

The SHORT WAVE Magazine

VOL. XX

JULY, 1962

NUMBER 5

hallicrafters

Within the hallicrafters range of top quality communications equipment are units to meet every requirement. Two examples of the compass of this range are given below.



S-120

This new economically produced Receiver combines the current hallicrafters styling with functional design throughout.

FEATURES

Full width slide rule dial with separate bandspread tuning condenser. Three antennas (ferrite loop for broadcast band, adjustable whip for short wave reception and wire antenna). Front panel headphone jack automatically disconnects built-in speaker.

FREQUENCY COVERAGE

Four bands change 550 kc to 30 mc.

£35



SX-100

This receiver has been used extensively by Commercial, amateur and military operators over several years, and provides the most desired features in a general coverage receiver.

FEATURES

Temperature compensation of high frequency oscillator circuits; crystal controlled second conversion oscillators; gear driven main tuning and bandspread dials; selectable side band operation; tee-notch filter; 100 kc quartz crystal calibrator.

FREQUENCY COVERAGE

Four bands — 538 kc through 34 mc. Bandspread calibrated for 80, 40, 20, 15, 10 metre bands.

£160

HIRE PURCHASE TERMS AVAILABLE

MAIN DISTRIBUTORS FOR HALLICRAFTERS IN GREAT BRITAIN

SCOTT'S

James Scott (Electricity Service Centres) Ltd
175 St. Vincent Street, Glasgow C.2
Tel: City 3181

H. WHITAKER G3SJ

Court Road - Newton Ferrers - SOUTH DEVON

Telephone 320
Newton Ferrers

(A.R.B. APPROVED)

Precision crystals of all types in a wide variety of bases covering the complete range 50 kc/s to 18 mc/s in fundamental frequencies. All are made to extremely fine tolerances and frequency adjustment can be given up to .005%. Plated electrodes of gold, silver, or aluminium with wired in spot welded contacts are available. Quotations can be given for any type of cut, or mode of oscillation, including a complete range of filters with zero temperature co-efficient over a sensibly wide temperature range.

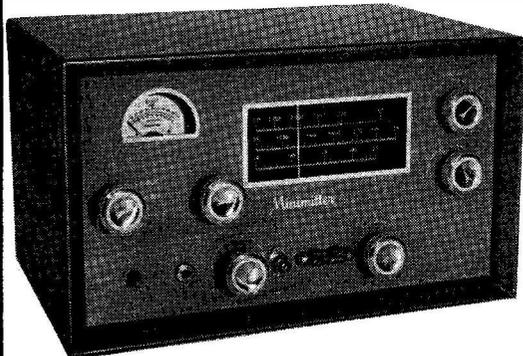
Special Offer :

400 crystals in the range 7100 to 7150 kc/s inclusive. Brand new and unused post-war production. Specification : BT cuts, zero temperature co-efficient, gold plated electrodes, wired into FT 241 type holders with standard $\frac{1}{4}$ " pin spacing. Accurately calibrated. Better than average activity, EPR is better than 14 K. Ohms at 30 pf. input capacity. Price 18/- each, post free. All fully guaranteed and unrepeatable at today's prices. The offer applies only to the range mentioned above, all frequencies between 7100 and 7150 kc/s available.

VHF ENTHUSIASTS

No more chains of doublers ! A complete new range of crystals for DIRECT output up to 74 mc/s when using only a simple RF pentode oscillator such as Z77, EF80, etc., full details of this range on request.

MINIMITTER 'Top 2-7'



An extremely compact, efficient 24 watt transmitter for lower frequency bands: 1.8, 3.5, 7.0 Mc/s. Completely Self-Contained, with built-in Aerial, change-over and control relays — Input and Output monitoring — V.F.O. and Crystal Control — Large "slide rule" V.F.O. dial — "Picture Frame" front panel — Complete remote control facilities.

PRICE £28. 10. 0 Complete

The MINIMITTER F.B.S. Ferrite Loaded	
All-Band Antenna	£5. 0. 0
The Minibeam 10/15 G4ZU Antenna	£16. 10. 0
The "X20" 20 Metre. G4ZU Antenna	£10. 0. 0
34 foot Telescopic Mast with all fittings	£10. 0. 0
Ferrite Beads as used in our F.B.S. Aerial. 50 for	12. 6
The MR44/II Communications Receiver	£65. 0. 0
MINIMITTER Mobile Transmitter. 20 Watts	£16. 10. 0
Transistor Power Supplies	£11. 11. 0
Mobile Whip Antennas 160-80-40 Metres	£6. 0. 0

For full details of any of the above, please send S.A.E. to:—

THE MINIMITTER Co. Ltd. 37 DOLLIS HILL AVENUE,
LONDON, N.W.2 Tel: MAIda Vale 5588

• Southern Radio's Wireless Bargains •

PORTABLE TEST METERS. 0-5000 ohms ; 0-60 m.a. ; 0-15v. 0-3V. (Featured in Practical Wireless, March issue). 12/6 each

TRANSMITTER RECEIVERS TYPE "38" with 5 valves. New but untested, no guarantee. 25/- each. Post paid.

ATTACHMENTS FOR "38" TRANSMITTER-RECEIVER : HEADPHONES, 15/6 ; THROAT MICROPHONES, 4/6 ; JUNCTION BOXES, 2/6 ; AERIALS ; No. 1 2/9, No. 2 5/3 ; WEBBING, 4/- ; HAVERSACKS, 5/6 ; VALVES—A.R.P.12, 4/6, A.T.P.4, 3/6 ; SET OF FIVE VALVES, 19/-. Postage on each item, 1/6 extra (except valves).

ATTACHMENTS for "18" Transreceiver. HEADPHONES, 15/6 ; MICROPHONE 4a, 12/6 ; AERIALS, 5/- ; MORSE KEY, 6/6 ; VALVES—ARPI2, 4/6, ATP4, 3/6, AR8, 7/6 ; SET OF SIX VALVES, 25/- . Postage extra (except Valves) 1/6 each item.

OFFICIAL BOOKLET. "18" T-R Circuits, etc., 6/6, post paid.

TYPE "18" RECEIVING PORTION ONLY with 4 Valves. S.W. 6-9 mc/s. 35/- each

QUARTZ CRYSTALS. TYPES F.T. 241/243 2-pin $\frac{1}{4}$ " space. FREQUENCIES. F.T. 243. 5706 kc/s. to 8625 kc/s.

FUNDAMENTAL. F.T. 241. 20 mc/s. to 38.9 mc/s. (54th and 72nd Harmonics) 4/6 each. List available of frequencies stocked.

CRYSTAL BASES. F.T. 241/243 1/6 each

CRYSTAL CASES. F.T.241/243 10/6 per dozen

DYNAMOTORS. 28v. D.C. to 250v. D.C. for B.C. Command Receivers 17/6

VARIOMETERS for "19" Sets. New 21/- each

RECORDING BLANKS. New 13", 6/- each or 15 complete in tin £4

BOMBSIGHT COMPUTERS. Ex-RAF. Wealth of gears, motors, blowers, etc. Ideal for experimenters £3/12/6 carr. paid

RESISTANCES. 100 Assd. Useful values, new 12/6 per 100

CONDENSERS. 100 Assorted. Mica, Etec., Tubular, etc. New 15/- per 100

LUBRA HOLE CUTTERS. Adjustable. $\frac{3}{8}$ " to 3 $\frac{1}{2}$ " 7/9

VISUAL INDICATORS (10G4). Type 3 with 2 Meter movements, 2 Neons. New 12/-

MAGNETS. Strong Bar. 2" x $\frac{1}{4}$ " 1/6 each

Post or Carriage Extra. List of Radio Publications, etc., 3d.

SOUTHERN RADIO SUPPLY LTD

11 LITTLE NEWPORT ST., LONDON, W.C.2. GER 6653

**SEE
and
HEAR**



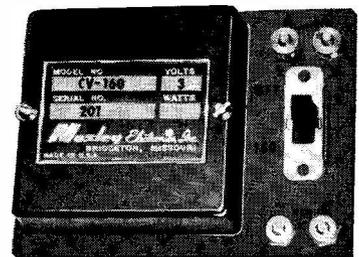
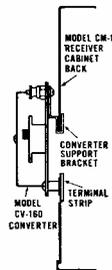
the
imaginatively
designed

MOSLEY CM-1 receiver

- First low priced receiver with double conversion and crystal controlled first oscillator.
- First receiver with 5 dual-purpose valves of one type and 4 semi-conductor diodes which perform all functions usually requiring 12 or more valve sections.
- First low priced receiver with selectivity, sensitivity and stability that equals receivers selling for upwards of £50 more.

FEATURES and PERFORMANCE:

Diode detector for a.m. and product detector for s. s. b. and c. w.
 Calibration every 5 kc. WWV reception at 15 Mc.
 Selectivity : 2.5 kc. at -6 db. Automatic noise limiter.
 Sensitivity : ½ microvolt for 10 db. signal-to-noise ratio on ten metres.
 Stability: Less than 500 cycles drift after one-minute warm-up.
 Less than 200 cycles change for 10% line voltage change.
 Image and i.f. rejection: 35 db. minimum.
 Power consumption: 33 watts. (230 volts a.c., 50 to 60 c.p.s.)
 Rear chassis accessory facilities: Transmitter relay terminals, accessory power socket, external speaker/VOX terminals.
 Write for complete descriptive brochure and the name of the dealer handling the CM-1 in your area.
 Net Price £86. (All crystals included).



New! MOSLEY 160 METRE CONVERTER
 Model CV-160
 Converts the 160 metre band, 1750-2000 kc. for reception on most 80 metre band receivers. Transistorized, crystal controlled, printed circuit and self powered.
 Designed to attach directly to rear of the Mosley CM-1 and adaptable to most other receivers.
 Net Price £7. 10. 0.

Mosley Electronics Ltd.
 15 Reepham Rd., Norwich, Norfolk

“Worlds Leading Manufacturer of Amateur Radio Aerials”

TECHNICAL PUBLICATIONS

AVAILABLE FROM STOCK

	Post Free
A GUIDE TO AMATEUR RADIO.....	4s. 0d.
AMATEUR RADIO HANDBOOK (new Publication by R.S.G.B.), 550 pp.....	36s. 6d.
ANTENNA HANDBOOK (Published by A.R.R.L.) (9th Edition).....	19s. 0d.
A COURSE IN RADIO FUNDAMENTALS (4th Edition).....	10s. 6d.
AUTOMOBILE ELECTRICAL EQUIPMENT BASIC MATHEMATICS FOR RADIO AND ELECTRONICS.....	31s. 0d.
BEAM ANTENNA HANDBOOK.....	18s. 3d.
BETTER SHORT WAVE RECEPTION.....	24s. 6d.
CALL BOOK (G's only).....	24s. 0d.
CHART OF INTERNATIONAL FREQUENCY ALLOCATIONS — GENEVA, 1960 (Official), 10Kc-40Gc, 51" x 34", wall mounting.....	5s. 0d.
COMMAND SETS (Published by CQ.) Information on conversion of many Command Transmitters and Receivers.....	8s. 3d.
CQ ANTHOLOGY.....	12s. 6d.
DXERAMA (3rd Edition).....	16s. 9d.
FOUNDATIONS OF WIRELESS.....	16s. 0d.
GUIDE TO BROADCASTING STATIONS (13th Edition) pp. 112.....	17s. 3d.
HAMS INTERPRETER (Published by OH2SQ) (4th Edition).....	3s. 10d.
HINTS AND KINKS, Vol. 6.....	7s. 0d.
HOW TO BECOME A RADIO AMATEUR★	11s. 0d.
HOW TO IMPROVE YOUR SHORT WAVE RECEPTION.....	5s. 0d.
HOW TO LISTEN TO THE WORLD, 1962.....	14s. 9d.
HOW TO GET THE BEST OUT OF YOUR TAPE RECORDER.....	12s. 6d.
LEARNING MORSE.....	9s. 1d.
LEARNING THE RADIO TELEGRAPH CODE.....	1s. 9d.
LOG BOOKS Spiral bound (Published by A.R.R.L.)★.....	4s. 6d.
MOBILE HANDBOOK (Published by CQ) (2nd Edition).....	7s. 6d.
MOBILE MANUAL (Published by A.R.R.L.).....	24s. 0d.
NEW RTTY HANDBOOK.....	23s. 0d.
NEW SIDEBAND HANDBOOK (Published by CQ, latest issue).....	32s. 0d.
NOVICE HANDBOOK, Tx and Rx, 150 pages.....	25s. 6d.
OPERATING AN AMATEUR RADIO STATION (Published by A.R.R.L.)★.....	23s. 6d.
PORTABLE TRANSISTOR RECEIVER.....	2s. 8d.
QUAD ANTENNAS.....	3s. 0d.
RADIO AMATEUR YEAR BOOK.....	23s. 0d.
RADIO AMATEURS' EXAMINATION MANUAL.....	4s. 0d.
RADIO CONTROL HANDBOOK.....	5s. 6d.
RADIO DATA CHARTS.....	18s. 9d.
RADIO DESIGNERS HANDBOOK (4th Edition) 1,498 pp. (F. Langford Smith).....	11s. 3d.
RADIO AND ELECTRONIC LABORATORY HANDBOOK (7th Edition, by Wireless World).....	57s. 6d.
RADIO INTERFERENCE SUPPRESSION.....	57s. 3d.
RADIO VALVE DATA (New Edition now available, 4,800 types listed).....	11s. 3d.
S-9 SIGNALS.....	6s. 6d.
SCATTER PROPAGATION THEORY AND PRACTICE (H. W. Sams).....	8s. 6d.
SHORT WAVE RECEIVERS For The Beginner.....	25s. 0d.
SHORT WAVE AND THE IONOSPHERE.....	6s. 6d.
SINGLE SIDEBAND FOR THE RADIO AMATEUR (A.R.R.L.).....	11s. 9d.
STEREO HANDBOOK.....	14s. 6d.
SURPLUS SCHEMATICS (Published by CQ).....	11s. 4d.
SURPLUS HANDBOOK (See p. 420, Oct. '61).....	21s. 0d.
	24s. 0d.

SURPLUS CONVERSION MANUAL	
Volume 1 (3rd Edition).....	24s. 0d.
Volume 2.....	24s. 0d.
Volume 3.....	24s. 0d.
TELEVISION EXPLAINED.....	13s. 6d.
THE OSCILLOSCOPE.....	18s. 6d.
THE RADIO AMATEUR OPERATOR'S HANDBOOK (Data Publications) (New Edition).....	3s. 10d.
TRANSISTORS: THEORY AND PRACTICE (Published by Gernsback).....	23s. 0d.
TRANSISTOR THEORY AND PRACTICE (Published by World Radio Handbook).....	9s. 6d.
TRANSISTOR TECHNIQUES (Gernsback).....	12s. 6d.
VHF HANDBOOK (Orr W6SAI).....	24s. 0d.
VHF FOR THE RADIO AMATEUR (CQ).....	28s. 0d.
WORLD RADIO HANDBOOK, 1962 Edition, 228 pages.....	19s. 0d.

(★ Not strictly applicable under U.K. conditions)

MAGAZINES BY SUBSCRIPTION

	One Year
73 MAGAZINE.....	30s. 0d.
CQ, RADIO AMATEUR'S JOURNAL.....	44s. 0d.
QST, ARRL.....	48s. 0d.

Post free, ordinary mail only

Easibinders for Short Wave Magazine, holds 12 issues (one volume) 13s.

LATEST ISSUES

Radio Handbook (15th Edition)

Published by Editors & Engineers, W6-U.S.A. 800 pages, durable binding.

Price 68s. 6d. post free, from stock

Radio Amateur Call Book

The CALL BOOK is published in two parts: American Section only, at 45s. post free; Foreign (non-American) Section at 27s. post free. Both Editions appear quarterly and include latest callsign/address listings for all countries, with much DX data. The only complete directory to the radio amateur stations of the world.

American Section, Summer Edition 45s.; Foreign (non-American) section Summer Edition, 27s.

The two together at 65s. post free

Radio Amateur's Handbook

1962 EDITION — 740 pages fully indexed (See Review, p.121, May)

Published by the American Radio Relay League

Price: Standard Binding 37s. 6d. post free

Bound in Buckram, de luxe, 47s. 6d. post free

DX Zone Map (Latest Edition)

(Great Circle, centred U.K.)

Linen Backed (de luxe) 11s. 9d. post free

Amateur Radio Map of World

Much DX Information — In Colour, 8s. 6d. post free — Second Edition

World Short Wave Radio Map

(General SWL and BC coverage, with handbook)

8s. 6d. post free

SHORT WAVE MAGAZINE

PUBLICATIONS DEPARTMENT

55 VICTORIA STREET · LONDON · SW1

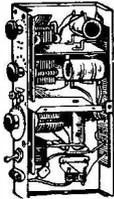
TELEPHONE ABBEY 5341

CRYSTALS & COMPONENTS LTD

TEL: TEM.1189 2.4. EARLHAM STREET WC.2.
Near Cambridge Circus. A few minutes walk from Leicester Square or Tottenham Court Road Underground Stations.

