & D.R.S.).** — February 21, March 7, 21, 7.30 p.m., Royal Oak Hotel, Bridge Street.
- Wirral (W.A.R.S.).** — February 20, March 6, 20, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

- Barnsley (B. & D.A.R.C.).** — February 22, March 8, King George Hotel, Peel Street.
- Bradford.** — February 26, March 12, 7.30 p.m., 66 Little Horton Lane.
- Doncaster.** — March 5, 7.30 p.m., Lord Nelson Hotel, Cleveland Street.
- Gateshead.** — Mondays, 7.30 p.m., Mechanics' Institute, 7 Whitehall Road.
- Hull.** — Second and last Tuesdays each month, 7.30 p.m., "Rampant Horse," Paisley Street.
- Leeds.** — Wednesdays, 7.30 p.m., 4 Woodhouse Square.
- Middlesbrough.** — Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Feversham Street.
- Pontefract.** — February 21, March 7, 8 p.m., Queen's Hotel, Tanshell.
- Rotherham.** — Wednesdays, 7 p.m., "Cutler's Arms," Westgate.
- Scarborough.** — Thursdays, 7.30 p.m., Chapman's Yard, North Street, Scarborough.
- Sheffield (S.A.R.C.).** — February 27, 8 p.m., "Dog & Partridge," Trippet Lane.
- Slough.** — Fridays, 7.30 p.m., 3 Dartmouth Street.
- South Shields (S.S. & D.R.C.).** — February 27, 7 p.m., Trinity House Social Centre.
- Spenn Valley.** — February 20, March 6, 7.30 p.m., Temperance Hall, Cleckheaton.
- York.** — Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

- Birmingham (South & Bournville).** — Tuesdays, 7.30 p.m., No. 4 Committee Room, Cadbury Bros., Bournville, (Slade). — February 15, March 1, March 15, 7.45 p.m., Church House, High Street, Erdington.
- Coventry (C.A.R.S.).** — February 25, March 11, 7.30 p.m., Queen's Road, Coventry, (Court-aids). — Wednesdays, Court-aids, Ltd., Foleshill Road, Coventry.
- Solihull.** — February 18, March 4, 7.30 p.m., Civil Defence H.Q., Sutton Lodge, Blossomfield Road, Solihull.
- Stourbridge & District.** — February 22, 8 p.m., White Horse, Amblecote, March 5, 8 p.m., A.G.M., King Edward VI School, Stourbridge.

REGION 4

- Alvaston.** — Tuesdays, Thursdays, 7.30 p.m.: Sundays, 10.30 a.m., Boulton Lane, Alvaston, Derby.
- 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., Room 5, Ilkeston College of Further Education, Field Road.
- Leicester (L.R.S.).** — February 11, 25, March 11, 7.30 p.m., 140 High Cross Street, Leicester.
- Lincoln (L.S.W.C.).** — March 6, 7.30 p.m., Technical College, Cathedral Street.
- Newark (N. & D.A.R.S.).** — March 3, 7 p.m., Northgate House, Northgate, Newark.
- Northampton (N.S.W.C.).** — Fridays, 7 p.m., Clubroom, 8 Duke Street.
- Nottingham.** — February 15, March 15, 7.30 p.m., Basford Hall Miners' Welfare, Nuthall Road, Cinderhill.
- Peterborough.** — March 6, 7.30 p.m., 21 Hankey Street.
- Retford & Worksop.** — March 11, 7.30 p.m., King Edward VII Hotel, Worksop.
- Scunthorpe (S.A.R.S.).** — February 26, March 14, 26, 7.30 p.m., Talbot Hotel, Earl Street.

REGION 5

- Chelmsford.** — March 5, 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.
- Norwich.** — Fridays, 7.30 p.m., The Golden Lion, St. John's, Maddermarket.

REGION 7

- Acton, Brentford & Chiswick.** — February 19, March 19, 7.30 p.m., A.E.U. Rooms, 66 High Road, Chiswick, W.4.
- Bexleyheath (N.K.R.S.).** — February 28, March 14, 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.).** — February 12, March 12 (Sale), 7.30 p.m., "Blacksmith Arms," 1 South End, Croydon.
- Ealing.** — Sundays, 11 a.m., A.B.C. Restaurant, Ealing Broadway, W.5.
- East Molesey (T.V.A.R.T.S.).** — March 6, 8.30 p.m., Carnarvon Castle Hotel ("Transistors," by R. H. Vivian).
- Guildford and Woking.** — February 24, March 24, 3 p.m., Royal Arms Hotel, North Street, Guildford.

- Holloway (G.R.S.).** — Mondays (R.A.E.), Fridays, 7 p.m., Grafton School, Eburne Road, Holloway, N.7.
- Ilford.** — Thursdays, 8 p.m., G2BRH, 579 High Road.
- Kingston-on-Thames (K. & D.A.R.S.).** — February 21, 7.30 p.m., Penrhyn House, 5 Penrhyn Road, Kingston, March 7, 8 p.m., Civil Defence, Guildhall, Kingston.
- London (L.M.L.C.).** — February 22, March 15, 12.30 p.m., Bedford Corner Hotel, Bayley Street, Tottenham Court Road, W.C.1.
- Ladies' Night.** — February 22 (same venue).
- London (U.H.F. Group).** — March 7, 7.30 p.m., Bedford Corner Hotel (Junk Sale).
- London Meeting.** — March 1, 6.30 p.m., I.E.E., Savoy Place, ("Modern Amateur Communication Receiver Design," by R. G. Lane, G2BYA.)
- Norwood & South London (C.P. & D.R.C.).** — February 16 (A.G.M.), March 16 ("Mobile Communications," by Automobile Association), 8 p.m., Windermere House, Westow Street, Crystal Palace.
- Slough.** — March 5, 01H from G2HOX, 13 Quaves Road, or G3GYD, 5 Parklands Avenue, Slough.
- Welwyn Garden City.** — March 5 (Constructors' Exhibition), Service Training School, Murphy Radio, Ltd., Bessemer Road, Welwyn Garden City.

REGION 9

- Bath.** — February 25, March 18, 7.30 p.m., R.N.V.W.R. H.Q., 12 Pierrepont Street (top floor).
- Bristol.** — February 22, March 22, 7.15 p.m., Carwardine's Restaurant, Baldwin Street.
- Exeter.** — March 1, 7 p.m., Y.M.C.A., St. David's Hill.
- Falmouth (W.C.R.C.).** — Alternate Tuesdays, 7 p.m., Technical Institute, Falmouth.
- Plymouth.** — Alternate Tuesdays, 7.30 p.m., Virginia House Settlement, Barbican.
- Torquay.** — February 16, March 16, 7.30 p.m., Y.M.C.A., Castle Road.
- Yeovil.** — Wednesdays, 7.30 p.m., Grove House, Preston Road, Yeovil.

REGION 10

- Cardiff.** — March 11, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff.
- Neath & Port Talbot.** — March 5, 7.30 p.m., Royal Dock Hotel, Briton Ferry.

REGION 11

- Prestatyn.** — March 4, 7.30 p.m., Railway Hotel.

REGION 13

- Edinburgh.** — February 21, March 7, 7.30 p.m., 25 Charlotte Square, Edinburgh.

REGION 14

- Falkirk and Stirling.** — February 15, March 15, 7.30 p.m., The Temperance Café, High Street, Falkirk.
- Glasgow.** — February 22, 7.15 p.m., Christian Institute, 70 Bothwell Street, Glasgow, C.2. ("Single Sideband Technique" by GM3CIX.)

London Meeting

Friday, March 1, 1957

"MODERN AMATEUR COMMUNICATION RECEIVER DESIGN"

by R. G. Lane (G2BYA)

at the
Institution of Electrical Engineers,
Savoy Place, Victoria Embankment

Buffer Tea 6 p.m.

Lecture 6.30 p.m.

Vacancies

Messrs. E. Arnold Matthews (G3FZW), A. B. Dixon (G3FAX) and M. M. Lovejoy (G3IXN) have resigned as Representatives for the towns of Lichfield, High Wycombe and Southampton respectively. Nominations for their successors should be made in the prescribed form and sent to reach the General Secretary by not later than March 31, 1957.

Can You Help?

- J. I. Boyle (G3EXV), 2 Bournwood Road, Plumstead, London, S.E.18, who requires the manual for the DST100 receiver?
- R. J. Richards (A.1381), R.A.F. Beachy Head, King's Drive, Eastbourne, Sussex, who wishes to borrow or buy a manual for the Marconi CR100?

New Books

PRINCIPLES OF COLOUR TELEVISION by The Hazeltine Laboratories Staff. 595 pages, fully illustrated. Size 9½ in. × 6 in. Published by John Wiley, New York and available from Chapman & Hall, London. Price £5 4s. 0d.

Prompted by the urgent need for information to meet the rapid advance of colour television the Hazeltine Corporation of America has in recent years sponsored a series of reports. These laid the foundations for the present book.

After considering basic principles, including a discussion on the quantitative handling of colour, the book presents the features of transmitting, receiving and measuring equipment. The complete description of the engineering design of receivers, includes questions of synchronization, r.f., i.f., video amplifiers, and decoders.

VACUUM-TUBE CIRCUITS AND TRANSISTORS by L. R. Arguimbau. 646 pages, fully illustrated. Size 9½ in. × 6 in. Published by John Wiley, New York, and available from Chapman and Hall, London. Price £4 2s. 0d.

This new work includes up-to-date material on transistors, frequency modulation, inverse feed-back and noise. Fundamental principles are emphasized throughout the book.

Designed to be understood by beginners but still to give useful ideas to mature people in industry, the approach avoids complicated answers in the early portions of the discussions. Formalized mathematics is also avoided wherever possible. Each new chapter begins with relatively simple material but works into more advanced points of view towards the end.

FREQUENCY MODULATION ENGINEERING by C. E. Tibbs and G. G. Johnstone. Second Edition Revised. 435 pages, fully illustrated. Size 8½ in. × 5½ in. Published by Chapman & Hall. Price 45/-.