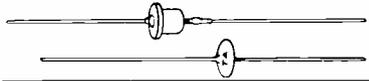
BC610 TUNING UNITS

These compact units (size 9 x 4 x 2 in.) were used as plug-in tuning boxes with the BC610 TX. They contain miniature variable condensers of 140 pf and 100 pf, a standard size 50 pf ditto. A 1 1/2 in. dia. 0-100 graduated knob/dial A D.P.D.T. toggle switch and several other components. Coverage is 5-6.35 or 6.35-8 Mc/s. Price 6/6 each, P.P. 3/-. A few at 2.0 to 2.5 Mc/s.



SILICON RECTIFIERS

Miniature silicon power diodes at new prices. Made by one of England's greatest manufacturers. Type (1) 400 P.I.V. 250 mA. d.c. output. Price 3/6. Type (3) 800 P.I.V. 550 mA. Price 8/6. Type (4) 1,000 P.I.V. 0.45 amp. Price 8/6. We have a limited quantity of Mullard BY100 rectifiers at 8/6 each.



MODULATOR UNITS

Type (1) Ex the 1985/1986 Aircraft TX 7 watts class B output. Crystal or low impedance input. Output matches TT 15. Complete with valves, 10/-, P.P. 3/-.

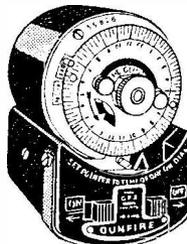
I.F. AMPLIFIER STRIPS

Three stage I.F. Amplifier strips ex the T.R. 1985/1986 series transmitters. Frequency 9.72 Mc/s. Widely used as an F.M.I.F. amplifier, etc. Price complete with valves, 10/- each. P.P. 3/6.

MAINS TRANSFORMER BARGAINS

TYPE (EHT 1) Input 0-210-230-250v. 50 C.P.S. Output 2 KV 10 M/A. 4v. 1A., 0-2-4v. 1.5A., 22/6 + P.P. 5/-.
TYPE (EHT 2) Input 10-0-200-220-240v. 50 C.P.S. Output 2.5 KV 10 M/A., 6.3v. 0.3A., 2v. 1.5A., 3.5 KV. D.C. working, 22/6 + P.P. 5/-.
TYPE (HT 1) Input 0-230v. 50 C.P.S. Output 500-0-500 at 250 M/A., 6.3v. 2.5A., 6.3v. 5A., 35/- + P.P. 5/-.
TYPE (HT 3) Input 10-0-200-220-240v. 50 C.P.S. Output 350-300-0-300-350 50 M/A., 0-4-5v. 3A., 0-4-5-6.3v. 4A., 0-4-6.3v. 3A., 1 KV wkg., 25/- + P.P. 5/-.
TYPE (HT 2) Input 10-0-200-220-240v. 50 C.P.S. Output 350-0-350 120 M/A., 0-3-12-18v. 5A., 39/6 + P.P. 5/-.
TYPE (HT 4) Input 10-0-200-220-240v. 50 C.P.S. Output 500-0-500 135 M/A., 0-4-5v. 3A., 0-4-5-6.3v. 3A., 0-4-6.3v. 4A., 0-4-6.3v. 3A., 42/6 + P.P. 5/-.
TYPE (HT 5) Input 10-5-0-110-200-220-240v. 50 C.P.S. Output 450-400-0-400-450v. 180 M/A., 0-4-5-6.3v. 3A., 0-4-6.3v. 4A., 0-4-5-6.3v. 3A., 0-4-5-6.3v. 3A., with E.S. screen, 39/6 + P.P. 5/-.
TYPE (HT 6) Input 10-0-200-220-240v. 50 C.P.S. Output 500-0-500 95 M/A., 0-4-5v. 3A., 0-4-5-6.3v. 3A., 0-4-6.3v. 3A., 0-4-6.3v. 2A., 32/6 + P.P. 5/-.
TYPE (HT 7) Input 10-0-200-220-240v. 50 C.P.S. Output 500-0-500v. 200 M/A., 0-4-5v. 3A., 0-4-5-6.3v. 3A., 0-4-6.3v. 4A., 49/6 + P.P. 5/-.
TYPE (HT 8) Input 10-0-200-220-240v. 50 C.P.S. Output 450-0-450 120 M/A., 5v. 3A., 6.3v. 5A., 6.3v. 1.5A., 4v. 1.5A., 35/- + P.P. 5/-.
TYPE (HT 9) Input 10-0-110-200-220-240v. 50 C.P.S. 480-0-480v., 100 M/A., 4A.-0-4A. 300 M/A. 6.3v. 2.5A., 6.3v. 1A., 5v. 2A., 47/6 + P.P. 5/-.
TYPE (HT 13) Input 0-205-225-245v. 50 C.P.S. Output 0-300v. 37.5 M/A., 0-300v. 37.5 M/A., 0-4v. 1A., 4 KV. wkg. 0-4v. 3A., 17/6 + P.P. 5/-.
TYPE (26) Input 230v. Output 250v. 60 mA (H.W.) and 80v. at 0.1 amp., 5/- + P.P. 2/-.
TYPE (350/120) 350-0-350v. 120 mA., 6.3v. 3amp. 5v. at 2 amp., 16/6 + P.P. 3/6.
TYPE (5K) 350-0-350v. 350 mA., 2v. 3 amp. tapped at 4v., 2v., 2 amp. 10 kV. ins. 20v. 1 amp., 7.5v. 1 amp., 5 kv. 5 mA. Price 25/- + P.P. 6/-.
TYPE (6v. 4A.) 6.3v. 4 amp. Price 8/6 + P.P. 2/-.
TYPE (250/60) 250-0-250 60 mA., 6.3v. 4 amp. Price 9/6 + P.P. 2/-.

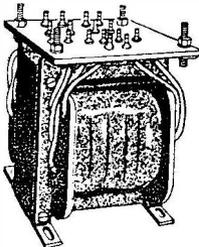
"GUNFIRE" Mains Time Switches



Type (3) Mains driven time switches by first-rate manufacturer, 200-250v. 50c. 10 amp. contacts, 62/6. Can be supplied with up to two "makes" and two "breaks" every 24 hours. Supplied with one set contact arms, 4/- pair. Type (4A) as above but with 20 amp. Contacts. New and improved Model, 79/6.

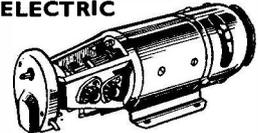
WHEATSTONE BRIDGES

Originally intended to test Bomb demolition wiring. Contains 11 step stud switch 0-10 ohms, ditto 0-100 ohms, 3 step ditto 0-100-∞ and a 2.5-0-2.5 Ma. Galvanometer 35/- Plus P. & P. 5/-.



A GEARED ELECTRIC MOTOR

FOR ONLY 10/- P. & P. 3/6.



Due to bulk purchase we are able to offer these 24v. Rotary Converters at this fantastic price. Easily modified for mains operation (full simple conversion details supplied). Complete with 400 to 1 reduction gearbox.

FIELD STRENGTH METERS

100-150 Mc/s.
Contains 0-1 M/A Meter, 1S5 Valve. Extendable chrome aerial, etc., in as new condition, requires only 1.5v. and 90v. Housed in black crackle case. Size: 7" x 7" x 7".
45/- + 2/9 P.P.
LIMITED SUPPLIES

WIRELESS SET No. 19

TRANS/REC. Covers 2-8 Mc/s. uses a 6 valve superhet receiver, I.F. being 465 Kc/s, and a 6 valve transmitter. Designed for voice and C.W. operation, incorporates a meter (500 μA) for tuning voltages, aerial loading, etc. Panel controls frequency tuning, P.A. tuning, gain control, M.C.W., C.W., R/T switch, het-tone netting, off/on, quench, aerial-AVC-HT-LT-Drive test. Complete with valves

55/- Carriage 10/-
LIMITED SUPPLIES

SPECIAL OFFER The well-known BC 221 FREQUENCY METERS

Every one tested and in perfect working order, £12/10/-, exterior soiled; £16/- as new. Packing and Carr. B.R.S. 17/6.
LIMITED SUPPLIES

CRYSTAL FREQUENCY STANDARDS

10X TYPES. 500 Kc/s, 7/6 each; 1,000 Kc/s, 15/- each; 2,000 Kc/s, 7/6 each. 5 Mc/s, 3/- each.

DISC CERAMICS

Available in .001, .002, .005 and .01 mfd., 500 V.V., 4/- per doz. your selection. P.P. 6d.

VALVES

Miniature type, wire ended
EF70, EF71, EF72, EF73, EF74, EN70, EC70, EQUIV, 12A7, 85A3, EQUIV, EP91, EQUIV, 13D3. All at 2/6 each. Series Stabilizer E2358 wire ended, 5/-.

Other types

6X4, 5/-, 6C4, 2/6, 5Y3GT, 7/6, 7Z4, 5/-, 6G6, 3/6, EF91, EF92, EL74, EAC91, EB91, EY91. All at 2/6. QV04/7, 5/-, TT1, 2/6, 150B3, 5/-, 6F17, 5/-, VR150/30, 5/-, 12A77, 12AU7, 5/-.

SPECIAL OFFER CHARGER TRANSFORMERS

Prim. 240v. Sec. 17v. 1A., 8/6. P.P. 1/9.

R114 2-Metre

RECEIVER EX 1985—86 series with valves 15/-, 7775 Kc/s. Crystal 5/-, I.F. Trans. 2/6. P.P. 2/6.

TERMS OF BUSINESS

CASH WITH ORDER. Handling charge of 1/6 on all orders under 20/- where P.P. is not otherwise stated.

CHOKES

Type: (CH 1) 5-H. 100 M/A. 145 ohms, 5/6 + P.P. 2/-. (CH 2) 4-H. 300 M/A. 50 ohms, 12/6 + P.P. 3/6. (CH 3) 20-H. 40 M/A. 640 ohms 6/- + P.P. 2/6. (CH 4) 12-H. 90 M/A. 350 ohms, 6/6 + P.P. 2/6. (CH 6) 2.5-H. 250 M/A., 7/6 + P.P. 3/6. (CH 8) 20-H. 100 M/A. 185 ohms, 7/- + P.P. 2/6. (CH 10) 17-H. 140 M/A. 300 ohms, 8/6 + P.P. 3/-.

IRON DUST CORED 465 Kc/s

Type (1) 1 1/2 x 1 1/2 x 2 1/2 in. 2/6 each. Type (3) 1 1/2 x 1 1/2 x 1 1/2 in. 3/6 each. Half Potted or 6/6 pair. Type (2) 1 x 1 1/2 x 2 1/2 in. 2/6 each. Type (4) 1 1/2 x 1 1/2 x 1 1/2 in. 3/6 each. Fully Potted or 6/6 pair.

EVERYTHING FOR THE ENTHUSIAST

AERIAL EQUIPMENT

TWIN FEEDER. 300 ohm twin ribbon feeder similar K25, 6d. per yard. K35B Telcon (round) 1/6 per yard. 750 ohm twin feeder 6d. per yard. Post on above feeders and cable, 1/6 any length.

COPPER WIRE, 14G, H/D, 140 ft., 17/-; 70 ft., 8/6, post and packing 2/-. Other lengths pro rata.

RIBBED GLASS 3" AERIAL INSULATORS. 1/9 each, P. & P. 1/6 up to 12.

SHELL INSULATORS 2" 9d. each. P. & P. 2/- up to 12.

FEEDER SPREADERS. 6" Ceramic type F.S., 10d. each. Postage 1/6 up to 12.

CERAMIC CENTRE PIECE for dipoles, Type AT, 1/6 each. P. & P. 1/-.

2 METRE BEAM, 5 element W.S. Yagi. Complete in box with 1" to 2 1/2" masthead bracket. Price 49/-, P. & P. 3/6.

SUPER AERAXIAL, 70/80 ohm coax, 300 watt very low loss, 1/8 per yard. P. & P. 2/-.

FOR THE DX ENTHUSIAST MOSLEY TRAP BEAMS

Vertical 3 Band V3 ... £7 10s.
3 Band 3EL Beam TA 33dr. £24 15s.
Also the **NEW Single Band Power Beams.** Send for details.
50 ohm, 300w. 1/2" coax Low loss. Ideal for Mosley and other beams, 1/9 per yd. P. & P. 2/-.



BAND CHECKER MONITOR

This new, sensitive, absorption wavemeter is fitted with a 0-500 microammeter and is also a most useful phone monitor. Covers 3.5-35 m.c/s. in 3 switched bands.

A "MUST" AT ONLY 3 gns.

FOR THE MOBILEER

ROTARY TRANSFORMERS

12v. input 490v. 65 Ma. output 17/6 each, P. & P. 3/-.
6v. in 250v., 125 Ma, only 17/6, P. & P. 3/-.

SHADED POLE MOTORS. 230v. or 110v. operation, ideal for fans, blowers or models. One only 12/6, P. & P. 2/- or pair 20/-, P. & P. 2/6.

TOUGH POLYTHENE LINE. Type MLI (100 lbs.) 2d. per yard or 12/6 for 100 yards. Type ML2 (220 lbs.) 4d. per yard, or 25/- per 100 yards, post free.

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 22/6 EACH. Post free.

VARIABLE CONDENSERS. All brass with ceramic end plates and ball race bearings. 50pf, 5/9, 100-6/6, 160, 7/6, 240, 8/6 and 300pf, 9/6. Extension for ganging, P. & P. 1/-.

RACK MOUNTING PANELS: 19" x 5 1/2", 7", 8 1/2", or 10 1/2", black crackle finish, 5/9, 6/6, 7/6, 9/- respectively. P. & P. 2/-.

AMERICAN 807 VALVES. Ex. W.D., 7/6 each or 4 for 25/-, P. & P. 2/-.

GELOSO VFO UNITS. 4/102 with new dial and escutcheon. Outputs on 80, 40, 20, 15 and 10. For 2-807 or 6146 Tubes. Only £8 5 0. 3 valves to suit, 24/-, ALL POST FREE.

MIKE CABLE. 1st Grade, 9d. yd. plus postage.

12-CORE SCREENED CABLE. 2/- yd.

10-CORE (5 PAIRS) SCREENED CABLE, 1/8 yd. All wires. P. & P. 1/6.

* No C.O.D. on orders under £1. Please print name and address.

CHAS. H. YOUNG LTD.

Dept. 'S,' 110 Dale End, Birmingham. CENTRAL 1635

ACKNOWLEDGED THE BEST COMPONENT CATALOGUE



NOW

166 pages

600 pictures

5,000

components

A MUST for every radio enthusiast

This is today's most up-to-date and most comprehensive component catalogue for the radio amateur, constructor, experimenter, electronic engineer, and Hi-Fi enthusiast.

Name

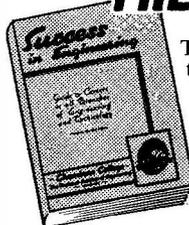
Address

2/6
Plus 9d. post
POST COUPON TODAY

Write CATALOGUE on top left of envelope. Enclose P.O. 3/3

HOME RADIO LTD, Dept S, 187 London Rd, Mitcham, Surrey

FREE! EARN



There's plenty of room at the top for technically trained men—room for YOU if you want quick promotion or a better-paid, more interesting career. N.I.E. can quickly give you a *guaranteed* spare-time Postal Training, in the comfort of your own home, and open up a whole new world of opportunity for you.

MORE

Find out what thousands of other N.I.E. Students have done—how *easy* it is to learn at home with N.I.E. Send for *Success in Engineering*—136 pages of sound, practical advice, information you can use—and details of a wide range of pay-winning Courses in all branches of Engineering, Building, Draughtsmanship, Local Government, etc. Get your copy today—FREE!

SOON

N.I.E. Guarantees—'Success'—or No Fee'

POST COUPON NOW!

Please send me a FREE copy of *Success in Engineering*

NAME

ADDRESS

.....

Subject or Exam. of interest.....

NATIONAL INSTITUTE OF ENGINEERING
(Dept. 443) 148-150 Holborn, London, E.C.1

THE GATEWAY TO BETTER LIVING

INDEX TO
ADVERTISERS

	PAGE
Anglin	277
Brookes Crystals	280
Cathodeon Crystals, Ltd. ...	276
Crystals & Components ...	227
Dale Electronics ...	<i>cover iii</i>
Daystrom	<i>cover iv</i>
Dependable Relay Co., Ltd.	280
G3HSC (Morse Records)...	280
G.W.M. Radio ...	<i>cover iii</i>
Home Radio	228
Jack Tweedy	280
James Scott & Co., Ltd.	<i>front cover</i>
K.W. Electronics	230
Minimitter	<i>cover ii</i>
Mosley Electronics ...	225
Multicore	<i>cover iii</i>
National Institute of Engineering	228
Peter Seymour	278
Short Wave (Hull) Ltd. ...	279
Small Advertisements	275-280
Southern Radio ...	<i>cover ii</i>
Southern Radio & Elec. ...	280
S.W.M. Publications ...	226
Tiger Radio, Ltd.	277
Whitaker	<i>cover ii</i>
Withers	279
Young	228

SHORT WAVE MAGAZINE

Vol. XX

JULY, 1962

No. 225

CONTENTS

	Page
Editorial	231
Two-Metre Sideband with the K.W. "Viceroy"	232
Aerial Tuning for Top Band	234
Modern Receiver for the Amateur Bands, Part II, <i>by J. D. Heys (G3BDQ)</i>	235
Miscellany — <i>Comment on the Times</i>	239
The Mobile Scene	240
Pre-Selection on Twenty Metres	245
DX Commentary, <i>by L. H. Thomas, M.B.E. (G6QB)</i>	246
"SWL" — <i>Listener Feature</i>	252
Field Strength Readings & SWR Checks, <i>by J. K. Fidler (G3OYP)</i> ...	257
Capacity Measuring Box, <i>by F. G. Rayer (G3OGR)</i>	258
VHF Bands, <i>by A. J. Devon</i>	260
Building A Lattice Mast, <i>by N. E. Read (G6US)</i>	265
The Other Man's Station — VQ5IB	269
Special-Activity Stations	270
New QTH's... ..	271
The Month with The Clubs — <i>From Reports</i>	272

Managing Editor : AUSTIN FORSYTH, O.B.E. (G6FO)

Advertisement Manager : M. GREENWOOD

*Published on the first Friday of each month at 55 Victoria Street,
London, S.W.1. Telephone : Abbey 5341/2*

Annual Subscription : Home and Overseas 36s. (\$5.25 U.S.) post paid

© Short Wave Magazine Ltd.

AUTHORS' MSS

Articles submitted for Editorial consideration must be typed double-spaced with wide margins on one side only of quarto or foolscap sheets, with diagrams shown separately. Photographs should be clearly identified on the back. Payment is made for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

K. W. ELECTRONICS . . . dx working is so much easier on SSB with a 'Viceroy'!

- ★ Complete SSB TRANSMITTER with Power Supply using SILICON RECTIFIERS
- ★ Highest standard Reliability, Stability, Carrier Suppression, Side-band Suppression
- ★ Outstanding audio "punch" due to A.L.C.
- ★ Requires no test-gear for setting up



The K.W. 'Viceroy' (Mark III). Price £142
(Extra ½ lattice filter £8)

- ★ BK keying
- ★ Suitable A.M.
- ★ Already in Service, Quick delivery
- ★ Employs Crystal filter—Extra ½ lattice filter an optional fitting, gives nearly 60db sideband suppression
- ★ Rugged Construction
- ★ 180 watts P.E.P.
- ★ Full TVI proofing

K.W. QUALITY EQUIPMENT*

KW equipment usually available from stock:—

- ★ **KW VANGUARD.** 50 watt Transmitter. A.M. and C.W.
- ★ **KW VALIANT.** Mobile and fixed station. Tx.
- ★ **KW 160.** "Topband" Tx. High level mod and BK C.W. (Series II available).
- ★ **"KW Match"** SWR Meter. Low and high Pass Filters. Microphones. Dow-Key Relays, etc.

Again Available:—

- ★ The famous **KW-GELOS** CONVERTER. Remarkable Bandspread and Stability. Self-contained Power Supply. 4.6 mc/s output. The "Rolls-Royce" of converters. Price £23 plus 10/- carriage.

★ THE KW "VICEROY" SSB EXCITER

Very SUITABLE FOR DRIVING THE P.A. of your A.M. transmitter. It is not difficult to change your Class "C" stage to a linear. Similar in appearance to the KW "Viceroy" but with self contained power supply. 8 watts Input sufficient to drive Linear 6146's, 1T21's, 4/125A, etc. Low impedance output. Full VOX control and anti-trip. £90 plus carriage

★ THE KW500 LINEAR AMPLIFIER

500 watt P.E.P. input, grounded grid P.A. Suitable for being by the KW "Viceroy" or similar transmitter. Including 1750 volt H.T. supply. £87. 10. 0 plus carriage

Main Distributors for

HAMMARLUND

your NEW Communications Receiver

• hallicrafters •

DRAKE GELOS • MOSLEY

Latest 2B + 2BQ + 2AC

(G209-R)

(CM-1)



HQ170

HQ170. Triple Conversion, selectable sidebands, full bandspread 6, 10, 15, 20, 40, 80 and 160 m. 17 tubes 100 kc crystal calibrator. Excellent performance. £184.

(Other models in stock including the latest HQ 100A, HQ 110, HQ 145X and HQ 180)

Make sure you buy a new Receiver that is "peaked to perfection." Our engineers take a pride in adjusting all imported Receivers to meet manufacturers specification.

We believe we have the largest turnover of imported Amateur receivers in the U.K. Our stocks are always changing, therefore, you can be assured that you get the latest Production model.

We stock:—

CDR BEAM ROTATORS AND INDICATORS, 220/240 volts

£18. 19. 0.

MOSLEY, Beams and Verticals.

K.W. TRAP DIPOLES

B & W PHASE-SHIFT NETWORKS, £2. 15. 0.

MCCOY 9 Mc/s S.S.B. FILTERS, £16. 10. 0.

Most available on easy terms.

EASY TERMS AVAILABLE

IMPORTERS OF U.S.A. EQUIPMENT

TRADE IN YOUR RECEIVER FOR A NEW ONE!

K.W. ELECTRONICS LTD., VANGUARD WORKS

1 HEATH STREET, DARTFORD, KENT.

Cables: KAYDUBLEW - Dartford.

Tel. Dartford 25574

The
SHORT-WAVE
Magazine

E D I T O R I A L

Mobile *It is already evident that this season is going to see the most successful |M activity and the biggest Rally attendances ever — but it is also clear that a certain amount of re-thinking is called for on the Mobile front.*

In the first place, even now not enough attention is being paid to safety; this does not mean driving, or even operating, safely but applies to ungainly LF whip fitments. Many of these are far too long, with loading coils that are too big and mountings not sufficiently secure. While rough-and-ready hay-wiring inside the home station is a matter for the personal judgement of the operator concerned, when out on the road it becomes a matter of the convenience of other people — to say nothing of aesthetic considerations.

Secondly, it seems high time that, for amateur |M working, a move should be made away from Top Band. While a fair proportion of mobiles are on two metres, it is obvious that far more use could be made of ten metres for mobile operation. This band is wide open for short-haul working at the sort of ranges now being obtained on 160 metres — moreover, a much simpler and far less obtrusive aerial system is involved. To most amateur mobiles who have contrived their own equipment, there would be no particular difficulty in building the gear for |M on 10 metres. With transistorised power packs using silicon rectifiers the battery load can be kept within reasonable limits.

Thirdly, it can be said that, in general, the neatest installations are the safest, as well as being the most efficient. This is not necessarily true in every case, nor does it follow that all the rather rough jobs one can see at Rallies are unsafe or ineffective — but where trouble has been taken in putting the equipment together, usually it will be found that proper attention has also been paid to the requirements of efficiency with safety.

It is just five years since, in this space (Editorial, June 1957), attention was first drawn to the fundamental importance of road safety in amateur mobile operation. With nearly a thousand |M's licensed in the U.K. in just about the same period, it is gratifying to be able to record not only that this principle is now well understood but (what is even more satisfactory) that there has been no known case of a major road accident in which an amateur mobile operator has been involved — and in a good hour may that have been said.

*Austin Fobler
G6FO.*

Two-Metre Sideband with the K.W. "Viceroy"

USING THE TRANSVERTER PRINCIPLE

WHILE many AT station operators now run a K.W. "Viceroy" CW/SSB transmitter, in one or other of its three marks—and the two-metre conversion discussed here is being used with a Mk. II—the VHF transverter principle can also be applied in the same way with any transmitter capable of giving stable output on the 14 mc band. This output can be either CW or SSB, but in the case of AM phone the PA at the VHF end is directly modulated in the usual way.

In other words, when transverting, the station HF transmitter is used as the driver for a conversion circuit operating (in this case) into the two-metre band. Since for ordinary CW or AM phone operation separate VHF transmitting equipment may already be available, it follows that the transverter idea is applicable mainly where it is desired (given an SSB transmitter in use on the HF bands) to get on two metres with Sideband phone, the CW facility being a side-issue—which brings us back to the "Viceroy" and the object of the present exercise.

The block diagram at Fig. 1 illustrates the general circuit arrangement, and shows how CW and SSB can be radiated on two metres with the "Viceroy" on 20 metres. Note, however, that by adopting this principle a further unseen dividend is being paid by the system—that of VFO control on the 144 mc band. The inherent stability of the "Viceroy" on 14 mc is such that not only can excellent SSB results be obtained on two metres, but also the great advantage of easy frequency changing—but it is to be hoped, and is expected, that any VFO changes will be strictly within the applicable Zone area! (see p.96, April SHORT WAVE MAGAZINE).

Transverter Circuit

At Fig. 2 is shown the actual circuitry involved, in which the oscillator chain is made to serve two purposes: (a) For the transverter

frequency change, and (b) As the oscillator section of the receiving converter. While this latter facility may not be required where a satisfactory 2m. Rx converter is already in use (in which case the Rx pick-up off L5 could be omitted), the point is that it is desirable to keep the oscillator running on "receive" anyway; this is because crystals in the overtone mode are liable to slight drifting on switching on, due to heating, and this is most undesirable when transmitting SSB phone.

In the model transverter built to this design, an 8750 kc crystal (Ch.388 in the FT-241A range) is multiplied to 131.25 mc through a 12AT7, the output being boosted by a 5763, V3 in the circuit; the 131.25 mc output is passed to another 5763 as an additive mixer (V1 in Fig. 2) with the 14 mc transmitter input, giving 145.25 mc at L3. An A.2521 in the cathode follower configuration is used as an isolating stage between mixer and output RF amplifier (not shown in Fig. 2)—which could be a QOV03-10 or similar, to drive a two-metre linear amplifier as a QRO PA, running CW or SSB to choice from the "Viceroy," or AM phone with a separate high-level modulator.

However, what we are concerned with here is getting the 14-144 mc conversion, using the arrangement of Fig. 2. If the circuit is built up carefully in unit form—crystal oscillator chain; 5763 amplifier; mixer; cathode follower—with proper screening between sections,

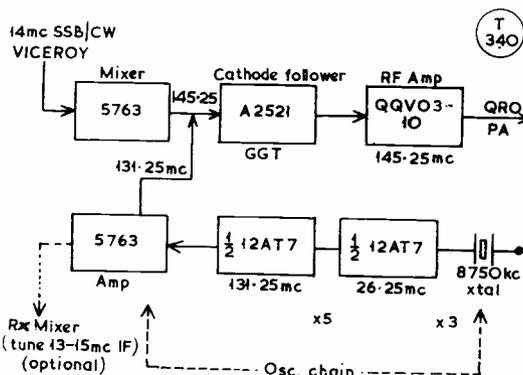


Fig. 1. Block diagram of the circuit sequence for obtaining two-metre Sideband phone using a K.W. "Viceroy" on the 14 mc band. From a conventional crystal-oscillator chain, an injection frequency of 131 mc is applied to the 5763 mixer which, from the 14 mc "Viceroy" input, produces a 145 mc SSB signal, passed on to a cathode follower (in this case an A.2521) as an isolating stage between mixer output and a 145 mc linear RF amplifier. As explained in the text, the 5763 oscillator-amplifier can also be used to give an injection frequency (at 131 mc) for the receiving converter, thus making the oscillator chain common to both Tx and Rx. In other words, the arrangement becomes a complete two-metre conversion unit, or transverter. The circuit is shown in Fig. 2, with values.

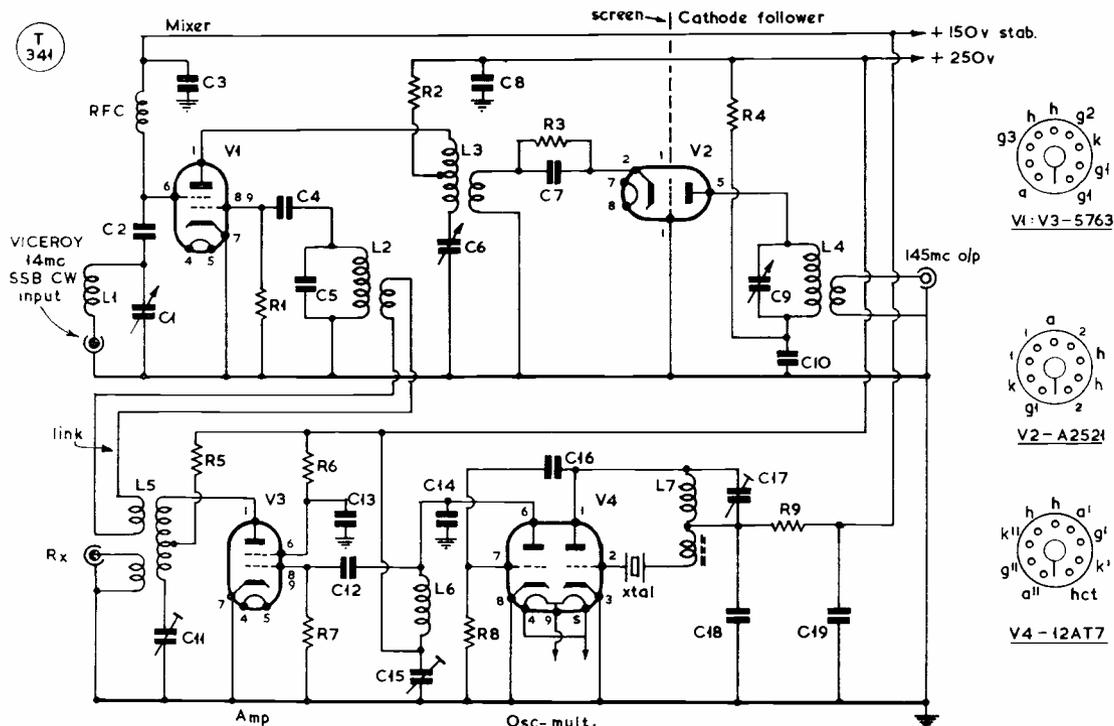


Fig. 2. Circuit evolved from the block diagram shown in Fig. 1, which makes it clear how the conversion is obtained. The 14-131 mc mixing stage V1, a 5763, is isolated from the 145 mc final output by the cathode-follower V2, in which an A.2521 is used. To obtain sufficient injection power, a 5763 amplifier V3 follows the conventional 12A7 8.75-131 mc crystal oscillator V4. Since for reasons explained in the text it is desirable (but not essential) to keep the oscillator running on "receive," it follows that some of the V3 output can usefully be taken as the injection frequency for the receiving converter, giving a tunable IF of 13-15 mc in the main receiver. This makes a neat and economical arrangement of the whole transverter unit. While the CO and injection frequencies actually used need not be those shown for the general design, it is clear that they must be chosen to avoid beats that would fall in the receiver tuning range.

and a liberal use of .001 μ F ceramic feed-through's wherever applicable, there should be no trouble with unwanted beats. The frequency relationships chosen are such that provided the tuned circuits are made selective, with adequate isolation (given by the A.2521 stage) between mixer and output, no spurious emanations should appear.

In setting up, the output from the SSB driver-Tx should be adjusted to give no more than enough mixing in the V1 5763 stage. Obviously, careful checks must be made all through to ensure that the correct frequency appears at the cathode of V2 and, with a 145 mc RF amplifier running under drive from the A.2521, bench tests should be carried out to make sure that the SSB product is clean and free from "squiggers" in or around the two-metre band; at the first going-off, the thing might well give the well-known Egyptian bag-pipe effect, and this would almost certainly be due to too much Tx drive. As already explained, in the interests of SSB stability the

Table of Values

Fig. 2. The 14-144 mc Transverter Circuit

C1 = 5-60 μ F	R8 = 100,000 ohms
C2, C3, C8, C10, C13, C14, C19 = .001 μ F, ceramic feed-thru, as applicable	RFC = 2.5 mH RF choke
C4, C16 = 50 μ F	V1, V3 = 5763
C5 = 5 μ F	V2 = A.2521
C6, C9 = 3-10 μ F, var.	V4 = 12A7
C7 = 0.1 μ F	Xtal = 8750 kc (Ch.388)
C11, C15 = 2-10 μ F, preset trimmer	L1 = to tune 14 mc with C1
C12 = 25 μ F	L2 = to tune 130 mc with C5
C17 = 3-30 μ F, trimmer	L3 = to tune 145 mc with C6, and centred link
C18 = .01 μ F	L4 = to tune 145 mc with C9, and link o/p
R1 = 33,000 ohms	L5 = to tune 130 mc with C11
R2, R5 = 100 ohms, w/wound	L6 = to tune 130 mc with C15
R3 = 200 ohms	L7 = to tune 26 mc with C17
R4, R9 = 1,000 ohms	
R6 = 10,000 ohms	
R7 = 22,000 ohms	

CO section should not be switched off for "receive."