This book is intended to provide students, engineers and all those interested, with a concise survey of the whole field of frequency modulation engineering. Since the publication of the first edition there have been extensive additions to the literature on the subject, while the engineering practice associated with f.m. systems has developed considerably.

As Dr. Sturley points out in his admirable Foreword, "Interest in f.m. has been given a considerable impetus by the Government decision, in July 1954, to accept the B.B.C.'s recommendations for a v.h.f. broadcasting service using frequency modulation."

The present edition takes note of the increased information now available on interference, aerials, limiters and discriminators, and f.m. receivers.

MARINE RADAR, by D. G. Lang. 229 pages, 129 illustrations. Size 7½ in. × 6 in. Published by Pitman. Price 30/-.

This is a book for all concerned with radar equipment; a practical guide for the man who must maintain it in good order and repair it when it breaks down, and a useful work of reference for the designer. It covers the syllabus of the Ministry of Transport's Radar Maintenance Certificate, and is a useful text book for those seeking to obtain this qualification.

Simplified diagrams of all circuits normally met with in commercial radar equipment are given, together with physical descriptions of how they work. General radar theory is adequately dealt with.

The Foreword is written by Group Captain E. Fennessey, O.B.E., whose important contributions to radar during and since the 1939-45 war are well known to many members of the R.S.G.B.

V.H.F. TELEVISION TUNERS by D. H. Fisher, A.M.I.E.E. 136 pages, 60 illustrations. Size 8½ in. × 5½ in. Published by Heywood & Co. Ltd. Price 21/-.

The tuner is a comparatively new addition to the television receiver in the U.K., but with the advent of the commercial service its use has rapidly become widespread—too rapidly for its technical features to be fully understood or appreciated by some of its users. As far as is known the present book is the first to be published which covers all aspects of the subject.

ELECTRONICS MADE EASY by Lothar Stern (Electronics Editor, *Popular Mechanics Magazine*). 192 pages, fully illustrated. Size 9½ in. × 6½ in. Price 21/6 from Popular Mechanics, Eagle House, 109 Jermyn Street, London, S.W.1.

This book, the latest addition in the popular "Build-it-Yourself" series, explains in simple language and by the aid of numerous diagrams and sketches how to build such things as a 5-valve radio receiver, a 25-watt hi-fi amplifier, a simple short-wave receiver and a record player. In addition chapters are devoted to radio servicing, radio fundamentals, high fidelity and transistors.

As the book is printed in Chicago the components specified are of U.S. origin.

FREQUENCY MODULATION RECEIVERS by J. D. Jones. 111 pages, 29 illustrations. Size 8½ in. × 5½ in. Published by Heywood & Co. Ltd. Price 17/6.

Concentrating on reception, this book contains a stage by stage description of the principles and operation of frequency modulation receivers, giving full details of the r.f. stage, frequency changer, i.f. stage and f.m. detector.

The first chapter outlines the reasons for using f.m. for high-quality broadcasting. In the next chapter the differences between f.m. and a.m. receivers are discussed. Later chapters deal with the various sections of f.m. receivers.

FREQUENCY MODULATION RADIO by K. R. Sturley, Ph.D. 120 pages, 78 illustrations. Size 7½ in. × 5 in. Published by George Newnes Ltd. Price 15/-.

The purpose of this book is to explain the general principles, theory, design, construction and servicing of v.h.f. f.m. receivers so as to assist the practical man whose job it is to make an f.m. receiver work. Each stage of the receiver is analysed in detail. A chapter is devoted to the special features of combined a.m./f.m. receivers. To assist the amateur constructor suggestions are made to help him cope with alignment problems.

Although the main emphasis is on f.m. reception, information is also given on f.m. transmission using as examples the transmitters used by the B.B.C. for their v.h.f. f.m. service.

HAM'S INTERPRETER by OH2SQ. 38 pages. Ring binding. Published by DLICU, P.O. Box 585, Stuttgart, Germany. Price 7/- post free.

Ham's Interpreter contains a collection of words and phrases designed to assist radio amateurs who wish to enlarge their knowledge of foreign languages. Eighty-one expressions met with during QSOs are translated into seven languages (English, French, Spanish, Italian, German, Swedish and Finnish). A typical QSO consisting of about 200 words and abbreviations is also translated into the same languages. An appendix lists about 100 words and phrases used in radio circles.

IMPROVE YOUR RECEPTION by John Cura and Leonard Stanley. 112 pages, 134 illustrations. Size 7½ in. × 4½ in. Published for *Wireless World* by Iliffe & Sons Ltd. Price 5/-.

This is the first fully comprehensive book on how to operate the controls of a television set to be written expressly for the home viewer. The authors explain in simple non-technical language exactly what each control is supposed to do, and with the aid of screen photographs, specially taken for the purpose, show clearly the various things that may happen when a particular control is not correctly adjusted and the improved picture which results from correct setting. Clear instructions are given on how to make each adjustment. A glossary of control names is given.

RADIO VALVE DATA (FIFTH EDITION) compiled by *Wireless World*. 126 pages. Size 11 in. × 8½ in. Price 4/6.

The latest edition of this most useful publication lists the characteristics of 2500 valves and c.r. tubes. Data is also given on transistors of various types and on non-thermionic diodes.

A 20 page section is devoted to valve base diagrams and a 19 page section to the Index and Valve Equivalents.

New Members

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

Corporate Members, Home (Licensed)

- G2HNO *L. J. J. MORGAN, 52 Seaford Road, Southbourne, Bournemouth, Hants.
 G3AVZ F. R. STECKEL, 10 Maple Grove, Bellfields Estate, Guildford, Surrey.
 G3DNQ *D. H. MACLEAN, 281 The Dashes, Harlow, Essex.
 G3HNB L. E. MAUND, 56 Exchange Road, Stevenage, Herts.
 G3ILY J. PELL, 10 Hall Lane, Hendon, London, N.W.4.
 G3IOD P. J. EVERETT, 129 Windsor Road, Forest Gate, London, E.7.
 G3IPQ *R. F. LLOYD, "Rose Cottage," Downend, nr. Nailsworth, Glos.
 G3IVK D. P. T. EVANS, 26 Grange Road, Bearley, Stratford-on-Avon, Warwick.
 G3JHK R. KILMINSTER, 37 Derby Range, Heaton Moor, Stockport, Ches.
 G3KAB *L. E. PROFAZE, 28 The Vale, Southgate, London, N.14.
 G3KQJ J. R. WALTON, 17 Wilmore Road, Billingham, Stockton-on-Tees, Co. Durham.
 G3LBT R. G. STOREY, 1 The Hedgerow, Vange Basildon, Essex.
 G3LCZ *T. W. HICKINBOTTOM, 12 Almond Grove, Fairfield, Stockton-on-Tees, Co. Durham.
 G3LDB C. B. COX, 92 Garibaldi Street, Grimsby, Lincs.
 G3LDF F. UNSWORTH, "Roslyn," 88 Ormskirk Road, Up-Holland, nr. Wigan, Lincs.
 G3LGH J. SUNDERLAND, 11 Clement Street, Rochdale, Lincs.
 G3LGG B. M. SANDALL, "Tybryn," 21 Dale View, Ilkeston, Derbs.
 G3LLB B. E. FOLDS, Yew Tree Café, Highclere, nr. Newbury, Berks.
 G3LJD J. H. DAVIES, 50 Currey Road, Greenford, Middlesex.
 G3LKS *R. W. POULTNEY, Single Staff Quarters, Cable and Wireless, Ltd., Porthcurno, Penzance, Cornwall.
 G3LMH R. WELLBELOVED, 77 Upwood Road, Lee, London, S.E.12.
 G6IC D. E. F. RAINS, 14 Egmont Road, Sutton, Surrey.
 G8SP *D. SHERLEY-PRICE, 40 Oliver Drive, Calcut, nr. Reading, Berks.
 G8TD *W. H. DYSON, Clare Green, Edgmont, Nelson, Lincs.
 G8XKHJ W. J. MCCALLUM, 7 Englishton Muir, Buncurey, Inverness-shire.
 G8XKJ *P. COHEN, 38 Drumby Crescent, Clarkston, Renfrewshire.
 G8XKF *W. DAVIDSON, 21 Gordon Drive, Alloa, Clackmannanshire, Scotland.
 G8XLD J. T. PHILLIPS, 19 Avondale Road, Pontrhydyrun, Cwmbran, Mon.

Corporate Members, Overseas (Licensed)

- DL4FL L. P. ROSE, 10r Gettysburg Avenue, Patrick Henry Village, Heidelberg, Germany.
 EL5G P. T. DALY, 11 Palmerston Road, Rathmines, Dublin.
 FISH C. A. VANANTWERPEN, 470 Rue de Tourcoigne, Mouvaux, Nord, France.
 JAICI H. IKEDA, 33 Oimatsu, Bunkyo, Tokyo, Japan.
 KN2SDM N. D. REZNICK, 191 East Roosevelt Boulevard, Philadelphia 20, Pennsylvania, U.S.A.
 KOGZN K. A. BUSH, Harper, Kansas.
 MS5BAF U. B. W. ANDERSSON, Essingstraket 32, Stockholm 4, Sweden.
 VE3BMB *D. J. GEORGE, Springarden Road, R.R.1, River Canard, Ontario, Canada.
 VK7CH C. HARRISON, c/o A.N.Z. Bank, Ltd., Box 37, Moonah, Tasmania.
 W2OIC B. DZULA, 54 Charles Street, Clifton, New Jersey, U.S.A.
 WN3HQO R. H. CHERRILL, 8005 Palmetto Street, Philadelphia 11, Pa., U.S.A.
 W7BLE W. D'ORR COZZENS, 2197 Kellers Lane, Salt Lake City 9, Utah, U.S.A.

- W7IQI B. A. BELLO, 960 Downs Street, Salem, Oregon, U.S.A.
 W7QYC F. S. WISE, 246 North 1st East, Provo, Utah, U.S.A.
 W8BF J. O. BAUMGARDNER, 20470 Lorain Road, Cleveland 26, Ohio, U.S.A.
 W8CQ F. DUNN, 1021 Marywood Avenue, Royal Oak, Michigan, U.S.A.
 W8VVD H. B. SMITH, 467 Park Avenue, Birmingham, Michigan, U.S.A.
 W9TV F. L. DUFFY, 112 Riverview Drive, Ottawa, Illinois, U.S.A.
 ZD3E J. W. WARD, c/o Electrical Dept., Bathurst, Gambia, West Africa.
 VP7NS D. R. THOMPSON, P.O. Box 48, Nassau, Bahamas, British West Indies.
 ZL1FM J. E. B. WARR, P.O. Box 73, Katikati, New Zealand.
 ZS6AOZ L. O. B. GATZKE, 13 Rose Street, Rosettenville, Johannesburg, South Africa.

Corporate Members (British Empire Receiving Stations)

- 746 *J. WORTHINGTON, British Embassy, Tel Aviv, c/o Foreign Office, London, S.W.1.
 939 J. W. MCCULLOCH, 3 Troop, 2 Squadron, 2 Wireless Regt., Royal Signals, B.F.P.O. 53.
 940 L. C. WILLIAMS, Royal Signals School B.A.O.R., Stornoway Barracks, B.A.O.R. 15.
 941 B. T. GODFREY, Royal Signals Training School, Stornoway Barracks, B.A.O.R. 15.
 942 G. J. WRIGHT, Royal Signals School, Stornoway Barracks, B.A.O.R. 15.

Corporate Members (Foreign Receiving Stations)

- 267 C. C. N. KROM, Box 339, East-Angus, Que., Canada.

Corporate Members (British Receiving Stations)

- 4145 *D. E. PRITCHARD, The Priory, Tetbury, Glos.
 17913 *R. BOWELL, 38 Temple Avenue, Dagenham, Essex.
 18968 *R. A. PRIOR, 41 Rockside Drive, Henleaze, Bristol.
 21286 *R. W. EVANS, 100 Victoria Road, Walsley, Ches.
 21287 C. W. DOWDING, 75 Eversley Road, Small Heath, Birmingham, Warwick.
 21288 F. GARSIDE, 60, The Fairway, Mill Hill, London, N.W.7.
 21289 C. MARSHALL, 5 Tennyson Street, Gainsborough, Lincs.
 21290 A. BURGESS, 13 Wordsworth Avenue, Bury, Lincs.
 21291 C. J. C. HOLMES, 120 St. Andrews Road South, St. Annes-on-Sea, Lincs.
 21292 J. D. HEWITSON, 7 Hawkins House, Watergate Street, Deptford, London, S.E.8.
 21293 W. J. SCOTT, 11 Wharton Street, London, W.C.1.
 21294 G. ARCHIBALD, 11 Ducie Street, Chorlton-on-Medlock, Manchester 15, Lincs.
 21295 G. W. DOUGLAS, 10 Burdichouse Drive, Edinburgh, Scotland.
 21296 R. STANFORTH, 7 Marion Drive, Windhill, Shipley, Yorks.
 21297 D. CLARK, 41 Grove Park Avenue, Brislinton, Bristol 4.
 21298 W. FERGUSON, 99 Windsor Avenue, Falkirk, Stirlingshire, Scotland.
 21299 D. B. SUGDEN, 5 Church Street, Alfreton, Derbs.
 21300 O. AIG-OJEHOMON, 33 Lonsdale Square, Barnsbury, London, N.1.
 21301 D. F. BRUNTON, 226 Dunkery Road, Motttingham, London, S.E.9.
 21302 A. G. TIMMS, 35 Priory Road, Kenilworth, Warwick.
 21303 I. B. JELLMAN, 18 Ash Grove, Palmers Green, London, N.13.
 21304 A. V. H. DAVIS, 24 Trinity Road, Gillingham, Kent.
 21305 S. R. MORTON, 18 Corbiehill Place, Davidson's Mains, Edinburgh 4, Scotland.
 21307 W. M. LANE, 45 Church Road, Yatton, nr. Bristol.
 21308 E. Y. WILLIAMS, Alandale, 171 Victoria Road, Port Talbot, Glam., S. Wales.

- 21309 H. D. TAYLOR, 40 Redford Avenue, Coulsdon, Surrey.
 21310 C. A. EARL, 26 New Street, Daventry, Northants.
 21311 E. S. ELLIS, 174 Southbank Road, Southport, Lincs.
 21312 A. GRIMWOOD, 17 Doughty Street, Stamford, Lincs.
 21313 J. R. BRIAN, 31 Greencourt Drive, Bognor Regis, Sussex.
 21314 R. H. FITZ-HUGH, 44 Ravensfield Gardens, Ewell, Surrey.
 21315 J. J. ROBERTS, 28 Roundlea Road, Northfield, Birmingham 31, Warwick.
 21316 T. EVETTS, 16 Hillside Close, Ronkswood, Worcester.
 21317 H. HOLT, 17 Gladstone Street, Bacup, Lincs.
 21318 C. E. DEAMER, 18 Doughty Street, Stamford, Lincs.
 21319 E. PICKERING, 167 Shear Brow, Blackburn, Lincs.
 21320 T. C. BICKERTON, 40 Downend Road, Horfield, Bristol 7.
 21321 B. G. LYTGOE, 82 Cadogan Square, Chelsea, London, S.W.1.
 21322 N. PARKER, 177 Elgin Street, Bolton, Lincs.

Associates

- E. J. C. BALDWIN, 7 Oldbury Court Road, Fishponds, Bristol.
 R. A. COLE, 12 Gloucester Road, Staple Hill, Bristol.
 J. M. R. CRUTTWELL, The Yett, Ticehurst, Wadhurst, Sussex.
 T. E. DOWNING, 16 Purleigh Avenue, Woodford Bridge, Essex.
 P. H. ETHERINGTON, 1 Kensington Gardens, Ilford, Essex.
 J. N. EVERINGHAM, 63 Sea Mills Lane, Stoke Bishop, Bristol 9.
 D. H. FREW, 1 Woodburn Avenue, Airorrie, Lanarkshire.
 S. J. GILBERT, 3 Charlbury Avenue, Prestwich, Lincs.
 C. R. GREEN, 5 Weir Hall Gardens, Edmonton, London, N.18.
 J. W. HALL, 72 Butts Road, Raunds, Northants.
 C. D. HARRINGTON, 75 Tewson Road, Plumstead, London, S.E.18.
 A. HOBSON, 133 Walslow Road, Elton, Bury, Lincs.
 A. MCMURTRY, 13 Upper Canning Street, Belfast, Northern Ireland.
 M. R. S. NEWBURY, 72 Erpingham Road, Putney, London, S.W.15.
 J. PENWARDEN, 69 St. Edmunds Drive, Stanmore, Middlesex.
 D. S. POTTER, Tiverton Cottage, North Road, Havering-Atte-Dower, nr. Romford, Essex.
 R. K. SMITH, 11 Ainsley Road, Western Boulevard, Nottingham.
 J. G. TALLON, 50 Park Road, Rugby, Warwick.
 D. VIVIAN, 2 Waverley Crescent, Oakdale, Poole, Dorset.
 R. B. WARD, 71 Abbotsbury Gardens, Eastcote, Pinner, Middlesex.
 P. E. M. PAVEY, 45 Mincing Lake Road, Stoke Hill, Exeter.
 R. A. T. PEDDER, 2 New Flats, Canal Walk, Landport, Portsmouth.
 J. H. SHAPIRO, 1 Ampton Road, Edgbaston, Birmingham, 15.
 D. M. WHITING, c/o Lord Dowding, "Oak-gates," 5 Darnley Drive, Southborough, Tunbridge Wells, Kent.

*Transferred to Corporate Grade.

†Denotes re-elected.

Membership Drive

Have you enrolled a new member this month?

There is always a fine selection of equipment at The Walk-around Shop



BEACON RECEIVER BCI206A

Covering 200-400 kc/s. Valve line up: 6K7 RF; 6SA7 frequency changer; 6SK7 I.F. amplifier; 6SQ7 det; 28D7 O/P. This was designed to run on 24/28V d.c. HT/LT. Excellent basis for car radio; size 6in. x 5in. x 4in. Good working order. £3.5.0 each, plus 5/- carr.

R.1155 RECEIVERS

75-500 kc/s, 600-15,000 kc/s, 3-18 Mc/s; not new but good condition. Air Tested. Price £6.5.0, plus 10/- carriage.

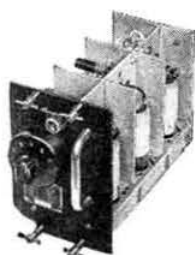
ALTITUDE SWITCHES

(U.S. manufacture) containing a double pole 11-way switch (Yaxley type) and 14 2.5 K ohms 1 watt resistors 10% contained in metal box 3in. dia. by 5in. long with 1 1/2in. skirted pointer knob. Brand new and boxed 4/- p.p.

R.F. UNITS

R.F. 24 20-30 Mc/s. Switched Tuning. Valved 9/6 each
R.F.25 40-50 Mc/s. Switched Tuning. Valved 9/6 each
R.F.26 50-65 Mc/s. Variable Tuning. Valved .. Damaged dials 20/- each
Perfect dials 25/- each

Packing and postage 3/- each type.



EDDYSTONE 358

COMMUNICATIONS RECEIVERS (B34)

Range 40 kc/s to 31 Mc/s covered with 10 plug-in coils; only 4 coils available covering 1250-2100 kc/s, 2100-4500 kc/s, 4500-9000 kc/s, 9000-22000 kc/s. Selectivity: 2 kc/s at 2.5 db down; 5 kc/s at 35 db down; 150 c/s at 4 db down. Supply required: 6V 1.4A; 175/200V 65mA. CIRCUIT: variable mu pentode H.F. Amplifier, Triode-Hexode frequency changer, two I.F. Amplifiers (450 kc/s), A.V.C./Detector/A.F. Amplifier, output stage, B.F.O. Valve check Meter. £8.10.0 with power supply. Plus £1 packing and carriage.