Having once set up the transverter and its associated RF amplifier, either CW or SSB phone is obtained by operating the "Viceroy"

in the usual way for these two modes—and the probability is that once having got going on two metres with Sideband phone, AM will never be used, for it is an extraordinary fact that not only is SSB much easier to tune on VHF than might be supposed, but a good Sideband transmission sounds stronger than its associated CW signal. And if a QRO linear is eventually achieved at the VHF end, a lot of heavy audio equipment would be required for full control under AM conditions.

AERIAL TUNING FOR TOP BAND

EFFICIENT COUPLING SYSTEM

THOSE who until now have been content to transmit on 160 metres with a length of wire pushed into the Ae. socket of the transmitter, leaving it to the π -tank network to take up the slack, would probably find a marked improvement in radiating efficiency by changing to the arrangement shown in the diagram.

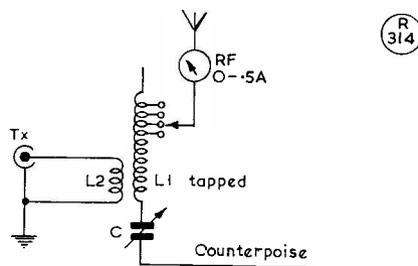
A coil L1 of about 70 turns of 22g. enamelled, close-wound on a 1½-in. diameter former, should have taps taken out every two turns for about one-third of its winding length—this will give 11 or so tapping points. L2 is a 5-turn link winding over the earthy end of L1, and it is the coax lead to this link that is plugged into the Tx, or to the aerial send-receive switch. The condenser C is a 500 $\mu\mu\text{F}$ BC-type variable.

Instead of a direct earth connection, a counterpoise is used on the lower side, and this is run in whatever way may be convenient. In theory, a counterpoise should exactly balance the aerial—in practice, it almost never can in an amateur installation, but experience has shown that a counterpoise run in almost any direction can often give much better results than a direct earth.

With an aerial of anything from 90-150 ft. in length, and a counterpoise of 50-90 ft., it should be possible to find the correct aerial tapping point to tune the system to resonance—this is the object of the taps, and the coil can be trimmed to the final size when the aerial tap has been established. The correct point is when maximum RF is shown in the ½-amp. aerial ammeter with resonance tune on the variable condenser and 10w. input to the transmitter, the π -tank in the Tx, of course, being kept at resonance while the aerial tuning adjustments are made. Once they have been found for whatever area of Top Band the operator favours, the tune will hold over quite wide changes of frequency.

When the system is right on tune in this way, not only will radiating efficiency be found to have improved (compared with any system tuned only on

Those interested in VHF and circuit design will see immediately that the transverter principle can be applied in a variety of ways, from LF to UHF, with different frequency relationships and driver-transmitters—and we acknowledge the Midland Amateur Radio Society's *News Letter* for May 1962 as the source of the inspiration. Incidentally, if you want to hear a two-metre transverter system in operation, using a "Viceroy" as the Tx driver, listen to G3BA of Sutton Coldfield.



Showing the circuit arrangement discussed in the text. By using a counterpoise, radiating efficiency on 160 metres can often be considerably improved compared with a direct earth. In amateur practice, the counterpoise need not be directly underneath the aerial, nor must it be of the same electrical length. The coil size suggested, with the taps taken, will accommodate wide variations in aerial and counterpoise dimensions.

the Tx tank against ground), but there will be an additional bonus on the receiving side, in that signals will come up considerably. Hence, the station change-over should be arranged to swing the aerial link between Tx and Rx.

A rather simpler version of this circuit (with L1 untapped) has given G3PLB (London, N.22) much improved results on Top Band, and was suggested by him in a recent issue of the Southgate & Finchley group *Newsletter*.

AMENDMENTS AND CORRECTIONS

In the circuit on p.188, June, R2 should have been shown as variable, as stated in the paragraph of values below the diagram. Going back to the May issue, we are informed by the M-O Valve Co., Ltd., that in the circuit on p.124, the "Voltage-Regulated Power Supply," it is advisable to use 150-ohm resistors in each cathode of the 6080, V3; this is in order to assist in the equal sharing of current when the triode sections are paralleled; failure to take this precaution can lead to unsatisfactory valve life.

Going further back still, to the February issue, and the circuit on p.658, G3BAK explains that following some correspondence on the subject of modulating the klystron, it should be made clear that the square wave must be of sufficient amplitude to sweep from the operating point to the peak of the mode.

Modern Receiver for the Amateur Bands

FURTHER CIRCUIT POINTS —CONSTRUCTION—AND SETTING UP

Part II

J. D. HEYS (G3BDQ)

The first part of this interesting practical article appeared in our June issue, and it will be necessary to refer back to it to follow the discussion here, which concludes the treatment.

—Editor.

BEFORE proceeding further, attention is drawn to the following amendments to Part I of this article: In the table of values on p.183, R7 (1000 ohms) and R30 (250K, 1w.) should have been included; also, on the same page, the tuning range of the variable frequency oscillator ought, of course, to have been given as 1955-2465 kc, and not as stated.

As already explained in Part I, provision has been made for both carrier and product detection. When SW3a is in the SSB/CW position (see Fig. 2, p.181, June issue) HT is applied to the 7360 valve (V8). The secondary of the final IF transformer IFT4 is also connected to one of the beam-deflecting electrodes (pin 8—see Fig. 2, V8) of the product detector via SW3b. Use is made once again of the cathode tap oscillator circuit and the 7360 valve provides its own BFO injection. L11 was made from a midget LW aerial coil of the type sold for crystal sets, and a few turns were removed to make it tune to 460 kc when using the capacitors indicated (C65 and C66). An OA79 semi-conductor diode, D1, is connected from the control grid of V8 to earth and this prevents the grid approaching earth potential. (Without this diode there would be considerable distortion.) Audio output from pin 6 of V8 is taken

to the audio gain control R40 through a simple RF filter comprising R42, C54 and C55.

With SW3 in the AM position V7b operates as an infinite impedance detector, which is really a kind of cathode follower. The blocking capacitor C38 is necessary owing to the possibility of HT being applied to the grid of V7b should SW3 not be of the break-before-make type. Audio output from the cathode of V7b also runs through the RF filter network.

The grid and anode of V7a are strapped and connected to the secondary of IFT4 through a blocking capacitor C37. A fixed bias derived from HT is applied to the cathode of V7a to prevent operation of the AVC circuit when receiving weak signals. The time constant of the AVC system is arranged for a slow decay which enables satisfactory reception of SSB and CW signals and renders S-meter readings of these fluctuating signals an easy matter.

The Output Stage

The usual precaution of running leads to and from the AF gain potentiometer R40 in shielded and earthed wires is observed to prevent instability and hum. The triode section of V9 is a normal voltage amplifier which is RC coupled to the pentode control grid. By using a 500-ohm potentiometer R35 in parallel with R36 it is possible to take off a positive reference voltage for the S-meter circuit. This voltage should be equal to the no-signal cathode

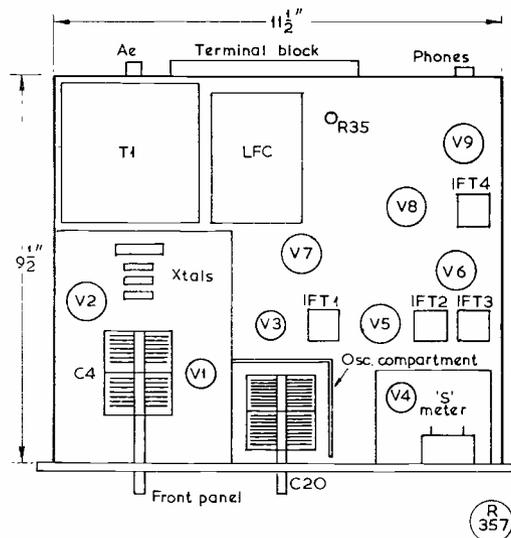


Fig. 3. Layout above chassis and arrangement of the main items in the G3BDQ receiver—compare with one of the photographs. This drawing is not to scale and is intended for suggestion only.

voltage of V6, which is about 2 volts. Under these conditions the S-meter will read zero, although in practice it is better to set R35 to give a meter reading of S2 for more realistic reporting. Signals strong enough to overcome the fixed AVC bias on V7a will cause a reduction in the voltage on V6 cathode and bring up the S-meter. R41 across the meter enables the operator to set things so that the strongest signal likely to be encountered cannot pin the needle against its stop.

In the circuit diagram on pp.180-181 of the June issue the headphones and speaker are arranged to operate together. Should phones-only reception be required a shorting switch can be wired across the output transformer secondary. R34 limits the anode current of V9 and whilst hardly affecting the power output greatly reduces the heat dissipation of the valve.

Power Supply

A C-core mains transformer acquired cheaply on the surplus market provides power for the receiver; this type of fully screened transformer seems to be much more reliable than the normal drop-through variety and the writer has never had one break down. The 5-volt rectifier filament winding is not used because the silicon diodes D2 and D3 provide HT rectification and this all helps to lighten the load on the primary winding of T1. After several hours' operation the transformer remains cold to the touch. C67 and C68 are high voltage disc ceramic capacitors and help to reduce any mains borne interference. Two one-amp. fuses are used on the input side and a 200 mA pea bulb serves to fuse the DC output. This also affords some protection to the silicon diodes should an accidental short circuit occur.

Two 6.3 volt heater windings are used, one for each half of the total current load. By having a choke input smoothing circuit the output voltage is 200v. which is adequate for the valve types used in the receiver, and regulation is improved. SW3d and SW3e are wired to give "Off" and "Standby" switch positions, centre tap switching being employed.

Construction

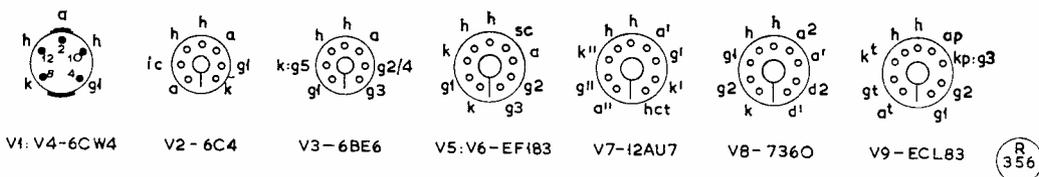
The receiver is built around a vented cabinet measuring 13in. x 9in. x 10in. deep. This item, together with a matching 2in. deep aluminium chassis, was supplied by E. J. Philpotts Metalworks Ltd., and a special 1/4in. aluminium panel was also supplied to order by the same firm. This type of Philpotts cabinet is perforated for approximately two-thirds of the total top and side areas. If ordering a similar cabinet it would be as well to ask for a 1 1/2in. slot to be cut out at the rear to allow easy access to the terminal block and aerial socket.

Side brackets were fitted to strengthen the chassis assembly and to minimise panel movement. Fig. 3 shows the location of the main components above the chassis, and it will be seen that despite the bulk of the mains transformer and smoothing choke there is no crowding—and see rear view photograph. This can be partly explained by having worked in three dimensions, the front-end and Q-multiplier units being "above deck". A large section of the chassis beneath the front-end unit was cut away to allow easy access to the cores of the pre-selector coils.

The underside view of the receiver reveals a U-shaped aluminium screen behind which are housed the detector circuits and SW3. It is important that the BFO wiring be kept within this screen to prevent BFO voltages leaking back ahead of the product detector. Should this happen it will give rise to a considerable S-meter reading when the BFO is running.

Normal practices should be observed when wiring the receiver. Short direct leads, and the positioning of resistors and capacitors parallel to the chassis sides all help to prevent a rat's-nest appearance. Since the receiver was built some small 0.1 μF ceramic capacitors have become available, and these could conveniently replace the somewhat larger paper types used.

A word perhaps should be said regarding the finish and appearance of the front panel. Many amateurs produce efficient and reliable equipment which is unfortunately spoiled by an untidy panel layout. The first consideration



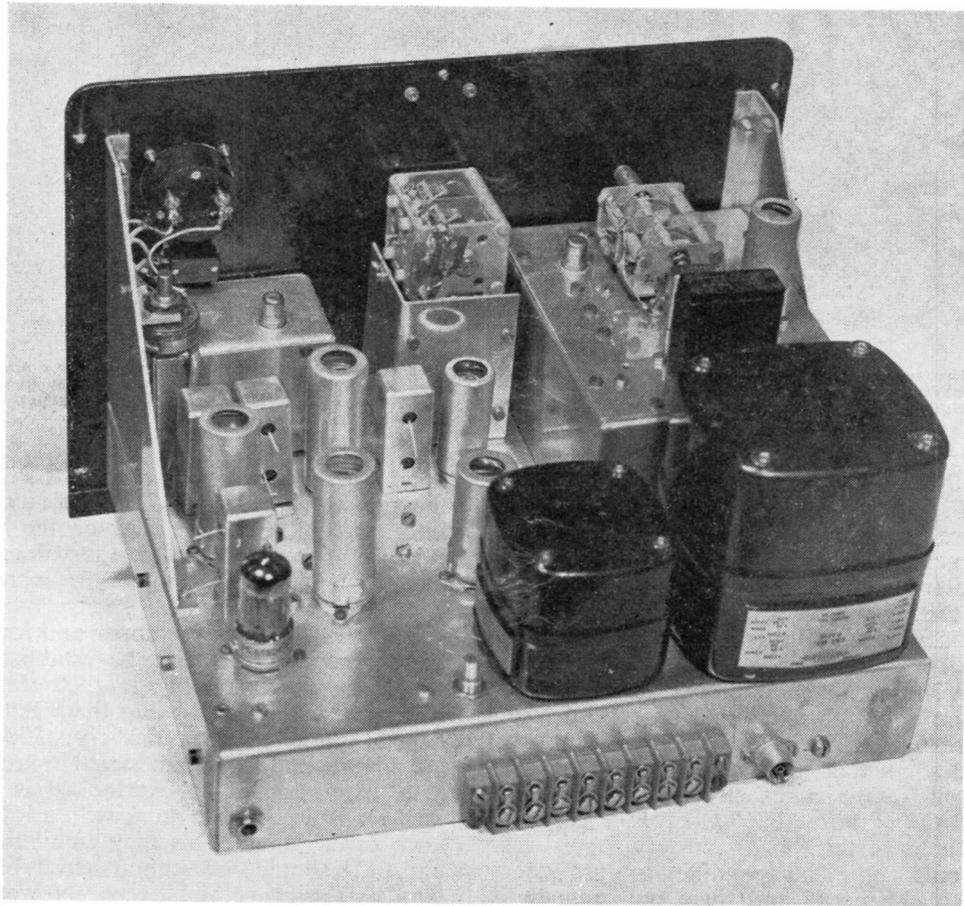
Base connections for the valves used in the circuit of the Receiver, pp.180-181, June.

is the main tuning dial. Space was at a premium when designing this receiver so thoughts of horizontally scaled slide rule dials were dismissed and a Muirhead instrument vernier dial and slow motion assembly was used. This item is available on the surplus market at a small fraction of the cost of more showy yet often less effective dials. With the Muirhead, logging positions to one part in 1,000 can be noted, and the action is silky and positive with no trace of backlash. The remaining controls are arranged along horizontal lines and help to give (what is hoped is) the professional touch to a piece of home-built equipment. Chrome-plated bolt heads and lettering transfers add finish to the general appearance.