I.F. AMPLIFIER UNIT

460 kc/s with IT4. Brand New and Boxed. Fully Screened in plug-in Box. Size 2 1/2in. x 1in. x 4 1/2in. Price with circuit, 10/- each. Plus 1/- p.p.

OCTAL PLUGS

Bulgin bakelite type, 2/6 each p.p.

HEATER TRANSFORMERS

6.3 volt, 1 1/2 amp.; brand new, 6/6 plus 1/- p.p.

SMALL MAINS TRANSFORMERS

Input 230V 50 cycles, output 250V 40 mA, 6.3V 1.5A. Size 3.9" x 2.4" x 2". Ideal for TV converters. Price 12/6 each, plus 1/- p.p.

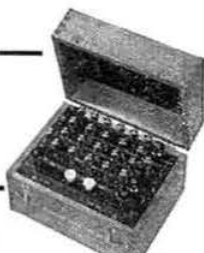
CHARGER TRANSFORMERS

For 6 or 12 volt; 230 volt 50 cycles input, 9 and 17 volt 3 amp. output. Price 15/6 each, plus 1/- p.p.



POST OFFICE BOX

(Sub standard) 10,000 ohms
Brand new condition.
Price 50/- plus 5/- p.p.



STUD SWITCHES

20 segment 1/8" studs. Base 5in. square with handle and housing. New and boxed price 5/- each, plus 1/6 p.p.

BENDIX TRANSMITTERS TYPE TA.12B

Master oscillator type transmitter. Four-channel 40W. operation, provide telephone, CW or MCW in frequency ranges of 300-600 kc/s, 3-4.8 Mc/s, 4-6.4 Mc/s, 4.37-7 Mc/s. Each of the 4 channels has its own oscillator and uses a 12SK7. The IPA stage consists of an 807 while the PA is two 807s in parallel. Size 10 1/2" x 6 1/2" x 15 1/2". Price £3.15.0, plus 10/- carriage.

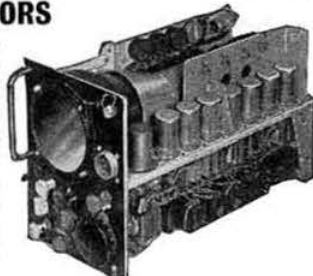
TRANSMITTER Type T1131-L

Frequency 100 to 156 Mc/s. Output 50 W. Crystal controlled. 200-240V, 50 c/s Power supply. Housed in 6ft. standard on 19in. rack. In new condition complete with valves.

Send for full details.

TYPE 62A INDICATORS

Ideal for conversion to oscilloscopes, T.V. units, etc. Containing V.C.R.97, 12 VR.91 (EF.50), 2 VR.54 (EB.34), 3 VR.92 (EA.50), 4 CV.118 (SP.61). Slow-motion dial, 13 pots and scores of useful components. Size 8 1/2in. x 11 1/2in. x 18in. In wooden packing case. PRICE: £3.0.0. Carriage 7/6.



COMMUNICATION RECEIVER CG.46116

(General Electric U.S.A.) Highly sensitive receiver 1500 to 9000 kc/s (200-232) metres continuous coverage with overlaps in 4 channels. 3 I.F. stages, 2 R.F. stages and I.F. break-through trap, B.F.O. and O/P. Valve line up: 5 12SK7s, 12K8, 12SR7, 12A6. Neon static in antenna circuit. Fully valved £8.10.0, plus 10/- pack and carr.

TWIN COUNTERS

(Gallons gone) 24V, reading 4 figures and reset contained in housing, size 4in. dia. by 5in. long, 15/- plus 2/- p.p.

SPECIAL OFFER—MALLORY VIBRATOR PACKS

12 volt, 150 volt 40mA. Brand new and boxed, size 5 1/2 x 5 1/2 x 3in. 12/6 p.p.

INVERTERS

Miniature 3-phase (ex-compass unit) 24V input with 17V 3-phase, 400 c/s output. These have been used by model makers as motors and are known as the "5/- Motor." Will run quite successfully on 12 volts, 5/- plus 2/- p.p.

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

PROOPS

BROS. LTD.,

DEPT. 'B',

Shop hours 9 a.m. to 6 p.m.—Thurs.: 9 a.m. to 1 p.m.

52 TOTTENHAM COURT ROAD, LONDON, W.1

Telephone: LAngham 0141

OPEN ALL DAY SATURDAY

S. G. Brown

AUDIO AIDS

Headphones with individual volume control. Ideal for use with church and cinema deaf aid installations or for individuals with impaired hearing.

They provide the essential clarity of reception when listening to Radio and T.V.

Send for Brochure 'B' of all types available. If desired, advice is given on selection of type most suited to individual needs.

S. G. Brown provide Headphones and associated equipment for all known purposes.

Telephone: Watford 7241

S. G. Brown, Ltd.

SHAKESPEARE STREET, WATFORD, HERTS.

PHILIPS TECHNICAL LIBRARY

Hi-Fi

Microphone to Ear

G. SLOT

Fully illus. 17s 6d

Authoritative close-packed technical explanation on all stages of recording, playing and amplifying. 170pp. 118 illus.

Tube Selection Guide '56-'57

Current Philips types [nearly all numbered as British] with interchange and replacement tables and preferred types for all main uses. Manila, 9s 6d

"Electronic Applications"

We can supply a few bound volumes of Vol 15 (1954-5) at 25s. [Normal annual sub. 30s, binding 6s 6d.]. Mention this advt.

Our new Radio List is worth a P.C.

CLEAVER-HUME PRESS LTD.

31 Wright's Lane, Kensington, London, W.8.

B 46 RECEIVERS Made by Standard Radio, 1.4 Mc/s-15 Mc/s 12V Battery operated. New-tested, £17 10 0. Packing and carriage 15/-.

B 47 RECEIVERS Made by Standard Radio, 40 kc/s-500 kc/s. 220-250 V.a.c. New and Tested, £25. Packing and carriage 15/-.

ROTARY CONVERTER UNITS

Input 11.5-12.5V d.c. Output 300V 200 mAmps d.c. Price 30/-, Packing and carriage 15/-.

FIELD TELEPHONE TYPE "F"

In excellent condition £3 10 0 each; carriage 10/-.



MICROPHONES & RECEIVER HEADGEAR

Assy. No. 2 (ZA 2905) consisting of 100 ohms impedance M.C. headphones. Tannoy highpower microphone.

18/- each. Carriage 1/6.

HIGH RESISTANCE HEADPHONES

2,000 ohms. Brand New, Ex W.D. boxed, Type D.H.R.

12/6 per pair postage 1/6.

J. P. ELECTRIC

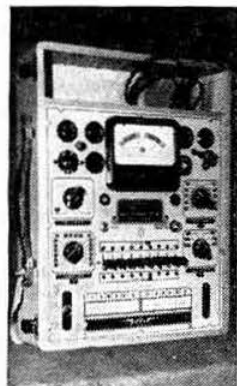
AMERICAN VALVE TESTER Model 314.

Individual lever switches for each tube element. Roll Chart for American type valves. 220/30V a.c. Brand new in nice wooden case with leather handles. Full instruction booklet.

£10. Carriage 10/-

HAND MICROPHONE

No. 8 (Carbon). New with plugs. 8/-, Packing and carriage 1/6.



1155L RECEIVERS COVERING TRAWLER BAND

Frequency range 200 kc/s-500 kc/s and 600 kc/s-18.5 Mc/s. Working and guaranteed £12.19.6. Pack. and carr. within U.K. £1.

Also available: Transmitters, 12 and 24V power supply units, indicators, loop aerials, etc., required for complete direction finding installations.

MAIL ORDER DEPT.
156 ST. JOHN'S HILL · LONDON · S.W.11.

The Panda "CUB" Transmitter

gives you ALL you want.

Top band to TEN . . . FONE or C.W.
with the latest standard Panda V.F.O.
and incorporating all the best T.V.I.
proofing technique . . . just needs a
mike or key to go straight on the air.



DELIVERY IS NOW FROM STOCK.

Write today for FULL details.

TERMS still available from
only £13 deposit.

PANDA RADIO CO. LTD.

16-18, Heywood Road., Castleton Nr. Rochdale.

Tel: 57396 Castleton (Rochdale).

Grams and Cables: 'Panda Rochdale'

BENTLEY ACOUSTIC CORPORATION LTD.

EXPRESS SERVICE !!!

C.O.D. ORDERS RECEIVED BY 3.30 P.M. EITHER BY
LETTER, PHONE, OR WIRE. DESPATCHED SAME
AFTERNOON.

THE VALVE SPECIALISTS

38, CHALCOT RD., LONDON, N.W.1

PRImrose 9090

UNIQUE OFFER

ANY PARCEL INSURED AGAINST DAMAGE IN
TRANSIT FOR ONLY 6d. EXTRA. SAVES TIME IN
CLAIMS AND WORRY!

6Z4	6-	6AB8	10-	6F17	12 6	6Z4/84	12 6	12SH7	5 6	77	8-	DAP91	7 6	ECC85	9 6	GZ39	8 6	MHL4	7 6	QP22B	12 6	UUR	8-		
1A5	3-	6AC7	6 6	6F32	10 6	6Z5	12 6	12SH7	8-	78	8 6	DAP96	9 6	ECC91	6-	GZ32	12 6	ML4	6 6	QP25	6 6	UY41	8 6		
1A7	12 6	6AG5	6 6	6F33	12 6	7AT	12 6	12SK7	6-	80	8 6	DCC90	7-	ECP80	12 6	GZ54	14-	ML5	6 6	QS150/15		V1507	5-		
1C2	9-	6A88	8-	6H6G	2 6	7C5	8-	12SR7	7 6	83	8 6	DF33	11-	ECP82	12 6	H39	5-	N77	5-			V1549A	E3		
1C6	8 6	6AK5	5-	6H6M	3 6	7C6	8-	12T5G	7 6	150B2	12 6	DH63	8 6	ECH42	10-	HK90	10-	N150	10 6	SP2(7)	8 6	VP2(7)	8 6		
1H5	11-	6AK8	7 6	6J5G	5-	7H7	8-	12V4	10 6	210LF	3-	DH76	8 6	ECH81	8-	HL2	3-	N154	9 6	SP4(7)	15-	VP4(7)	15-		
1L4	6 6	6AL5	6 6	6J5GTG	5 6	7Q7	8-	13VPA	10 6	807	6 6	DH77	8 6	ECL80	10 6	HL13C	7 6	N309	11 6	SP13	12 6	VP13C	7-		
1L5	5-	6AM5	5-	6J5GTM	6-	787	9-	14R7	10 6	806A	12 6	DK91	8 6	EP4	10 6	HL23	10 6	N329	9-	SP42	12 6	VP23	6 6		
1N5	11-	6AQ5	7 6	6J7G	6-	7V7	8 6	1487	14-	885	10 6	DK92	9-	EP36	4 6	HL41	7 6	N709	10 6	SP61	3 6	VP41	7 6		
1R5	8 6	6AQ8	10-	6K7G	5-	8A8	7-	20P3	12 6	1203	7-	DL2	15-	EP39	6-		12 6	OD3	9-	TP22	10 6	VT501	5-		
1R5	7 6	6AT6	8 6	6K8G	8-	8D2	2 6	25L6	9-	5763	12 6	DL33	9 6	EP40	11 6	HL133DD	P2	10 6	U16	12 6	W76	8 6			
1T4	7-	6B4	6-	6LD3	10-	8D3	9-	25V5	8 6	7193	2 6	DL92	7 6	EP41	9 6		HYE2	12 6	P61	3 6	U17	12 6	W77	6 6	
1U5	7-	6B7	10 6	6L4	10 6	9D3	3-	25Z4G	9-	7479	7 6	DL94	8 6	EP42	12 6		HYE2A	20-	PABCO		U22	7 6	W142	9-	
2A5	12 6	6B8G	4-	6L6G	9-	10LD3	8 6	35Z5	8 6	9003	5 6	DLX10	10 6	EP50(A)	7-		KBC32	8 6	PCC84	15-	U31	9-	W150	9 6	
2C2	4-	6B8M	4 6	6L7	8-	10P13	17 6	27	7 6	9006	5 6	DLX10	10 6	EP50(E)	5-		KP35	9-	PCC85	12 6	U32	8-	N61	10 6	
2D12C	7 6	6BA6	7 6	6N7	7-	11D3	15-	28D7	7-	9006	6-	EL148	2-	EP54	5-		KL35	8 6	PCP80	7-	U76	8-	N65	10 6	
3A4	7-	6BJ6	8-	6Q7GT	9-	12AH7	8-	30C1	7-	AC6PEN	6 6	EA50	2-	EP73	10 6		KT2	5-	PCP82	11 6	U78	7-	N66	10 6	
3A5	7-	6BW6	7 6	6R7G	8 6	12AH8	12 6	30L1	8-	DD 15-		EACB80	7 6	EP85	8 6		KT33C	10-	PCL83	12 6	U142	8 6	N142	10-	
3B7	8 6	6BW7	9 6	6SA7	8-	12AT7	8 6	31	7 6	AC P4	8-	EAF42	10 6	EP86	12 6		KT44	10-	PEN25	6 6	U150	8-	N150	10-	
3D6	5-	6BX6	9 6	6SG7	6 6	12AU7	7 6	33A158M		AV P1		EB34	2-	EP89	10-		KT63	7 6	PEN40DD		U152	9-	XPW10	6 6	
3Q4	9-	6BY7	8 6	6SH7	6-	12AX7	10-	20-			15-	EB41	8-	EP91	9-		KT71	8 6		25-	U153	9-	XPY12	6 6	
3Q5	9 6	6C4	7-	6SJ7	8-	12BA6	9-	35/51	12 6	AP4	7 6	EB91	6 6	EP92	6 6		KTW61	7-	PEN46	6 6	U154	7 6	XH(15)	4-	
3R4	7 6	6C6	6 6	6SK7	5 6	12BE6	10-	35L6	9-	ATP4	3 6	EB93	12 6	EL32	6-		KTW62	7-	PL82	9-	U251	12 6	XSG(15)	4-	
3V4	8 6	6C8	8-	6SL7GT	8-	12B1	30-	35Z4	8-	AZ31	12 6	EB93	7 6	EL41	10 6		KTW63	7-	PL83	11 6	U319	7 6	Y63	7 6	
3V4	8 6	6CH6	7 6	6S87	7 6	12C5GT	4-	35Z5	8 6	B309	9-	EB41	10-	EL42	12-		KTZ41	6-	PM2	12 6	U329	12 6	Y63	10 6	
3Y4	10-	6D6	6 6	6L4GT	14 6	12J7	9 6	41MTL	7 6	BL63	7 6	EC32	5 6	EL84	10 6		L63	6-	PM12M	6 6	UAF42	10 6	Z66	20-	
3Y4	7 6	6F9G	7 6	6T5G	7 6	12K7	8 6	50C5	10-	CK503	6 6	EC34	6-	EL91	5-		LN152	10-	PM202	4 6	UBC41	8 6	Z77	9-	
3Y4	10-	6F7	10 6	6T7	8 6	12K8	14-	50L6	8 6	CK506	6 6	EC70	12 6	EM34	10-		LN309		PM202	4 6	UBF80	10-	Z150	12 6	
3Z3	8 6	6F10	10 6	6T8G	7-	12L7	8 6	57	37	CK523	8 6	EC33	15-	EY51	10 6		LP2	12 6	PM202	4 6	UBF80	10-	Z152	9 6	
3Z4	8 6	6F12	9-	6V6GT	7-	12SA7	8 6	58	8 6	CK525	8 6	EC82	10 6	EY86	11 6		LZ319	7-	PM202	4 6	UBF80	10-	Z152	9 6	
6A8	10-	6F13	12 6	6X4	7-	12SC7	7 6	61BT	12 6	CV85	12 6	EC83	8 6	EZ35	6 6		LZ319	7-	PM202	4 6	UL41	10-	ZD152	10-	
6AB7	8-	6F16	9 6	6X5GT	6 6	12SG7	7 6	61MP	10 6	D1	3 6	EC85	8 6	EZ40	8-		MH4	5 6	QP21	7-	UL46	12 6	ZD152	10-	
								61NPT	15-	D42	10 6	ECC81	9-	EZ41	8-										
								61ME	10-	D63	5-	ECC82	7 6	EZ40	8 6										
								72	4 6	D77	6 6	ECC85	9-	EZ81	11 6										

Terms of business:—Cash with order or C.O.D. only.
Orders value £3 or more sent post packing free. Orders
below £3 please add 6d. per valve.

C.O.D. orders:—Minimum fee, including post and
packing, 3/-. We are open for personal shoppers, Mon.-
Fri. 8.30-5.30. Sat. 8.30-1 p.m.

CRYSTAL DIODES (1st Grade), OA71, GEX34,
CG6E, M1, CG10E, all 7/- each.

All valves new, boxed, tax paid, and subject to maker's
guarantee. First grade goods only, no seconds or rejects.
All orders received by post sent despatched same day.
S.A.E. for free complete list, with terms of guarantee
and conditions of sale.



BROOKES *Crystals* for **DEPENDABLE** frequency control



- Illustrated above is a Type SJ Crystal Unit from a range covering 3-20 Mc/s and on the right is a Type SM Crystal Unit from a range covering 3-20 Mc/s.

ALL Brook's 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 Brook's Crystal to suit your purpose—let us have your enquiry now.



Brookes Crystals Ltd.

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

WANTED

BC312

UNMODIFIED RECEIVERS

BC610E

TRANSMITTERS

FREQUENCY METERS 221

We will pay **Top Cash Prices**
for sets in good condition

P.C.A. RADIO

Beavor Lane, Hammersmith, W.6.
RIVERSIDE 8006

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. 21, London, W.4.

Subject(s) of interest

Name

Address

FCU
ICV7

Associated with H.M.V. MARCONI etc. etc.

G2ACC offers you—

AERIAL MATERIAL

14 S.W.G. H/D enamelled copper wire 5d. yd. Telcon twin feeder:—
K24B 150 ohm 10d. yd. or 75/- per 100 yds., K25B 300 ohm 10d. yd. or 75/- per 100 yds. Aerialite 300 ohm twin feeder 7d. yd. or 50/- per 100 yds. 70-80 ohm twin feeder 7d. yd. or 50/- per 100 yds. Coaxial cable:—Low-loss 66-77 ohm 1/- yd. or 87/6 per 100 yds. Extra low-loss 66-77 ohms 2/- yd. or 191/8 per 100 yds. Telcon K16M light-weight 50 ohm 10d. yd., Telcon PT5M heavy-duty 50 ohm 3/3 yd.

ILLUSTRATED CATALOGUE No. 10

56 pages. 135 photographic illustrations and technical data on leading makes of transmitting, short wave and broadcast components. Over 2,000 items. Word prefixes and zones list. 6d. post free U.K. and Forces overseas only.

Southern Radio & Electrical Supplies

So-Rad Works, Redlynch, Salisbury, Wilts.

Telephone: Downton 207.

SMITH'S of EDGWARE ROAD

Manufacture a full range of 4-sided Blank Chassis of 16 Gauge half-hard aluminium.