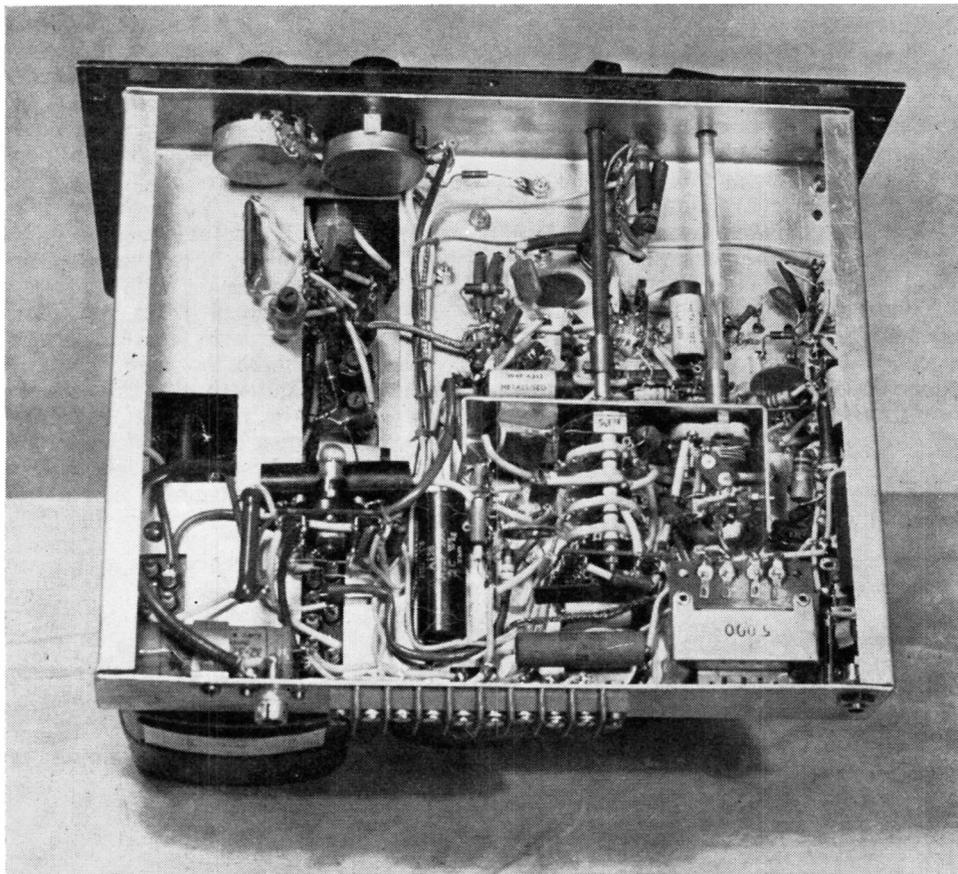
Initial Testing

Assuming that the front end unit has been

built along the lines suggested, and tested, it can be fixed into place on the main chassis. The second mixer and IF stages can now be tested, and for this purpose an old BC-453 or "Q-Fiver" may be pressed into service. With only V1, V2 and V3 in position the BC-453 is loosely coupled to V3 anode and tuned to 460 kc. Signals should be heard, and the Top Band tuning range is best suited for this operation, there being a number of identifiable stations on at all times. If all is well V5 can be inserted and the BC-453 coupled in turn to its anode. Most IF transformers sold these days are pre-tuned to 460 kc or 465 kc and very little adjustment of their cores should be needed. If any instability is noticed this must be righted before proceeding further. V6 is tested similarly, and you must remember to keep backing off the gain of the BC-453 as you work along the IF strip! It



Rear view of the 9-valve double-conversion amateur-band receiver designed and built by G3BDQ. The C-core transformer and choke are both inexpensive surplus items. All parts used, including the latest valves incorporated in this design, are catalogue items obtainable from Amateur Radio supply houses.



Underside view of the amateur-band receiver, showing the screened compartment for the product detector and BFO circuitry, using a 7360 in this position. Extension rods connect the function switch (SW3 in the main circuit) and the BFO control with their knobs on the front panel. The output transformer T2 can be seen in the lower right-hand corner of the chassis, and the pea-bulb serves as an HT fuse.

may be that the top-coupled windings of IFT2 and IFT3 cannot be pulled on to frequency with core adjustments. This is because IF transformers are designed to work into normal valve inter-electrode capacities, and should this be the case some extra capacity will be required across the IF transformer windings in question.

V7a, V7b and V9 should work satisfactorily if they are wired correctly and no special test procedures are needed. The BFO circuit must be tuned so that at mid-setting of C65 (pitch control) it oscillates exactly at the IF of 460 kc. Once more the "Q-Fiver" can be used to achieve this.

It should now be possible to use the receiver on an aerial and there only remains the correct setting up of the S-meter circuit and the testing of the Q-multiplier. The latter must be tuned to the centre of the IF pass-

band by adjustment of its coil core and by the pre-set capacitor C47. V4 should just go into oscillation at one end of the track of R33. If it fails to oscillate the values of R30 and R31 may be changed to increase the anode voltage of the 6CW4 valve.

The BFO settings for upper and lower side-band reception can also be established, and the front panel suitably marked for future reference, remembering that these settings will depend upon whether the crystal oscillators are higher or lower than signal frequency.

A point not to be overlooked is that the receiver is designed to work with a low impedance aerial input. This may entail the use of an ATU should the station aerial be a long wire or the proverbial "piece of wet string." The receiver will certainly work with a bit of wire tucked into its input socket, but first-class results cannot be expected when used in

this way.

Conclusion

A muting system has not been incorporated in the design as shown here, for most amateurs have their own individual send/receive systems and can adapt the circuit to suit their particular station switching arrangements.

Although many receivers have noise-limiting devices or circuits, the writer has never found it necessary to use them at his QTH except when operating on ten metres or the VHF bands. If the constructor has a particularly noisy location there are many effective and tried circuits which could easily be incorporated in the design.

Whether the whole receiver is constructed or whether instead only certain sections or ideas are borrowed from this article, the writer feels sure that the results obtained will be well worth the effort. Only the usual hand tools were used for the constructional work and a small square-topped wooden stool served as a workbench. This was because of the normal state of the real workbench, it being cluttered with numerous pieces of gear finished, unfinished or abandoned!

The completed receiver has now taken over the function of main station receiver; the trusty AR88 has been relegated to stand-by and other secondary uses.

(Concluded)

Miscellany

INCIDENTAL INFORMATION, AND ITEMS OF TOPICAL INTEREST

(A new feature, in which almost anything may appear)

“Great is the alarm and despondency when it is learnt that Old Fred (who has been fiddling with radio for the past twenty years and is also a qualified electrical engineer) has failed the R.A.E. How often do we hear of such cases? Far too often, I fear. It is almost impossible to convince Old Fred that the examiners are not ganged up against him or that someone has seen to it that he fails. After all, he repairs wireless sets and electrical gadgets for his living, doesn't he? To add insult to injury, that half-baked spotty long-haired youth of the last twelve summers who lives next door is now sporting a VQ4 callsign!”
(QTC, East Africa)



“The times in which we live are made dangerous by the achievements of technology. The dangers can be averted only through the intelligent use of the same technology. . . By invoking the technologies of mass production and distribution along with those of communication, anything we choose and resolve to accomplish we can accomplish. The choice is ours and it is very simple. Either our technology will blow us apart, or it will blow us together.”
(Dr. R. H. Wright, *New Scientist*)



“Are you a good operator? Of course, you say, but are you? Do you converse with a fellow amateur or do you like the sound of your own voice or keying for long-winded overs?”
(MARS News Letter)



FOR SALE: Carrier and One Side Band.
(Advt. in *Wolverhampton News Letter*)



A Law about Antennas: Wherever five amateurs are gathered together, there will be at least seven antenna experts, of whom nine will express opposite views. He who knows least about the subject will speak at least 20 dB louder than the others.

(Letter from G8ON)



Top-Band three-element beams? Those who think they are not feasible would be interested in an article on “LF and VLF, A New Challenge” in the May 1962 issue of *CQ*. It is concerned mainly with the difficulties of undersea communication, but makes the point—which will astonish many who have never given it a thought—that the length of a half-wave at 2 mc is 234 feet in air but only 1.64 feet in water! This is, of course, because the relation between frequency and wavelength is completely different in water. (An aerial 33 feet long, submerged in water, corresponds to a wavelength of 46,800 feet—roughly 15,000 metres—in air.) It is suggested that this might be a fruitful field for amateur investigation.



Sunspot activity records from 650 BC? Impossible, obviously, but a paper communicated to the *J. Brit. Astron. Ass.* by Dr. D. J. Schove discusses a record of auroral numbers from that date, from which the mean sunspot intensity for each decade can be estimated. A table of these decadal values, from the 5th century BC up to the present decade, indicates that the current figure is the highest ever recorded and that the previous highest was in the seventh decade of the 14th century! On the basis of this long-term study it is hoped to calculate agreement co-efficients between auroral numbers, the pressure

parameter, and indices of rainfall, temperature and tree-ring growth. Although the eleven-year cycle is well established, there is some disagreement as to whether the greater cycle is of 78, 90, 165 or even 200 years. The study continues (as well it might!).

(Data forwarded by G3NWT)

— • • • —

"I find more and more entries in my log marked s.o.d. (switched off in disgust)."

(G6--, on 80-metre phone)

— • • • —

"Everyone realises that East and West Germany are two separate and distinct countries (plus wall) and DXCC acceptance of the obvious would not drastically alter the course of history. Politics are not supposed to be a part of Amateur Radio. . . A real honey has just been put on the list—the neutral zone of Kuwait. Here is a place, presumably, having no Government, no nothing. . ."

(Yasme Newsletter, KV4AA)

— • • • —

"At Southampton Magistrates' Court recently, a pirate radio station operating in the amateur bands was fined for the *second* time. The Magistrates, however, refused to recommend the confiscation of the equipment."

(QUA, Southern Hampshire)

— • • • —

"Most of the crop of tunnel diodes on the market have voltage ratings best stated in millivolts. This is coupled with current ratings in the milliampere range. Several companies have made a break-through, how-

ever, and one can now buy off-the-shelf tunnel diodes with ratings of ten amperes or more . . . promises are made of currents in hundreds of amperes being available soon. Just now the writer cannot think of any really good amateur application of a device that operates at 100 amperes with 380 millivolts potential."

(W5EHC, in *The Collector and Emitter*, Oklahoma)

— • • • —

"Europe, gentlemen, is not located in South America, nor is it on Long Island or in New Jersey; it is not in Central America nor is it in Ohio. It is located 'way across the Atlantic Ocean directly north-east of my present QTH, and I want everybody to understand that. Now, for the Europeans *only*, nobody transmits until I say either QRZ or Go . . . now, Europeans only . . . GO!"

(HK3LX, operating K54BF, Serrana Bank)

— • • • —

"That beacon on 1900 kc is sited at Portsmouth and is a surveying aid, likely to go off any day now, but another at Norwich will soon take its place."

(Enfield Newsletter)

— • • • —

"Why not leave out the whole idea of QSL cards and substitute certificates? A QSO with me will bring you a beautiful certificate, just provided you remember to send me a large s.a.s.e. and the dollar (oh, yes, and your own QSL)."

(Letter from OH2YV, in "QST")

— • • • —

• • • *The Mobile Scene* • • •

RALLY REPORTS AND PICTURES — EVENTS IN FAIR WEATHER AND

FOUL — 1,128 MOBILE LICENCES IN FORCE — NEW MOBILE

GROUP FORMED — FORTHCOMING MEETINGS

THIS time, we are able to cover the Rallies held at Hunstanton, Luton and Longleat, where similar events have been organised in previous years. At each, the attendance was up on last year—in spite of shocking weather at Luton—though this may not be so surprising when it is realised that there are now 1,128 mobile licences in issue (G.P.O. figure as at May 31, 1962). At the end of 1961, the total was 1,045 compared with 929 in December, 1960. Though this growth-rate appears to be slow, it is nevertheless significant, for the reason that in Amateur Radio generally there is a considerable turn-over of licensed AT stations, which makes the nett increase smaller than one might suppose; the point here is that the percentage growth in /M licences is a good deal greater than the increase in total amateur licences held.

The formation of a new group—the Northern Amateur Radio Mobile Society, under the presidency

of G2VO, with G3LHQ as hon. secretary—is a reflection of the keen interest there is in amateur /M operation. The N.A.R.M.S. organisation is already on a working basis and their first national effort—the Northern Mobile Rally at Harewood House—is to be held on September 2 (*see* calendar). Those interested in joining the Northern Amateur Radio Mobile Society are invited to apply for details to G3LHQ (QTHR), the sub. rate being 7s. 6d.

For the **Hunstanton Rally** on **May 20**, the weather turned out bright and sunny, in spite of a shocking forecast. The 30 mobile-fitted vehicles booked in were all on Top Band, and G3ANM/P had a busy time on the talk-in. A feature of this event was a D/F contest, with the hidden transmitter operated by G2NJ, a very well-known call on 160m. First home was G3MMS. Other prizes were for the mobile

travelling the longest distance (G6CW, Nottingham); smartest rig (G3FUR, 2m., Stamford); most versatile /M equipment, (G3ARD, Spalding); and neatest installation (again G3MMS, Boston). The meeting was organised by the Peterborough Radio Society, with G3KPO and G3PTC as the "guiding lights." From their point of view, the Rally was a "great success and better than last year."

Sunday, May 27, for the **Luton Rally** in Stockwell Park, started as a day of rain and storm—and stayed that way till it was time to go home; indeed, during one of the afternoon's thunderstorms, houses in Luton were struck by lightning! Nevertheless, some 35 /M's were present, 30 of which were worked on 160m. by G3MGY/A on talk-in, and two on 145 mc by G3JZW/A. The organisers (G3JZW, G3MGY and SWL Bavister of the Luton and District Amateur Radio Society) express themselves as "very pleased (and thankful!) to see so many turn up in about the worst Wx possible." Among those present were G3OSS/M, and F8MX with G3HRH, also from



G3CGQ (left) and G3OS/M at the Luton Rally on May 27. G3OS/M came from Gainsborough, Lincs., and is mobile on Top Band.

London. GM3PLL/M looked in off the M.1 on his way through.



Study in concentration—G3MMS (Boston, Lincs.) tuning his ferrite D/E aerial for the transmitter hunt organised by the Peterborough Amateur Radio Society at their Rally at Hunstanton on May 20. Incidentally, G3MMS was first to find the hidden Tx.

Quite a different weather situation developed for the popular West of England Mobile Rally at **Longleat on June 17**. It was a glorious day, with the great house fitting perfectly into its lovely surroundings—and, of course, there was a very good turn-out, there being about 60 vehicles fitted /M, with 190 signatures in the visitors' book; the total attendance must have been around 300. G3CHW/A worked 31 mobiles on 1880 kc, and six /M's raised G3GYQ/A on two metres, the best of these 145 mc QSO's being with G3JXN/M when near Andover. The prize for the longest distance travelled, to and from Longleat on the day, went to G3PRT/M, Orpington, Kent. Winner of the *concours d'elegance* was G3OUK/M, Bristol. Certain starting-up difficulties with G3CHW/A, due to generator trouble, meant that the field-strength measuring test had to be cancelled, and there was also some confusion as to which particular /M was entitled to the prize for "longest distance worked to Top Band control." Naturally, the organisers very much regret this, and hope it will be accepted and understood as just-one-of-those-things—we all know how temperamental petrol-electric sets can be. Among the many /M personalities present was G3JEQ/M (Great Bookham, Surrey), who is one of the very few equipped for mobile operation both on Top Band and two metres—indeed, he had just returned from a short foray through the Welsh counties, during which both bands had been worked; his car accommodates not only the gear, but also the luggage for his xyl and daughter, who were with him. The two-metre aerial is a halo, with a loaded whip for 160m., and he also carries a telescopic mast (see p.122, May SHORT WAVE MAGAZINE) which can be quickly set up under /P conditions either to elevate a long-wire or hold up a small two-metre beam. Incidentally, G3JEQ/M uses the transistor two-metre converter described by G3JAM in the December, 1961, issue of the *Magazine*; with this,



An impression of Longleat, the setting in which the West of England Mobile Rally was held on June 17, in fine, warm weather. A magnificent house, fronted by a lake, stands in a lovely, well-kept park. The property is owned by the Marquis of Bath, and has been in the family for many generations.



G3LZR/M, Romford, Essex, with his motorcycle combination, on which he journeys to many of the Rallies; he was at Longleat on June 17. His gear is on single-switch control; he has a transistorised speech amplifier and all home-built equipment; he can operate while motoring; and he gets ranges up to 20 miles under actual /M conditions.



The Marquis of Bath, owner of Longleat, made a short speech of welcome outside the reception tent for the West of England Mobile Rally on June 17.

G3JFH/M from Cheltenham, a regular Rally supporter, was at Luton on May 27 (and at Longleat on June 17). He radiates a very potent signal on Top Band and has a neat aerial mounting on his Morris Traveller. The main whip as fitted is for DX, and the smaller one is a loaded ferrite rod for local working!





GM3PLL/M at the Luton Rally. His car is an MG, he uses a Mohican for reception, and the Tx is a Minimitter. The loading coil on the whip is the "Chinese Hat" design by G3BMN, as described in the Magazine for August, 1961.

Rally pictures from Luton and Longleat



An impression of the line-up at the Luton Mobile Rally, May 27, which brought in quite a good attendance in real thunderstorm- and-gumboot weather. In spite of the dreary conditions the mobiles totalled about 35.



Two Amateur Radio notabilities at the West of England Mobile Rally — left, Louis of G3EHY, Banwell, Som., who must be well known either by QSO or by reputation to practically everybody on VHF in the U.K. On the right, old-timer G6ZR of Bristol who, in his day, was one of the finest CW operators on the amateur bands, with a perfect, rhythmic fist. He has not been very active of recent years, but keeps up his callsign and his interest.



At Longleat on June 17, communication between the Top Band talk-in station and the two-metre site at the top of the hill was maintained by G3INZ of High Wycombe (with microphone) using his VHF portable gear, the aerial being the halo on the roof of the car. Also in the picture is G3OOS.

while out in GW during the few days before June 17, he heard ON4BZ and worked several stations in the London area, including G3OSS and G5MA. Another well-known mobileer at Longleat was G5PP/M, demonstrating a transistorised two-metre Rx checker consisting of no more than an OC44 in a CO circuit, which gives a healthy beat in the 144 mc band—just the thing for making sure the converter is still working. Among the old timers seen round the park were G2IK, G5UH, G5YN and G6ZR; the Yeovil group had come over in their minibus; G3EHY was there, making personal two-metre contacts; G3MSS and G2FUX discussed the importance of safety in mobile installations, and were probably the only two on the ground who are /M on 10 metres . . . and many others had come with something interesting to say or to show. Once again, Longleat was a great success, and much credit is due to John Tanner, G3NDT/T, and his colleagues of the Bristol Group for making it so.

By the time this appears in print, the Worthing bucket-and-spade party, the A.R.M.S. meeting at Barford St. John and the Bridlington rally, will be over—we hope to be able to report them in our next. In the meantime, here is the Calendar of Forthcoming Events:

July 8: North-Eastern Mobile Rally, at Bents Park Recreation Ground, South Shields, Co. Durham, with G3DDI on 1980 kc from 11.0 a.m. to work incoming mobiles. Competitive events for /M's and all visitors will start from the Ground at 2.0 p.m. On the day of the Rally, from 0001 BST onwards mobileers are invited to work, on Top Band only, as many other /M's as possible, and to bring their logs for scrutiny; a prize will be awarded for this contest. Light refreshments will be available on the site, for those not wishing to picnic. G3KZZ (*QTHR*) is hon. secretary of the organising body, the South Shields and District Amateur Radio Club.

July 14: On a *Saturday*, the Southern Counties Mobile Rally is to be held in conjunction with the annual Southampton Show and Exhibition—this is an experiment, as in previous years the Rally has taken place at Beaulieu, on a *Sunday*. The site this time is Southampton Common, on the A.33, opening at 10.0 a.m., with the talk-in stations on Top Band and two metres both signing GB3SS, frequencies 1880 kc and 144.14 mc. Refreshment marquees and bars (all-day licence) will be open in the Show grounds, and they tell us there will be adequate tented cover if the weather turns nasty. There will be the usual competitions; a free prize draw; an exhibition staged by the Southampton Group, in a separate marquee; and a special car park for visiting mobiles, for which stickers can be obtained on request from: A. R. Partner, G3HKT, 159 Burlesdon Road, Sholing, Southampton; these stickers give free entry to the park. The Southampton Show itself is in the nature of a local agricultural, horticultural and handicrafts

exhibition. The Rally in connection with the Show is being organised by the Southampton (Amateur Radio) Group, and further details can be obtained from: L. Daish, G2FGD, 7 Bracken Lane, Shirley, Southampton.

July 15: Harlow and District Radio Society Mobile Rally, at Magdalen Laver, 4 miles S/E of Harlow, Essex. Top Band talk-in will be by G3LIT. We have no other information, but those wanting further details can apply to: B. H. Wynn, Black Cat, Abbess Roding, Ongar, Essex (*Tel. Matching 265*).

July 15: The Hell-Fire Mobile Rally, to be held at West Wycombe Estate—the home of Sir John Dashwood, Bt., premier baronet of the United Kingdom—a few miles to the west of High Wycombe, on the A.40, London-Oxford. Besides the elegant house, there is the church on the hill, the picturesque village of West Wycombe, and the Hell-Fire Caves, in which in bygone times black magic was practised and invocations made to the Evil One—so it should be quite an interesting *Sunday* afternoon! Talk-in will be by G6IF/A on 160m., and it is hoped to have a two-metre station in operation. For ordinary straightforward information, with no black magic attached, apply: P. J. Perkins, G3OUV, hon. secretary, Chiltern Amateur Radio Club, Fair Acre, *between 47/49* Priory Avenue, High Wycombe, Bucks.

For the Rally events listed below, further details will be given in the appropriate issues—organisers please note that the closing date for August is *July 13*, and for September it is *August 17*.

August 19: Annual Rally, Derby and District Amateur Radio Society, Rykneld Schools, Derby.

August 26: Stockport Radio Society Mobile Rally, at the Pavilion Gardens, Buxton, Derbyshire.

September 2: National Rally organised by the Northern Amateur Radio Mobile Society at Harewood House, nr. Leeds, which is intended to be a regular event, to be held on about the third *Sunday* in May from next year onwards. Information about N.A.R.M.S., and the national Rally, can be obtained from: B. Crisp, G3LHQ, Ashmount, Moorhouse Lane, Birkenshaw, nr. Bradford, Yorkshire.

September 9: Rally organised by the Thames Valley Amateur Radio Transmitters Society.

September 16: Annual Lincoln Hamfest and Mobile Rally, organised by Lincoln Short Wave Club.

The pattern of Rally events has not changed much over the last seven years. Most of the mobile activity—about 90% of it, in fact—is still on Top Band. This can be traced to the influence of the ZC1 Mk.I/II equipment, which originally was about the only apparatus available on the surplus market suitable for /M operation. It happened that the ZC1 could be applied most easily to 160 metres, and, though practically nobody nowadays uses a

DX COMMENTARY

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

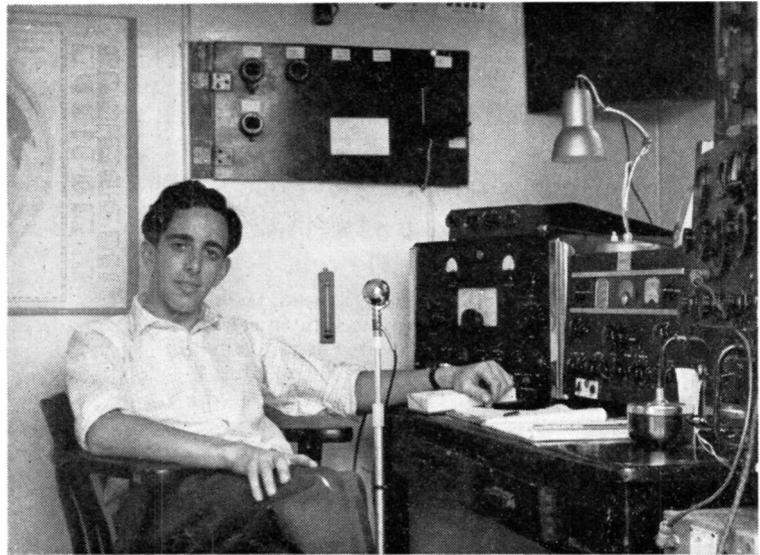
SUMMER conditions now seem to have taken over, with the usual result—a real plague of short-skip on the HF bands. Even 21 and 28 mc have been full of it, at the expense of most of the former DX. The 14 mc band carries most of the long-haul traffic now, and the short-skip there is no worse than usual.

The marvellous outcrop of Pacific DX died down after a wonderful period of three weeks or so, and 14 mc, in the early mornings, seems to yield only W6-7, KH6, KL7 and the like, which we were treating as locals when all the more exotic stuff was there. It was nice while it lasted!

No shortage of DX-peditions and pile-ups (or, of course, the strange manifestations that go with them). Routine DX is also plentiful, especially for the relative newcomers to whom anything they haven't yet worked is DX . . . they are the lucky ones!

On the whole, the state of the bands is much better than one would have predicted for this summer, and the whole business of propagation-prediction seems to be in a state of uncertainty, as far as long-range forecasts go. It is even possible that the next cycle will be an extremely good one—also that it will start sooner than had been expected. The whole matter is just about as chancy as the weather forecasts.

A few correspondents may find that some of their remarks, which don't fit neatly under any heading in this piece, have been transferred to a new feature, "Miscellany," on p.239. They are none the less appreciated and will always be welcomed.



G3MEM

CALLS HEARD, WORKED and QSL'd

DX News from All Parts

All sorts of nice pieces have cropped up on the bands from time to time, and should continue throughout the summer. Dick of W0MLY duly showed up from TR8 (Gabon), calling, as promised, on 14001 and listening 10 kc higher (this didn't deter the Klots from smothering his frequency). Later he was heard from TN8 and TL8. Gus, W4BPD, was making a fantastic number of contacts from Aldabra as VQ9AA, then back to the Seychelles again and signing VQ9A. At the time of writing his operating dates from the various VQ8 spots are not fixed.

4UIITU was a call that caused quite a stir on 14 mc, both SSB and CW. Had he shown up with the HB9 call that his geographical position warranted, nobody would have taken any notice! But he is described as an "International

Amateur Radio Club Station" and operates from the International Telecoms. Union on United Nations premises in Geneva. K9EBE, W4KVX (yes, the *DX Magazine* man) and W9AC all contributed some very slick operating. Such is the lure of inventing new "countries" that this one may count as such . . .

VK3AHO, signing FW8BH from Wallis Island after a spell as YJ1RH, hopes to be active until July 13; meanwhile, FK8AS has permission to sign FW8AS from the same spot . . . AP5CP is in Dacca, East Pakistan; he runs only 45 watts, but is trying to stir up some more activity . . . Even Rhodes seems to be in great demand; a quick trip there by DL9VZ, signing /SV0, chalked up 1500 contacts . . . Leo of UA3CR made 1600 from Dickson Island and 2300 from Franz Josef Land,

DALE ELECTRONICS

Your Complete buying guarantee for AMERICAN EQUIPMENT

COMPONENTS · TRANSMITTERS
RECEIVERS · TEST GEAR

----- ALWAYS IN STOCK -----

DRAKE 2B · HAMMARLUND HQ170
HALLICRAFTERS HT 32B & 37
LINEARS HT4I & COURIER
CDR ROTATORS · JOHNSON INVADER

All equipment carriage paid and supplied for use on 200/240 volts
at no extra cost

There is no question of not being completely satisfied when you purchase from Dale, if you are not satisfied with anything you buy from us just return it within 7 days and we will refund your money . . . *it's as simple as that!* Why buy elsewhere?

DALE ELECTRONICS
109 JERMYN STREET · LONDON · SW1
WHITEHALL 4856

ERSIN MULTICORE SOLDERS for a first class joint every time

Ersin Multicore contains 5 cores of extra-active, non-corrosive Ersin Flux. Prevents oxidation and cleans surface oxides.

SIZE 1 CARTON
5/-



HANDYMAN'S
CARTON

Suitable for 200 average joints. 6d.

HOME CONSTRUCTORS
2/6 PACK

In addition to the well-known Home Constructors Pack (containing 16ft. of 18 s.w.g. 60/40 alloys) a similar pack is now available containing 35ft. of 22 s.w.g. 60/40 alloy especially suitable for printed circuits.



Wherever precision soldering is essential, manufacturers, engineers and handymen rely on MULTICORE. There's a MULTICORE SOLDER just made for the job you have in hand. Here are some of them.

SAVBIT TYPE 1 ALLOY

A specially formulated alloy to reduce the wear of soldering iron bits. Contains 5 cores of non-corrosive Ersin Flux and is ideal for all soldering purposes.

SIZE 1 CARTON 5/-

Available in three specifications



BIB WIRE STRIPPER
AND CUTTER

Strips insulation without nicking wire, cuts wire cleanly, splits extruding flex. 3/6 each



MULTICORE SOLDERS LTD.,

Multicore Works, Hemel Hempstead, Herts

Boxmoor 3636
M2

G. W. M. RADIO LTD.

ALL ITEMS in last month's advertisement available

RECEIVERS. B28 good condition, aerial tested before despatch, £17/10/-, carriage £1.

CR300. Good working order, complete with power supply, £10, carriage £1.

ANOTHER BATCH OF 52 Receivers in excellent condition, 1.75 to 16.0 mc/s, £5/10/-, carriage £1.

COMPONENTS removed from transmitter: 813 valve tested in Ham transmitter, £1, post 2/6. Ceramic base to suit, 3/6, post 9d. Cooling fans, 12 volt, DC, 7/6, post 2/-. P.A. Tuning Capacitor 200+200 pf. at 1,200 volts DC, 7/6, post 2/6.

Vibrator packs for receiver, 12 volts DC to 150 volts DC, 10/-, post 2/6.

WS 22 components. Meters 500 mic/amp calibrated 0 to 15 and 0 to 600 volts, 8/6, post 1/6. Toggle switches 1 pole C.O., 1/-, post 3d. Vibrator power pack 12 volts to 300 volts DC at 80 ma, 10/-, post 5/-.

VALVES. Ex good condition equipment. 6V6, EL32 at 1/6. AR8, ARP12, ATP4 at 1/-, post 9d., singly, dozen free. All heaters tested.

COSSOR 339 Oscilloscopes, £12, carriage £1 good working order.

BSR Audio Oscillators LOSO, £7/10/-, carriage 15/-.

AVO Roller Panel Valve Testers, £4/10/-, carriage 10/-.

Modulation Transformers, "C" core ex-equipment. Primary 6,500 ohms to suit push-pull, QQV06-40 modulating QQV06-40 P.A. ratio 1 to 0.68, 15 watts, 15/-, post 3/6.

METERS 300 ma, 2in. square, 6/6, post 1/-.

HEADPHONES type CLR, low resistance, 6/6, post 1/6.

RIBBED Pyrex glass 3in. aerial insulators, 9d., each, post 1/-; 6 or more free.

Mains Transformers, tapped primary. Outputs 6.3v. Ia. three times, 5v. 2a., 290-0-290v. 80 ma, 15/-, post 2/6.

ONE ONLY. BC342N Receiver complete with auto transformer for 230 AC supply, £11/10/-, carriage £1. Also, BC1147 in excellent condition, £25, carriage £1.

All equipment offered is complete but not tested unless otherwise stated. Carriage charges are for Mainland only.

Terms: Cash with order. Early closing Wednesday.

40-42 PORTLAND RD., WORTHING, SUSSEX

For Highest Quality

Heathkit
DAYSTROM

at Lower Cost



DX-40U

AMATEUR TRANSMITTER Model DX-40U. Compact and self-contained. From 80-10 m. Power input 75 W. CW., 60 W. peak, C.C. phone. Output 40 W. to aerial. Provision for V.F.O. £32 10 0

AMATEUR TRANSMITTER Model DX-100U. Covers all amateur bands from 160-10 metres, 150 watts D.C. Input. Self-contained including power supply, modulator and V.F.O. £71 10 0



DX-100U

THE "MOHICAN" GENERAL COVERAGE RECEIVER, Model GC-1U. In the forefront of design with 4 piezo-electric transfilters, 10 transistors, variable tuned B.F.O. and Zener diode stabiliser. An excellent fully transistorised general purpose receiver for both Amateurs and Short-wave listeners. Other features include printed circuit boards, telescopic whip antenna, tuning meter, and large slide-rule dial approximately 70 inches. £38 15 0



GC-1U

HI-FI 18W. STEREO AMPLIFIER, Model S-99. Ganged controls; Stereo-Mono gram., radio and tape-recorder inputs; push-button selection; printed circuit boards. £26 19 0

TAPE RECORDING/PLAYBACK AMPLIFIER. Thermometer type recording indicators, press-button speed compensation and input selection. Printed Circuit Board. Mono. Model TA-1M £18 2 6
Stereo Model TA-IS £23 6 0



SB-10U

SINGLE SIDEBAND ADAPTOR, Model SB-10U. May be used with most A.M. transmitters. Less than 3 W. R.F. input power required for 10 W. output. Operation on 80, 30, 20, 15 and 10 m. bands on U.S.B., L.B.S. or D.S.B. £37 6 0

R.F. SIGNAL GENERATOR, Model RF-1U. Provides extended frequency coverage in 6 bands from 100 Kc/s. to 100 Mc/s. and up to 200 Mc/s. on calibrated harmonics. Up to 100 mv output on all bands. £11 18 0

6-W STEREO AMPLIFIER, Model S-33. 0.3% distortion at 2.5 W/chnl. Inputs for Radio (or Tape) and Gram. Stereo or Monaural £12 8 6

VAR. FREQ. OSCILLATOR VF-1U. Calibrated 160-10 m. Fund. outputs on 160 and 40 m. Ideal for our DX-40U and similar transmitters. £11 2 0



VF-1U

GRID DIP METER, Model GD-1U. Continuous coverage 1.8 to 250 Mc/s. Self-contained. 5 plug-in coils supplied £10 9 6. Transistorised Version from 1.8 to 45 Mc/s. £10 8 6

"COTSWOLD" HI-FI SPEAKER SYSTEM. Acoustically designed enclosure "in the white" 26 in. x 23 in. x 15 1/2 in., housing a 12 in. bass speaker with 2 in. speech coil, elliptical middle speaker and pressure unit to cover the full frequency range of 30-20,000 c/s. Complete with speakers, crossover unit, level control, etc. £21 19 0



HI-FI AM/FM TUNER. FM: 88-108 Mc/s.; AM: 16-50, 200-550, 900-2000 m. Tuning heart (£5 5 6, incl. P.T.) and I.F. amplifier (£19 8 0) complete with cabinet and valves; self powered. Total £24 13 6

HI-FI FM TUNER. 88-108 Mc/s. Tuning unit (£3 2 0 incl. P.T.) with 10.7 Mc/s. I.F. output and I.F. amplifier (£11 11 0) complete with cabinet and valves; self powered. Total £14 13 0

VALVE VOLTMETER, Model V-7A. Measures volts to 1,500 (D.C. and RMS) and 4,000 pk. to pk. Res. 0.1 to 1,000 M Ω. D.C. input impeded. 11 M Ω. Complete with test prods, leads and standardising battery £13 0 0

R.F. PROBE, Model 309-CU. Extends the frequency range of our V-7A to 100 Mc/s. £1 9 6

AUDIO SIGNAL GENERATOR, Model AG-9U. 10 c/s to 100 Kc/s, switch selected. Distortion less than 0.1%. 10 V. sine wave output metered in volts and dBs. £19 19 6

RES.-CAP. BRIDGE, Model C-3U. Measures capacity 10 pF to 1,000 μF, resistance 100 Ω to 5 M Ω and power factor. 5-450 V. test voltages. With safety switch £8 6 6

The "Cotswold"

Money saving "PACKAGE DEALS" of complete Stereo Equipment from £44 9 0



O-12U



AW-1U



AG-9U

5in. OSCILLOSCOPE, Model O-12U. Has wide-band amplifiers, essential for TV servicing, F.M. alignment, etc. Vertical freq. response 3 c/s. to over 5 Mc/s. without extra switching. T/B covers 10 c/s to 500 Kc/s. in 5 ranges £36 10 0

ELECTRONIC SWITCH, Model S-3U (Oscilloscope Trace Doubler). Enables a single beam oscilloscope to give simultaneous traces of two separate and independent signals. Switching rates approx. 150, 500, 1,500, 5,000 and 15,000 c/s. £10 15 6

AUDIO WATTMETER, Model AW-1U. Up to 25 W. continuous, 50 W. intermittent £14 14 0

SHORT WAVE TRANSISTOR PORTABLE, Model RSW-1. Four bands (2 short, Trawler and Medium). £21 6 0



THE "GLOUCESTER" EQUIPMENT CABINET

All prices include free delivery U.K.