Size (in)	Price	Size (in)	Price	Size (in)	Price	Size (in)	Price
6 x 4 x 2	5/-	9x8x2	7/6	13x 8x2	8/10	15x10x2	10/6
7 x 5 x 2	5/6	10x8x2	7/10	12x 9x2	8/11		
8x5x2	6/-	12x5x3	7/11	14x 7x3	9/6	17x10x2	11/3
10 x 4 x 2	6/4	12x7x2	8/-	13x10x2	9/9	17x 9x3	11/6
9 x 7 x 2	6/6	11x8x2	8/3	14x10x2	10/-		
12 x 4 x 2	6/10	10x8x3	8/6	12x10x3	10/3	17x10x3	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. Prices include postage and packing (U.K. only)

H. L. SMITH & CO. LTD.

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

HOME RADIO OF MITCHAM

THE NEW

EDDYSTONE '870'
RECEIVER

Small dimensions, light weight, and attractive style make it the ideal dual purpose domestic and short wave receiver. Equally at Home Ashore or Afloat.

- Two short wave bands, medium and long wave
- High grade gear-driven spinwheel tuning
- Good quality and volume from high flux speaker
- Good all round performance and selectivity
- Five modern high efficiency valves
- Clear horizontal scales with logging device

£34. 16. 0

including Tax

May we send you full details of this latest product of the firm of EDDYSTONE which has concentrated for many years in the manufacture of high grade communication receivers.

HOME RADIO (MITCHAM) LTD

187 LONDON ROAD, MITCHAM, SURREY.

MIT. 3228

New Books

TV CONVERSION FOR I.T.A. by C. E. Lotcho. 240 pages, size 8½ in. x 5½ in. More than 170 illustrations and tables. Published by George Newnes Ltd., London. Price 25s.

This book provides information on the conversion of those television sets which receive B.B.C. programmes only so that they will receive both B.B.C. and I.T.A. stations.

In Section One the practical methods of receiver conversion are outlined and guidance given on correct aerial installations. Patterning and interference suppression are also dealt with.

Section Two contains detailed instructions for the conversion of popular television models produced before the introduction of the I.T.A. Services. Information is also given in fitting and maintaining converter units produced by manufacturers for their models.

Section Three contains reference data on the sound and vision i.f. of many hundreds of television models.

TELEVISION EXPLAINED (Sixth Edition) by W. E. Miller, M.A.(Cantab), M.Brit.I.R.E. Revised by E. A. W. Spreadbury, M.Brit.I.R.E. 182 pages, size 8½ in. x 5½ in. 107 illustrations including 10 pages of art plates. Published by Iliffe & Sons Ltd., London. Price 12/6.

This is the sixth—and greatly enlarged—edition of a book specially designed for those requiring technical information on domestic television in a straight-forward manner.

The introduction since the fifth edition appeared of an alternative television service has necessitated a complete rewrite of several chapters. Additional chapters have been included to cover such new features as switched tuning, automatic gain control, the increased use of fly-wheel synchronization and dual aerial systems.

The book assumes a knowledge of the ordinary sound radio receiver but no previous knowledge of television circuits. It is non-mathematical, written in simple language and comprehensively illustrated.

TRANSISTOR TECHNIQUES. 96 pages. Illustrated. Published by Gernsback Library Inc., 154 West 14th Street, New York 11, U.S.A.

No claim is made by the authors of this little book to describe all that is known about transistors, nor could they do so if the book were three times as large. On the other hand they present, in easy-to-follow language, a good deal of valuable information about transistor techniques and applications.

The eight chapters deal with the protection and testing of transistors, transistor performance and measurements, oscillators and triggers, the transistor d.c. transformer, auto-light control using transistors, and Geiger counters.

The book is well illustrated with line diagrams and half-tones.

For the amateur seeking to extend his knowledge of this fast growing branch of radio science *Transistor Techniques* will prove a good investment. It can be obtained by sending \$1.50 to the publishers.

For reliability . . .

ATTENUATORS, variable 1 db to 80 db, accuracy 0.1 of a db. Reconditioned, lab. tested and as new. Ideal for audio and carrier frequency measurements. £12 10.

400 CYCLE 3-PHASE INVERTERS. 28 volts D.C. input with dual output: 115 volts 750 V.A. 3-phase and 24/26 volts 250 V.A. S.P. 400 cps. Larger model 2.4 k.V.A. 400 cycles 115 volts S.P. output from 28 volts D.C. input with control panel. All lab. tested and guaranteed.

DUBILIER CONDENSER. 2.25 µF 5000 volts D.C. working. 4 µF 400 volts 2/- ea. 20/- dzn. post 2/-, 8 µF 400 volts 4/6 ea. post 1/-.

MINIATURE I.F. STRIPS. frequency 9.7 Mc/s. 10½" x 2½" x 3", less valves, 8/- each post free.

RESISTANCE WIRE. Small reels approx. 4 oz. Constantan Alloy 46/0024 D.A.S., 10/- per reel.

Leslie Dixon & Co.

Dept R., 214 Queenstown Road, London, S.W.8 Tel: MACaulay 2159

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 1/- per word, minimum charge 18/-). 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)

ARMY 12 Transmitter, £12—Exchange S640; Hambander £5. 17 Thelwall Lane, Warrington. (226)

AS NEW: R1155, £8. Top band receivers, £3. CR100 less valves, assembled, not wired, £9. McClelland, 45 Fairfield Road, Epping. (222)

A RADIO Jackdaw is clearing his nest. Send for details G2AWJ, Coldwaltham Vicarage, Pulborough, Sussex. (218)

B2 Transmitter/Receiver for sale, with coils, handbook and useful circuits, but less power pack. £10, o.n.o., buyer collecting. G2HJP, 41 Tycehurst Hill, Loughton, Essex (229)

BC221 modulation model commercial power unit, mint £30; H.R.O. Senior, 9 coils, in cabinet, spare set valves, exceptional, £30; G.E.C. Miniscope with wobulator, new, £10; H.T.11 complete, £10. Delivered London. Offers: G2AC, Sleepy Hollow, Headley, Bordon, Hants. Headley Down 3106. (225)

B.C. 342. New front panel, totally enclosed external power pack. £12. G2AKR, 14 Finchley Grove, Moston, Manchester, 10. (224)

BOUND to satisfy—BULLETINS bound, 7/- per volume. Post free. Attractive low-priced QSL cards supplied. Sample—H. W. Robinson, G2BBT, 35 Forty Acres Road, Canterbury. (220)

CLEARANCE before rebuild:— (2) 6N7, 3/6 each; (1) 1C5, 2/-; (3) 6B4G, 5/- each; (1) 1D8, 3/6; (2) 6L6G, 7/6 each; (1) 6F8, 2/-; (5) QVO4/7, 3/6 each; (2) 6N7GT, 3/- each; (2) 6SH7, 2/- each; (2) 829B, 20/- each; (2) 6L7, 3/- each; (2) 8012, 5/- each; (4) 6CH6, 10/- each; (3) 866, 5/- each; (6) 6X4, 5/- each; (1) 803, 20/-; (5) 807, 2/- each. 1 Lab-gear Multiplier unused, £4.0.0. 1 Eddystone Bug Key, £2.0.0. 1 Small Auto amplifier 230V—110V, 7/6. 1 Mains Transformer 800/0/800V 500mA, £1.0.0. 1 Swing choke 10H 25mA, 7/6. 1 Choke 10H 250mA, 7/6. Please add extra for postage especially Transformers and Chokes. G3IKW, 41 Portway, Baughurst, Nr. Basingstoke, Hants. (243)

COMPLETE rack built, all band 35W transmitter phone c.w., Wilcox Gay v.f.o., a.t.v., £14, o.n.o. G3KTY, 4 Shutlock Lane, Birmingham 13. (227)

EXCHANGE BC348 modified, speaker, phones, small electric fan, fire, etc., for two large size cabin trunks. Will include unused Grayshaw signal generator with above for tape recorder in good condition. Call Gittens, Forest Hill 3718 after 7 p.m. (228)

FOR SALE: receiver/transmitter S.T.R.16 2.4-13 Mc/s receiver S.T.R.17 150-505 kc/s, both in one unit. Also R.C.U., aerial tuning unit, power supply for above. R.t.-c.w. 75 watts c.w. Honetel for reasonable offers. G6VJ, Royal Naval College, Dartmouth. (238)

G3CGD QSL's Fixed and Mobile samples on request. Printing enquiries welcomed. 30 St. Luke's Road, Cheltenham. (216)

HALLICRAFTERS Communications Receiver SX 23, 540 kc/s—34 Mc/s, crystal, good order, with manual, £25 o.n.o. Original owner. G4JW, 580 Redmires Road, Sheffield. (230)

HAMMARLUND Super Pro receiver, £25.0.0. Sound Mirror tape recorder, £25.0.0. Webster wire recorder with crystal microphone and accessories, £15.0.0. R.C.A. 12V mobile transmitter 6 in. sq., £7.10.0. Bendix mobile transmitter/receiver type 3801, size 13½ in. long, 5 in. deep, 5 in. high, £7.10.0. Hallicrafter Skyride receiver S.21, £15.0.0. 5 in. oscilloscope case tube, transformers, etc., requires wiring, £4.0.0. 50W transmitter exciter all bands table top, £12.10.0. Numerous valves, bases, coils, etc. State your requirements to G2MF, 51 Townhead Road, Dore, Sheffield. (242)

Continued on page 388)

EXCHANGE AND MART SECTION (Cont.)