Deferred terms available on orders over £10. Assembled models also available, Prices on request.



GD-1U



CM-1U



OS-1

HI-FI SPEAKER SYSTEM, Model SSU-1. Ducted-port bass reflex cabinet "in the white." Twin speakers. (With legs £11/15/0) £10 14 0

HI-FI EQUIPMENT CABINETS. Range now available to suit all needs. From £11 12 6 to £18 10 0

2 1/2 in. PORTABLE SERVICE OSCILLOSCOPE, OS-1. A compact, portable oscilloscope ideal for servicing and general laboratory work. Overall size 5" x 8" x 1 1/2" long, weight 10 1/2 lb. Y amplifier sensitivity 10 mV/cm, bandwidth 10 c/s. 2.5 Mc/s. Time base 15 c/s—150 Kc/s. Uses printed circuit board and 2 1/2" c.r.t. £19 10 0

CAPACITANCE METER, CM-1U. Direct-reading 4 1/2 in. scale. Full-scale ranges, 0-100 μF, 0-1,000 μF, 0-0.01 μF and 0-0.1 μF £14 15 0

DUAL-WAVE TRANSISTOR PORTABLE, Model UXR-1. Medium and Long. Real hide case. £14 3 0

Please send me **FREE CATALOGUE** (Yes/No)
Full details of model(s).....

NAME
(BLOCK CAPITALS)
ADDRESS

SW7

DAYSTROM LTD
DEPT. SW7, GLOUCESTER, ENGLAND

A member of the Daystrom Group,
manufacturers of the

WORLD'S LARGEST SELLING ELECTRONIC KITS

to say nothing of 500 SSB contacts from Tannu Tuva!

The phenomenal Pacific activity reported last month doubtless continues, but conditions have fallen off somewhat since then, and we don't hear them so often or so well. A wonderful display on 14 mc in the region of 0800, lasting for several days, produced such calls as W 6 G M Q / V R 3, W1MV/KP6, V R 3 L, VR3H, K6YZZ/VR3, W 5 I U R / V R 3, K1AZA/KP6, W0ANJ/KP6, K3GAD/KJ6, KJ6BV, KJ6CU, WA6UNJ/KB6 . . . but why go on? They were all there at various times, usually with fine signals but molested by all the more hideous forms of Klottery, as one might expect. The artful ones managed to work them, or some of them . . .

An expedition to Lord Howe Island was promised by VK2VC and two W's, scheduled to operate for about a week, ending July 6 (but you might just get in on this one!) SSB only, it seems, 14260 for W's and 14125 kc for DX; likewise 21400 for W's and 21200 kc for DX; and possibly 7120 as well. In all cases the DX is to call 5 to 10 kc up.

W6VUN/KW6, active now, will be there until August . . . W4LCY/KM6 is also active, with no firm date . . . TZ8BF is on 14 mc CW (Mali Republic); QSL via REF . . . VP2KJ has been active of late from St. Kitts on 21 mc AM (a fairly rare one among the VP2's).

G2DC informs us that Danny Weil is still in Tahiti, held up over licence difficulties for Manihiki (ZK1), a rare spot which is in demand. (A few of the luckier 'chasers worked KH6MG/ZK1 in 1958, when a party observed the total eclipse from Danger Island, Manihiki Group . . . they QSL'd, too!)

The monthly (or so it seems) allusion to Timor . . . it now appears to have changed its prefix to CR8! CR8AB was heard in a pile-up around 14110 kc, and says "QSL to Joao, CR8AB, Dili, Timor." Well, there's no harm in trying . . .

And yet another misleading prefix — W 5 H T M / K P 6 and K5MAZ/KP6 were both on

Christmas Island, not Palmyra. It seems that the FCC authorised the use of the KP6 prefix. And talking of prefixes—Cyprus is now 5B, the old callsigns being retained, e.g. ZC4OS becomes 5B4OS.

G3FPK heard from a VE that VR6AC works many VE's on Wednesdays at 0500 GMT (14110); If you can fix a prior sked with VE7IT you are probably in, as VR6AC will look for anyone if asked to by VE7IT . . .

Mike of G3JFF writes to say that the visits to Tarawa, signing VR1M, were very disappointing. On the second stretch (June 2-7) the only Europeans heard and worked were GI3IVJ and OH1TM; 21 mc was "non-existent," 14 mc dead by 0930 on all days, and 7 mc mediocre and full of QRM. They made 368 QSO's under these very trying conditions. At one time on 14020 kc, says Mike, there were VR1, VR2, VR3, VR4, FK8, FO8, KJ6, KM6 and KX6. No one seemed to want them so they had to work each other!

From YJ1MA, in two short periods of operation, G3JFF made 655 contacts in 59 countries; from Fiji (VR2EA) he netted 1280 contacts in 107 countries. Best of all was G3JFF/MM, with 2094 QSO's and 95 countries.

Also from Mike: VR1G is now the only active amateur in the Gilbert and Ellice colony, VR1B having become VK3IB . . . VK9RO expects to leave Port Moresby and become VK5RG . . . VR2DK is on 14 and 7 mc most days, 0700—1200 . . . VR2AP is active on SSB.

VS9ANW is ex-ZL3GI, and has also held the calls ZD2NWW and ZD1NWW; he works 21 mc AM and 14 mc CW. QTH: N. W. Willis, Shell Oil Co., Box 4050, Aden.

Peter Windle of G3HVG, 4S7XG and VE2XG is now active from Jamaica as VP5XG . . . "VQ5CSP, 5VG and 5DS" are all phonies, according to VQ5AU, who adds that the VQ5 QSL bureau consigns all cards for these gentry to the w.p.b.

The VK/ZL/Oceania DX Contest

Changes in the rules have widened the scope of this popular event, and entrants may now work any country in Oceania for points. **Times:** Phone, October 6, 1000 to October 7, 1000; CW, October 13, 1000 to October 14, 1000. **Scoring:** For stations outside Oceania, 2 points per QSO per band with VK/ZL stations, one point per QSO per band with other Oceania stations. **Final Score:** Total points made up as above, multiplied by the sum of VK/ZL call areas worked on all bands (the same VK or ZL call area worked on different bands counting as a separate multiplier).

Serial numbers: Six figures (or five for phone) with the serial number beginning at 001. **Logs:** Columns in this order—Date, GMT, Call-sign, Band, Serial number sent, Serial number received, Points. And underline each new VK/ZL area worked, using a different log sheet for each band.

Summary Sheet to show call-sign, name and address (block letters), details of equipment, total score (sum of call areas for all bands and total points for all

FIVE BAND TABLE

Station	Countries Worked					
		1.8 mc	3.5 mc	7 mc	14 mc	21 mc
G2DC	303	12	101	143	27	265
GW3AHN	303	1	21	68	255	277
G3DO	293	10	55	51	263	220
G3FPQ	290	23	107	138	262	252
G3NOF	226	1	24	18	168	183
G3LHJ	199	11	23	47	136	189
G2YS	197	20	75	94	176	123
G3IGW	183	23	51	99	126	127
G3NFV	164	16	49	39	85	118
G3BHJ	150	1	11	29	63	165
G2BLA	146	9	39	73	94	96
G3JWZ	132	9	52	62	107	77
GW3CBY	95	15	35	53	75	31
G3IDG	90	9	17	23	49	61
G3PLQ	70	10	18	11	15	16
G3PEK	54	8	22	30	44	15
G3NYQ	53	11	30	38	32	17

(Failure to report for three months entails removal from this Table. New claims can be made at any time)

bands). **Awards:** Certificate to each country for (1) Top scorer using all bands; (2) Leaders on individual bands; (3) All those who get through with "minimum contact requirements," depending upon conditions and activity prevailing.

Logs to NZART, Box 489, Wellington, N.Z., by (wait for it!) January 19, 1963.

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
<i>CW and Phone</i>		
G2NJ	98	98
G3APA	94	94
G3MBW	91	92
G3LWQ	90	92
G3OHX	83	87
G3NPB	82	84
G3NVO	81	88
G3OGE	81	84
GM3KLA	78	82
G3OIT	74	85
G3NNF	71	76
G3OQT	70	80
G3OLN	68	79
G3PGN	68	71
GW3CXY	67	73
G3PDM	66	77
G3NLR	64	64
G3OWR	62	62
GM3PBA	59	71
G3MGI	56	63
G3PLQ	51	68
G3OX1	46	67
G3IDG	46	49
G3PEK	35	56
G3OHL	26	35
G3NAI	14	38
G3LHJ	13	28
<i>Phone only</i>		
G3FS	85	85
G3NPB	79	81
G3NAA	65	67
G3NNF	63	65
G3NNO	54	71
G3OIT	26	52

(Failure to report for three months entails removal from this Table. New claims can be made at any time.)

Top Band Topics

The real long-haul DX season may be said to have closed—but the next will be on us pretty quickly. The past winter saw many new "firsts"—some of them with quite exotic spots—and doubtless next season will be even better and bigger. One resounding "first" for which we did not give proper credit at the time was between G6BQ and HC1AGI (March 11). And EP2BK, although running skeds and making very shaky contacts with W1BB for some time, was given credit for the first *solid* QSO with USA when he worked W2IU (ex-W9NH) on March 27.

So much for the tidying-up. On a general survey, rumour has it that G3PU has now worked 40 countries (or more) on this band, with others close behind. How we should have laughed a few years ago if someone had suggested 50 countries on Top Band as a possibility for a G station . . . but we shall be very surprised if that figure is not clocked up by the end of 1963, or even sooner.

Long-distance work on One-Sixty is as far removed from the general sphere of HF-band DX as the activities of the VHF boys. With a few exceptions, the Top Band kings are specialists who don't go much for the "easy" DX on Twenty and Fifteen. We are therefore pleased to have the space to give them pretty generous coverage when new DX-ploits come along. And now for the EDX, GDX and no DX at all!

When the WABC Certificate was first introduced, it took the first claimants quite a time to collect their 60 counties; yet here we have the G3O's and G3P's with their own little ladder, and several of them well over the 60 mark in the first six months of this year. Activity is the great thing, and it's certainly there now. And DX-peditions have also helped enormously.

One such (though we are only able to report it rather belatedly) was made in the Spring by G3OTR and G3OTS. They took a mobile rig into Caernarvon, Merioneth and finally Westmorland, the idea being to sample the beauties of North Wales and the Lake District and also to put out a signal from

the rarish counties. The gear worked well, but technical hitches with the camping equipment forced them to sleep inside the car (in sleeping bags!). A half-wave of wire was unfurled and hung in the best available spot, although the weather was against them and the Welsh mountains still snow-covered. The Westmorland QTH was 800 feet up in Langdale, with the aerial hung on a 100-ft. cliff. Overall results—92 contacts in five days, 900 miles of driving, and mastery of the art of getting into a sleeping bag inside a car!

GM3PBA (Dumfries) worked G3PAA in London when the latter was running 3.8 watts of phone with a completely transistorised transmitter, and feels that this is probably a record of some kind for G3PAA. Daylight work has been good, with 100-mile contacts on phone, but GM3PBA wishes some of the southerly stations would turn their gains up a bit and listen for weak CW: he will be operating between 1890 and 1900 kc, calling "CQ GDX" on CW.

G3MBW (Leeds) makes his first appearance on the Counties Ladder with the nice score of 91/92. He can't get on the band until late at night and says that CW activity up north is very poor . . . G3PGN (Basildon) raised Argyll and Inverness and still manages to work the OK's quite easily . . . G3PEK (Stockport) raised GW3JEQ/P in Merioneth for a new one: he is moving QTH shortly and hopes to be more active.

G3PLQ (Salisbury) is now QRT, having returned to his /MM job, but he says he will be listening on all bands with an Eddystone 840A; he hopes his ship will be going to the Pacific. Meanwhile, he is just one card short of WABC! However, for the moment he manages to occupy the top rung of the G3O/G3P Ladder.

GM3KLA (Shetlands) was pleased to have a very solid QSO with GC3AEF/A in Guernsey—nearly 1000 miles between those two! But GM3KLA still needs Jersey, Alderney and Sark.

G2HFD will be operating as GC2HFD from Sark, July 21—

August 13 . . . he has the licence and permission. (But whether he will be on Top Band we don't know for certain, as he is said to be taking a Viceroy with him.)

The Rockall Project

GM3JZK still has his teeth well into the business of activating Rockall. He even suggests that it may be an independent territory within the Commonwealth, rather than part of the UK, and so it might qualify for such a prefix as ZB3. Apart from the enormous physical difficulties of operating there (see last month), there is the even greater difficulty of securing permission; but GM3JZK will not be letting the grass grow under his feet, and we feel that something will come of this. He sends a sketch of the rock, with a tent and a 14 mc ground-plane perched on the top—quite hair-raising! Watch this space for further news . . .

Jungle Warfare

Observation of various pile-ups (and there have been plenty of them to observe) has shown that the most successful stations are those who come and go so quickly that their presence is hardly noticed. In the case of W0MLY/TR8 and /TL8, who called CQ on 14001 kc and said "call 10 up," many who did just that were rewarded with a QSO right away. But still there were the inevitable dim ones who called and called on the frequency, getting longer and longer, slower and slower and (unless this was our imagination) louder and louder. Not a hope for them—just condemned to be public nuisances all their lives and never a contact with the DX man.

Then there is the self-appointed MC business; G3NWT comments on a VR3 conferring with "one of the high priesthood, discussing how the latter should best handle the pile-ups for him on the morrow (when the band was flat!) . . . Seems the channel has to be sort of consecrated before the laity can get at it."

G3FPK, who has had experience at the other end, from 3A2BT, says it's essential for the DX station to state exactly who he wants to work, where he wants



Robert Snyder, EP2BK, Teheran, Persia, who gave many European QSO's on Top Band before his return to the States, where he can now be reached through Box 502, Springfield, Miss.

them to call, and to make it clear that he won't stand for any nonsense. When he was confronted with too much Klottery on the frequency, his simple remedy was to QSY and start again . . . they were still calling blindly on the old frequency fifteen minutes later!

On SSB we have the equivalent of the long-winded CW caller—the big-signal guy giving his call very slowly and changing the phonetics every time; by the time he finishes there is another one there. Given a few of these on the frequency, it's impossible to tell whether the DX has come back to anybody. Ah, well . . .

And so to HF band reports. From some of the long lists of DX worked we can quote only the very best, but there is plenty to choose from on all modes. And some calls that represent a triumph for the 50-watt man with a dipole would hardly be noticed by some of the top-scorers. So we try to sort them out accordingly.

DX on 14 mc

G2DC found two all-time new ones in K3GAD/KJ6 and K5FOQ/KS6; others raised were W0MLY/TR8, F08AN, HM1AP, TG9AD, VP2KJ, VR3L, W6GMQ/VR3, W1MV/KP6, UA1KED and "hordes of KH6's" . . . all on CW.

G3OJV (Hornchurch) says that under short-skip conditions EI0AB (Aran Islands) was blocking the receiver; his best were KG1FD, KG6IJ, OH0NC, PJ2AA, VK5AB, VP7NS, VQ1CJ, 3A2AH, 4U1ITU and 5H3GC, all on SSB. He comments "listening on 14 mc it would seem that AM is going out fast and that CW and SSB will have taken over completely by the next sunspot maximum."