JERSEY Holiday—Visit "The Lincoln," 3 Saviour's Road, S.A.e., please, for brochure—GC3KPO. Book early! (191)

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

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

RI155 receiver, power pack, speaker, manual transit case, perfect working condition. £10, buyer collects. Mr. Potter, 49 Epsom Road, Croydon, Surrey. (219)

SALE Marconi CR100 late model, noise limiter, voltage stabiliser, unmodified, mint condition. £18. Buyer collects. Clarke, "Westaway," School Lane, Newton Kirkham, Lancs. (221)

UNUSED valves: 805 (4), 12/6; 830 B (6), 6/-; 100TH (1), 37/6 each. G3GQF, 78 Dolcoath Road, Camborne, Cornwall. (239)

WANTED CR100, H.R.O., AR77 or similar. Sale Halli-crafters S20R 500 kc/s to 44 Mc/s. £12.10.0. G3LGZ, 13 Bamford Street, Glascoote, Tamworth, Staffs. (231)

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 Halli-crafters, E.T.4336 transmitters, and spare parts for same. Best prices. P.C.A. Radio, Beaver Lane, Hammersmith, W.6. (626)

WANTED Panda, Minimitter or LG300 transmitter, State age, condition and price to Box No. 233, The National Publicity Co Ltd., 36/37 Upper Thames Street, London, E.C.4. (233)

WANTED Radiovision Commander receiver in good condition, good price paid; also U.S.A. bug key Vibroplex preferred. Box No. 235, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4. (235)

WODEN UM4, 250 watts audio, £3, UM2, 25/-, New valves: 829, 25/-, 832, TZ40 (4), 304H, 15/-, 6Y6G (3), 6SA7 (3), 5A3 (2), 3A3 (2), 3A3 (2). All plus postage, Marshall, G2MA, 57 Godstone Road, Rotherham. (240)

"WODEN" 75 watt modulator with 1,000 volts for L.G.300, £21.0.0. 120 watt band-switched transmitter, filtered TVI, £60.0.0. High fidelity amplifier, £14.0.0. Large quantity of radio and transmitting gear, high voltage power packs, valves, meters, etc. Ellis, 47 Victoria Road, Saltash, Cornwall. (244)

19" RACK cabinet 2' 3" high, 11 1/2" deep, 30/-, 10 1/2" rack panels, 2/6. Handles 6d. each. Ex T.C.S. 6" loudspeaker, 10/-, CV63, 1/-, U.S.A. twin blow transmitter 12-24V, 10/-, Weston 0-15V a.c., ISI61, 10/-, 3/4" silvered copper tube, 6d. per ft. Heavy 5-way screened rubber covered cable, 1/6d. per yard. G2ACT, Wycollar, Pedders Lane, Preston. (237)

100W c.w./phone transmitter for sale, bandswitched 6 bands 80-10 m. Built on standard crackle panels and chassis, mounted in 4' rack consisting of: power unit, 60W self-contained modulator with UM2 modulation transformer, crystal oscillator drive unit, final 807 with coil turret, P.A. chassis p.p. 807s with Labgear 200W coil turrets, aerial loading unit; separate table top Tesla V.F.O. £30 the lot. Also Eddystone S640 with handbook, £18. Items delivered in London area. Would exchange for tape deck or recorder plus cash. Faulkner, 22 Selbourne Avenue, Tolworth, Surbiton, Surrey. Tel.: Elmbridge 3515. (223)

APPOINTMENTS SECTION

TECHNICIAN required in Department of Flight to assist in building and setting up electronic apparatus in an experimental laboratory and constructing flight research equipment of an electrical/electronic nature. Applicants should have completed their National Service, have some knowledge of radio and electronic work and be capable of constructing electronic apparatus from circuit diagrams. Five day week. Generous holiday allowance. Staff superannuation and sick pay scheme. Application forms from Chief Clerk, The College of Aeronautics, Cranfield, Bletchley, Bucks. (232)

APPOINTMENTS SECTION (CONT.)

Situations Vacant

TECHNICAL ASSISTANCE GRADE 1 required by KUMASI COLLEGE OF TECHNOLOGY GOLD COAST. Department of Electrical Engineering (M2C/41848/RC) and Radio Research Laboratory (IONOSPHERE RESEARCH) (M2C/42178/RC). Appointment for two tours normally of ten months each in first instance either (a) on agreement with prospect of pensionable employment salary scale (including 5% non-pensionable addition) £871 rising to £1,060 a year or (b) on contract with above salary plus 10% contract addition and gratuity at rate of £150 a year. Commencing salary according to experience. Outfit allowance up to £60.0.0. Furnished quarters available for officer and family. Free passages. Leave on full salary normally granted annually. Preservation of superannuation rights under F.S.S.U. scheme might be arranged. Candidates must possess H.N.C. or equivalent and have experience in research laboratories of manufacturer of telecommunications equipment or of an operating organisation. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote the reference number shown against the post applied for. (245)

WIRELESS TELEGRAPHY OPERATORS required by FALKLAND ISLANDS GOVERNMENT Wireless Station Port Stanley for one tour of three years in first instance. Salary scale (including expatriation allowance) £390 rising to £500 a year. Commencing salary according to experience. Full board accommodation obtainable at £12-£14 a month. Free passages. Liberal leave on full salary. Candidates must be SINGLE and have had good practical operating experience. P.M.G. Certificate an Advantage. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/41891/RC. (234)

AMERICAN TRANSMITTER CABINETS, 6 ft high x 21" x 20" totally enclosed, full length rear door with bolts; standard 19" rack sides drilled and tapped, £8 (20/-). **P.O. RACKS** de luxe 19" wide x 3" x 11" channel sides, drilled and tapped 3 ft high 40/- (10/-); 5 ft 70/- (12/6); 6 ft 80/- (15/-); 7 ft 90/- (20/-); 5 ft standard, angle sides, 45/- (12/6). **AMERICAN TRANSFORMERS** Best quality totally enclosed H.V. Test, all 230V input. H.T. 1025V c.t. 450 mA. 7" x 6" x 4" 37/6 (7/6). Fil. (1) 5V 6A c.t. (2) 5V 3A c.t. (3) 5V 3A c.t. (4) 4V 25A, 20/- (5/-) Fil. (1) 6.3V 8A (2) 6.3V 1.8A (3) 6.3V 1.4A c.t., 20/- (5/-) Fil. (1) 6.3V 3A c.t. (2) 6.3V 3A c.t. (3) 6.3V 3A c.t. (4) 6.3V 1.5A, 20/- (5/-). **AMERICAN CHOKES** 11H 275 mA 90 ohms, 15/- (5/-). **AMERICAN POWER UNITS**, Rack mounting, fine quality. Input 230V a.c. Output 800V 425 mA fully smoothed with 4 x 5Z3 valves; 1 cwt., £8 (20/-). **AMERICAN 10 ft DISH PARABOLIC AERIALS** with 700 Mc/s dipole on 20 ft mast with full rotation and fittings, £20 (Special). Amount in brackets in Carriage England and Wales. * Includes 10/- returnable case. Vast Amount Ham Equipment—Full lists available.

P. HARRIS ORGANFORD, DORSET

R.S.G.B. Bulletin

ADVERTISEMENT RATES

All enquiries regarding Display and 'Exchange and Mart' advertisements should be addressed to the Advertisement Manager:

H. Freeman

The National Publicity Co. Ltd.

36-37 Upper Thames Street, London, E.C.4

Tel: CEN 0473

Morse Code operating . . .

The essential qualification of a Radio Officer at sea, in the air or ashore is **EXPERT MORSE OPERATING**. The Candler method of teaching Code either from "scratch" or to get over that 20 w.p.m. "hump" to the classic 30 or more w.p.m., is known the world over. Thousands of Radio Officers owe their present high position of responsibility to their diligent study of the Walter H. Candler System of Morse Training.

45 years of teaching Morse Code is proof of the efficiency of this system.

. . . as a PROFESSION

Careful thought is given by our Instructional Staff to individual problems, and provided you study diligently and follow our advice success in reaching the qualification you desire is assured — we guarantee this or refund your fees.

Morse Key and Buzzer Sets of good quality on polished wood base, 15/- to Candler students only.

The Press carries an ever increasing number of advertisements of positions vacant at good salaries for competent Operators.

Send 24d. stamp for Payment Plans and Full Details of all Courses.

CANDLER SYSTEM CO.

(Dept. 55) 52b ABINGDON ROAD, LONDON, W.8.

Candler System Company, Denver, Colorado, U.S.A.



TELEPHONE SETS

EX-GOVT. "Don Mk. V" type.

Ideal between 2 or more positions up to 5 or 10 miles. STORES, FACTORY AND OFFICE; FARM BUILDINGS; GARDEN SHED and HOUSE. 2 sets in individual carrying cases, complete with long life batteries, bells, buzzers. Fully tested, with 100ft. telephone cable.

£4.19.0 per pair
Carr. (G.B.) 7/6

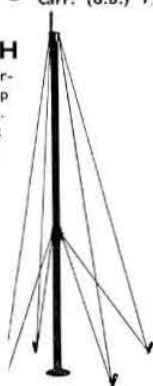
SPECIAL OFFER OF ARMY TYPE AERIAL MASTS 32ft. HIGH

Kits comprise:—10"x1" dia. tubular steel (copper-plated) screw-in sections of three foot length top section and base, pickets, guys and fittings. Admirably suitable for permanent lightweight installations to take aerials for Tx., Rx., F.M. and T.V. (especially Commercial). Complete in canvas carrying bag. You can purchase this normally expensive mast at a fraction of its cost, i.e. **£5.10.0** ONLY Carr. (G.B.) 7/6.

12ft. Whip aerial 12/6 carr. 3/-
U.S.A. 45ft. AERIAL MAST (10 sections 4ft.-6in. x 2in. guys, etc.) This entirely new and complete set in canvas carrying bag **£12.10.0** each. Carr. 12/6. Or 2 sets with additional low and high frequency antenna **£25** per pair. Carriage extra.

Quantity and Export enquiries are invited for above items, also other Electronic Component parts.

HATTER & DAVIS (RELAYS) LTD.
126, KENSAL ROAD, LONDON, W.10. LADbroke 0666



EDDYSTONE Communication RECEIVERS

Model	Cash Price	Deposit	8 monthly payments of
820	£31 18 0	£3 14 6	£3 14 6
870	£34 16 0	£4 1 6	£4 1 6
840A	£55 0 0	£6 8 4	£6 8 4
750	£78 0 0	£9 2 0	£9 2 0
888	£110 0 0	£12 16 8	£12 16 8
680X	£120 0 0	£14 0 0	£14 0 0

No extra charge for Credit if paid in 6 months, by Bankers Order. Carriage paid per passenger train.

Model 840A, is for A.C. or D.C. 110/250 V. 750 and 680X 110/240 V A.C. The very large tuning dials are clearly marked with band spread logging. Silky gear driven flywheel loaded tuning mechanism. These sets are the choice of the discerning professional and amateur users. Descriptive literature gladly forwarded. Latest Eddystone Component Catalogue 1/-.



55 COUNTY ROAD, LIVERPOOL, 4
Telephone: AINTREE 1445 ESTAB. 1935
Branch Address: MARKET CROSS, ORMSKIRK

Communications Receivers, Etc.

G.E.C. BRT.400	£95
Eddystone 680	£85
R.C.A. AR88D, 540 kc/s—32 Mc/s	£65
R.C.A. AR88LF, 75—550 kc/s and 1.5—30 Mc/s	£60
Marconi CR150 with power unit (2—60 Mc/s)	£60
Eddystone 750, with speaker and "5" meter (all in original packing, listed at £86)	£60
National H.R.O. Senior, with power unit, speaker and 10 coils, bandspreading 10, 15, 20, 40 and 80 metres, covering 50 kc/s—30 Mc/s. All in compact rack	£52
Hallcrafters SX.28, 550 kc/s—43 Mc/s	£50
Hallcrafters 5.36 U.H.F. AM/FM, 28—143 Mc/s	£50
Hallcrafters 5.27 U.H.F. AM/FM, 28—143 Mc/s	£40
BC.348, completely unmodified, 28 Volts d.c.	£35
Hammarlund Super Pro, with power unit	£35
Type R.308, U.H.F. AM/FM 20—150 Mc/s	£35
National NC.100.XA, 500 kc/s—30 Mc/s	£35
National NC.120, 540—30 Mc/s	£35
National H.R.O. Senior, with 5 coils and power pack	£33
R.C.A. AR77E 540 kc/s—31 Mc/s	£32
National H.R.O. Junior, with 9 coils	£28
Hallcrafters 5.38C 550 kc/s—30 Mc/s	£25
Type R.206 1.8—30 Mc/s	£25
Hallcrafters SX.16, 550 kc/s—61 Mc/s	£25
Marconi CR100, 60—420 kc/s and 500 kc/s—30 Mc/s	£25
Hallcrafters Skyriders 23, 540 kc/s—34 Mc/s	£25
Eddystone 5.640, 1.7—32 Mc/s	£22
Hallcrafters 5.38, 550 kc/s—30 Mc/s	£20
Eddystone 358X with 9 coils and P.P. 90 kc/s—30 Mc/s	£20
Type R.208, 10—60 Mc/s, £16; Type R.107, 1.2—17.5 Mc/s, £16; Type BC.639.A 100—150 Mc/s, £15; Trophy 6, 500 kc/s—44 Mc/s, £12.	

All National H.R.O. coils, receivers, power units in stock. Avo Test Equipment available (see last month's advertisement). Carriage is extra on all items.

RADIO TELEVISION & INSTRUMENT SERVICE

CORRESPONDENCE: CALLERS AND GOODS:
254 Grove Green Road, Ashville Old Hall,
Leytonstone, London, E.11 Ashville Road, London, E.11
Telephone LEYtonstone 4986.

G2AK DON'T MISS THESE BARGAINS G2AK

Items for the MOBILEER...

12 V miniature rotary transformers. Output 360/310V, 30mA c.c.s. or 70mA i.c.a.s. Only 4½ in. x 2½ in. overall. Only 21/- each or £2 for 2. Post and packing 2/-.

American Breast Mikes. Swivel head, push to talk and lock on switch, excellent job. Only 12/6. P. & P. 1/6.

British Breast Mikes, complete with pair of H.R. 4000 ohm phones in wooden carrying case 8½" x 4½" x 7½". New W.D. Stock. Unrepeatable at 17/6. P. & P. 2/-.

Crystal Hand Mikes in silver hammer case with polished grille and handle, complete with 4 ft screened lead, 21/- P. & P. 1/6.

... plus these fine offers

CERAMIC FORMERS, 2½" x 1½". Ideal for V.F.O. or turrets, 1/9 each or 17/6 doz. TWIN FEEDER, 300 ohm twin ribbon feeder, similar, K25 6d. per yard. K35B Telcon (round), 1/6 per yard. Post on above feeder and cable 1/6 any length.

COPPER WIRE, 14G, H/D 140ft., 17/-; 70ft., 8/6. Post and packing 2/-. Other lengths pro rata. Stranded 7/25, 140ft 10/-, 70ft 5/-, postage and packing 2/-.

The New GELOSO V.F.O. Unit. Output on 80, 40, 20, 15 and 10 meters sufficient for fully driving, pair of 807 or QV06/20 (6146) tubes. Complete with 8½" x 5" calibrated dial and escutcheon. Price less Tubes, £7-17-6. Set of 3 Tubes, 24/-.

HEADPHONES H.R. Type 4000 ohms very sensitive. Only 12/6 pair. P. & P. 1/6 C.L.R. (low res.) 8/6. P. & P. 1/6.

RIBBED GLASS, 3" aerial insulators, 1/6 each or 6 for 7/6. 12 or more post free. Small shell porcelain 4½d. each or 4/- dozen.

CONDENSER, T.C.C. Type 111, 8µF 1000V List over £3. Only 10/6 each. Post 1/9. 8µF 750V 5/6 each. Post 1/6.

SMALL POWER UNITS in black metal case. 200/260V input, 200/250V 60/80mA output; also giving 6.3V 3A a.c. and 31V .3A d.c. Fitted with 6X5 rectifier. Fully smoothed and filtered. Only 50/-. Post free.

TRANSMITTING Type tuning CONDENSERS by E. F. Johnson, U.S.A. 500 pF 1,500V Rating. Ideal for Pi output circuits, 15/- Post 1/-.

RACK MOUNTING PANELS, 19in. x 5½in., 7in., 8½in., or 10½in., black crackle finish. 5/9, 6/6, 7/6, 9/- respectively, postage and packing 2/-.

ABSORPTION WAVEMETERS, 3.00 to 35.00 Mc/s in 3 Switched Bands. 3.5, 7, 14, 21 and 28 Mc/s Ham Bands marked on scale. Complete with indicator bulb. A MUST for any Ham shack. Only 15/- each. P. & P. 1/-

PLEASE PRINT YOUR NAME AND ADDRESS.

A good range of Components and Communication Receivers always available

CHAS. H. YOUNG, LTD. Dept 'B' • 110 DALE END • BIRMINGHAM 4

Telephone (all depts.): Central 1635

Quality Electronic Equipment All Guaranteed in Perfect Condition

RECEIVERS

EDDYSTONE		
640 1.2-30 Mc/s. As new ...	£25	
740, 550 kc/s-32 Mc/s ...	£30	
750, 500 kc/s-32 Mc/s ...	£58	
680 ...	£65	
680x ...	£85	

RCA AR77E 550 kc/s-32 Mc/s ...	£35	
AR88D and type L.F. from ...	£55	

HAMMARLUND HQ129X ...	£85	
Super Pro complete with power supply	£38	

HALLICRAFTERS		
S38 a.c./d.c. 500 kc/s-32 Mc/s ...	£20	
SC24 500 kc/s-32 Mc/s ...	£35	
S20R ...	£28	
SX28 550 kc/s-42 Mc/s ...	£45	
SX71 500 kc/s-32 Mc/s ...	£85	

RADIOVISION		
Commander Double Superhet ...	£40	

HAMBANDER receiver 1.2-30 Mc/s	£17 10	
--------------------------------	--------	--

RME 69 550 kc/s-32 Mc/s. As new	£30	
---------------------------------	-----	--

NATIONAL NC 173, 550 kc/s-30		
------------------------------	--	--

Mc/s. NEW, with matching speaker	£100	
----------------------------------	------	--

HAMMARLUND HQ 129, as NEW	£75	
---------------------------	-----	--

MANUALS for the following receivers: AR88LD-D, AR77E, R107, Hallicrafters, SX24, SX28, S20R, S20, B2 Transmitter-Receiver, HQ120, HRO, Junior and Senior, £17.6 each. Set of main dial, bandspread and name plate for AR88D, £1.10 set of three.

TEST EQUIPMENT

AVO Valve Testers

Roller Panel Type

£8 15 0 each

AVO 1956 Manual, 15/-ext-a

AVO Resistance Capacity

Bridges £7 10 0 each

Taylor Model 82A AC/DC Test

meter Ranges: 0-500V; 0-10A AC/

DC; 0-1 Meg. resistance, £8.15.0

U.S.A. Brand NEW HICKOK

Valve Voltmeters; unused. Ranges:

2.5-250 a.c.V.; 1000 d.c.V. 2.5-1000 mA

d.c. Resistance 0-1000 meg. Fre-

quency up to 100 Mc/s. Voltage, 110V

a.c. Price, £30 each.

AVO Model 7 reconditioned

As NEW ... each £15 0 0

AVO Model 40 ... each £12 0 0

U.S.A. Brand New Valve

Testers, 210-230V, Radio

City Products ... each £10 0 0

Plus 2/6 carriage

UNIVERSAL ELECTRONICS

22/27 LISLE STREET • LEICESTER SQUARE • LONDON • W.C.2

IF UNDELIVERED

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

IF UNDELIVERED

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

WANTED URGENTLY !!!

Exceptional Prices Paid for

BC221

FREQUENCY METERS

or CASES

kindly advise price required

NO REASONABLE FIGURE REFUSED as we DO require these urgently

RECEIVERS, ASB8, ASB4, ASB6, etc.

Hallicrafters SX28, S27C, S27CA,

R.C.A., AR88, R1359, R1294, and

any VHF equipment. APR4 and

Units TN16, TN17, etc., etc.

VALVES CV129, 723AB, 707A.

U.S.A. MICROWAVE equipment

including all TS prefix equipment

i.e., TS12, TS13, TS47, TS174, TS175

and Manuals for any equipment.

Call write or phone: GERard 8410