G3BHJ (Norwich), also on SSB, raised K4OSL/KV4, KL7, KS4BF, VE3BQL/SU, VE8ML, YV3BG, ZB2AD and 4U1ITU. G3JOC (Norwich), on AM, booked in HC2WH, KL7EN, PZ1CG and a couple of TF's.

G3NWT used his AM to catch CP1BJ; G3FPK, same mode, worked CP1BH; on CW he raised SV0WZ/Crete and 6O1ND; SSB fetched in EI0AB, FG7XH, FM7WQ, FO8AN, HC1JU, KG6IJ, KM6CE, TG9GZ, W0MLY/TR8, VP5BL, VR3P, VR3S, YN1CK, ZK1BS, 3A2AH, 4U1ITU, 5H3GC and 3HH, 9C1CY and W0MLY/TL8.

G3NOF (Yeovil) stuck to SSB and accounted for FG7XH, FM7WQ, K4OSL/KV4, KP4's, KR6MF, OA4CV, PJ2AA, TG9GZ, VP5BL, VR3P, W0MLY/TR8, XE's, 5H3GC and 9K2BZ.

GM3JDR (Golspie) continues to put the Far North on the map and upsets the idea that DX is difficult to work from Scotland. His SSB brought back CE3VU, EL3A, EP2BQ, FO8AN, HK3LX, JA's, KA's, KG6IJ, KH6, KL7, KR6's, OA4CV and 4DI, PJ2AA, W0MLY/TR8, VP2KJ, VQ1CJ, VS4BY, VQ9A, VQ9AA, VR3P, VR3S, ZP5IT, 9G1, 9K2, 9M2 and 9Q5—only a small selection from his log over three weeks.

G3OAG (Prestwich) made it on CW with JA, 4S7EC and 7NE, HK1AAF, VS1LF, KV4AA, UH8's and UA9. He runs 70 watts to a dipole and has recently added a ground plane, first QSO on it being with VS1LF.

G3DO (Sutton Coldfield) raised a fine bag on SSB, such as BV1US, FG7XH, FO8AN, HL9KN and 9KP, HP1JF, KG6IJ, KM6CE, W4LCY/KM6, W0ANJ/KP6, K6CQV/KS6, W0MLY/TL8 and /TR8, VP2KJ, VR3P, VR3S, XE's, YN1AW and 4U1ITU.

SWL L. Margolis (Ilford) logged most of the good Pacific DX and also confirms that KL7FLC is on an ice island 600 miles from the North Pole, and in Zone 19.

DX on 21 mc

G3NOF connected on SSB with KP4ANZ, ZP5CN, W's and some /MM's; on AM he raised HH2CL, PJ2CR and 3AO, VQ5EK/A, ZC4, ZE, ZS, 5N2FEL and 2JKO, and 9G1DP.

G3FPK worked CW with VQ9A, VQ9AA and VS1FZ; SSB with MP4TAO, ZS7R and 7S, 5H3GC and 5N2TS/3; and AM with VS1GC. G3NFV (Ashted) stuck

to AM and raised VP5CH (Grand Turk), VU2TN and VS1FZ.

G3OAG, on CW, collected ST2AR, VP7NQ, KP4, LU, UG6 and UM8; and, on AM, YN6HH, 5N2RSB, PY1DC, VQ2IE and CT2AC. G3BHJ made it on SSB with FG7XH, MP4TAO, VQ1CJ, ZB1A, ZS7S and 5N2JKO; he thinks the band is actually improving, especially in the early evening.

G3NWT used SSB for VQ9AA, JA's and VS4RS; and then AM for VS6EO, T A 2 A R, ZS4PB/9, ZP5CF, VP5BB, JA's, VS1, 9M2, CR6, ZD6, 5N2's and VU2TN. G3JOC worked AM with CE4PB, CR6BX, 6DX and 6JS, EL4A, JA, MP4, OA6AN, PY, TT8AL, VP4BO, VQ9A, VU2TN, YA1AG, ZS3NZ, 5N2's and 9G1YL.

G2DC, on CW, found the band rather dull except for the openings around 1800-1900, but managed to raise CE3RZ, CR7IZ, CX2BT, CP1HP, EL3AF, 4A and 4YL, VQ5ID, VQ9A, VQ9HB, W0MLY/TR8 and YA1BW.

Late Flash: On June 17 G6QB was working on a string of W6's just before 2200, and was called by JA5FQ at that hour with a 599 report. He was told next morning that the band had been wide open nearly all night.

DX on 28 mc

This band attracts very little attention these days because of its unreliability. However, G3NOF, on AM, worked CR6JL, CX1OR, 6CG and 7BN, LU's, PY's, TN8AD and 5N2JKO. He remarks that some of the LU's and PY's have been coming in at S9 plus, even though using only 50 watts.

G3OAG, after hearing the French TV on Channel 1 up in Manchester (June 4) made a quick check on 28 mc and found it wide open to the whole of Europe with various countries coming in at terrific strength. This is the first spectacular short-skip opening he has experienced, and it shook him!

3.5 and 7 mc

News of the LF bands is very scarce, summer conditions and QRN having frightened many of the devotees off. However, G3FPQ was on 3.8 mc SSB one evening

early in June and managed to work VK3BM and VK2EX. The former was solid copy for over 45 minutes; the latter is operated by ex-PA0FM, who has emigrated to Australia.

On 7 mc the W's have still been workable in the early mornings, and G2DC raised a few PY's around 0700. SWL Neville Bethune (East Barnet) also covered the band and heard KS4BF (0642), CT3AV (0530), ZA1AB (2240) and UA0AZ (2315).

Late Flash: On June 18, 0700-0800, the W's and VK's were coming in at equal strength, mostly around 569.

Strays

Turkey has been getting more than its fair share of mention in these columns lately. The plain fact appears to be that *none* of them have a licence! SWL Richard Broome (Stratford-on-Avon) heard TA2BK, described a month or so ago as "the only licensed amateur in Turkey" actually telling someone that he *hadn't* got a licence! We now close the subject . . .

G2DC is of the opinion that the jamming horror that blots out 7050 and 14100 kc from 1600 nearly every day is not trying to

TOP BAND LADDER

(Starting January 1, 1962)

(G3O-- and G3P-- stations only)

Station	Counties	Countries
G3PLQ	72	8
GM3PBA	68	10
G3PDM	65	9
G3PRM	62	9
G3PGN	58	10
G3OXI	57	7
G3PPU	54	8
G3OLN	50	8
G3PEK	48	8
G3ORH	44	10
G3OQT	39	14
GW3PHH	32	7
G3PHO	30	8
G3PJD	28	3
G3PPF	24	5
G3OHL	21	4

New Claims for this Table may be made at any time. Confirmations not required.

jam anyone on 7050, but is just parked there when he has finished a session elsewhere . . . if we amateurs could insist on our rights we might extract some healthy parking fees from some of these ghastly specimens.

QSL information, from G3NOF: For 4U1TU, to Box 11, Geneva 20; for VR3P, to W5HTM; VR3S, to WA6MAZ; WOAMJ/KP6 to W4DKP; and for FM7WQ to G8KS. Also the info that 5A5TE is G3BFC (ex-MT2BFC, VQ6BFC, ZD3BFC). G2DC mentions that VR3L is ex-G3JFC.

Our Heading Photograph (p.246)

G3MEM is run by David Morgan, at Jevington, Hilltop Road, Earley, nr Reading, Berks., he having started as an SWL at the tender age of 13 years. The ticket came when he was 17 and now, at the age of ripe experience (22), he runs a PR120V for 10-80 metres; an all-band home-built Tx with a Type 145 (Wilcox-Gay) VFO, used mainly on 160 metres; and an AR88LF receiver. Aerials are, he says, "forever changing" and all sorts have been, and are being, tried. The shack is in a quiet spot in a large garden (the lucky chap!). G3MEM, whose job is as a representative for a large firm in the building trade, remarks that his "other important hobby" is as leader, on the trombone, of a small jazz combination locally. He also explains that since he is in no present danger of getting married he has plenty of time to devote both to the band and to Amateur Radio (the fortunate fellow!).

Comebacks

Various comments regarding last month's remarks on the use of the RST code, particularly on reports of the "Five and One" variety . . . G3FPK says that one often gets such a report from stations using 75S3 receivers; he has used one occasionally and has copied every word of a transmission which barely causes the S-meter needle to move (other receivers will register S9 on signals where there is as much noise as intelligence and where the readability report, if honest, would be R3). G3FPK suggests that the



The station of VE6GZ (Herbert Garber, Box 116, Foremost, Alberta) had a visit recently from VE5BD (left) of Moose Jaw, Saskatchewan, who has been on the air for many years.

remedy is obvious—give aural (not oral) reports as, indeed, we used to before S-meters were invented!

GW3AHN's remarks on the sad tendency to use very high power for all occasions, whether it is necessary or not, bring forth the biggest crop of comments. His suggestion of a world-wide 100-watt limit meets with general approval (but, of course, from people with 150-watt rigs, not from those with kilowatt outfits to put on the scrap-heap!). However, G3FPK demurs . . . he rightly remarks that one can get a *cleaner* signal out of a high-power linear, under-driven, than from a low-power linear going flat out; and that a strong, clean, *narrow* signal is preferable to a weak, dirty, broad one. And he adds "some of the lousiest signals I hear come from low-power rigs, and some of the cleanest from high-power ones."

Another point about a universal 100-watt limit—it might be all right for owners of Tri-banders and Quads, but not so hot for the others (the majority) with poor locations and dipoles or ground-planes. And (final point, again from G3FPK) the fellow with high power and a good aerial will often raise the rare DX with one short call and get out of the way

quickly, whereas some of the others will be bawling their heads off for hours and will cause far more QRM . . . apart from the temptation to turn up the audio and add to the racket with whiskey transmissions.

So . . . one can't immediately agree that a lowering of power all round would be an advantage. But high power licences should be confined to those who can really be trusted to use QRO intelligently, and maybe there should be more advanced examination before they are granted.

Late Flashes

G5RV will be active from Andorra, signing PX1RV, August 3-17 . . . WØMLY, having operated from TR8, TL8 and TN8, is now rumoured to be packing up; when asked recently by a W station where his next move was, Dick replied "the nut-house" . . . but we understand that this one doesn't have country status.

And on that cheerful note we leave you for another month. Deadline for the August issue is **first post on Friday, July 13**. Don't be late, and address everything to "DX Commentary," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. Until then, Good Hunting, 73 and — BCNU.

SWL • • • • •

THE MODERN FRONT-END — READERS' NEWS, VIEWS AND COMMENTS — MANY NEW LICENCES IN PROSPECT

THE HPX LADDER

IN previous instalments it has been explained that a great amount of RF amplification at the front end of a modern short-wave receiver is not necessary, unless the first IF is at such a low frequency that the problem of image interference becomes serious. Thinking in terms of the 14 mc band, it has in many quarters been assumed that *two* RF stages are essential . . . and so they have been, with an IF of 465 kc and the oscillator on the HF side of the signal. Without both stages, the broadcast stations on the 15 mc band would be breaking through, possibly at even greater strength than the wanted amateur signals on 14 mc.

With a much higher IF—and we will now talk in terms of 2 mc or thereabouts—one RF stage is more than adequate to keep intruders out, and one can even dispense with RF amplification altogether if the front-end tuned circuits are sufficiently selective to suppress signals 4 mc away from the wanted frequency.

Yet another argument for RF amplification has been the fact that many mixer stages are noisy, and it is the noise from the first stage of a receiver that really matters. Even here, however, there have been great improvements in technique, and if one uses a modern valve, such as the 6CW4 Nuvistor, one can escape from the tyranny of the RF stage and ganged tuning altogether. The Nuvistor was primarily intended as a low-noise RF amplifier on the VHF bands, but, of course, it is equally useful in the HF spectrum. It is slightly more expensive, of course, than older and more conventional valves, but the front end of your receiver, of all things, is worth spending a few extra shillings on. By doing so, you put its performance up in a class several pounds higher, in terms of possible purchase price of commercial receivers, than if you used an older type of valve.

Before building a completely new receiver designed on modern lines—such as that described by G3BDQ in this and the June issue of *SHORT WAVE MAGAZINE*—you may feel that you would like to try things out for yourself, using your present receiver for everything but the front end. We are therefore discussing and describing, here and now, a simple modern front-end which you can put together in very short time in order to try the technique out for yourself. It consists only of a mixer and a crystal oscillator (*no* RF stage!), and you can use whatever main receiver you have available to complete the circuitry. You will thus, most probably, end up with

a double superhet, first conversion being at 2 mc (tunable in that range) and the second almost certainly being 465 or 455 kc. (If you already have a modern double-conversion job you probably will not wish to try this out in practice, but it is hoped that you will still be interested in *how* to do it!)

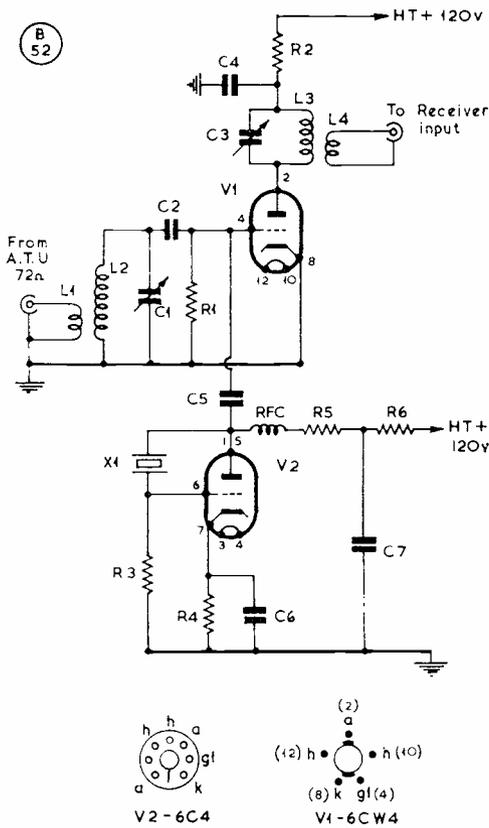
Fig. 1 shows a circuit which is, in effect, a simplified version of the mixer-oscillator stage of the G3BDQ receiver. Coil-switching has been omitted, and a single tuned circuit is used ahead of the mixer, with the assumption that it will be fed from a sharply-tuning ATU—not from a random piece of wire. The coil dimensions are given in a separate panel; L2 is simply a coil covering 14 and 21 mc, with a link winding for input coupling.

This input circuit is tuned to either 14 or 21 mc by the condenser C1 (much as you would use the aerial trimmer control on most receivers) and, of course, your ATU must also be accurately tuned. The anode circuit of the Nuvistor is tuned somewhere within the 1.5 to 2.0 mc band; and the heterodyning frequency is supplied by the crystal in the grid/anode circuit of V2, which must have a fundamental frequency of 16 mc for the 14 mc band, or 23 mc for the 21 mc band. (For various reasons, it is preferable to use a crystal on the high-frequency side of the band to be tuned.)

Both valves operate at low HT; the Nuvistor should not be run at more than 70 volts, and the crystal oscillator should, for preference, be run at almost the lowest voltage which will produce oscillation. This may be as low as 40 volts—or even less than that. R5 is provided simply to drop the volts on this valve, and its value should be chosen accordingly.

Bearing in mind that the whole idea is to give your receiver a kind of trial run with a front-end of this type, the design has not been made too stereotyped. It has been proved to work well in front of two or three different types of receiver, but always with a good aerial and a sharply-tuning ATU. Without the aid of the latter, it seems probable that a second tuned circuit in front of the mixer would be necessary. In the circuit of the G3BDQ receiver (pp.180-181 of the June issue) it will be seen that this has been provided. Two complete sets of coils are used, mounted so that they are completely shielded from each other, and top-coupled by a condenser of only 2.2 μF . This refinement may be introduced into your experimental front end if the selectivity with the one tuned circuit is not sufficient . . . but remember that that small condenser must be the only coupling between the coils, which must not be allowed to “see” each other at all. However, as this unit will represent only a “trial run,” you will probably not need to go as far as this.

Having set-up the unit with correct voltages and so on, confirm first that the crystal oscillator is working, by listening directly on the crystal frequency with another receiver, if one is available which covers 16 mc or 23 mc. Tune the “station receiver” to some point in the 1.5-2.0 mc band, and peak the noise (or any signal that happens to be there) by means of C1. C3 will also be found to peak, but should not



The front-end unit consists of a triode mixer (6CW4 nuvistor) with a triode crystal oscillator loosely coupled to its grid circuit. C1/L2 is tuned to signal frequency, and C3/L3 to a frequency in the 1.5-2.0 mc area. The value of R5 is chosen to allow V2 to operate at the lowest voltage at which it will continue to oscillate.

be tremendously sharp—it should only need re-setting if you swing from one end of the band to the other.

Tuning the receiver from 1.5-2.0 mc, with a 16 mc crystal in the unit, will give a true tuning range of 14.0-14.5 mc. Calibration will, of course, be “inside-out”—tuning up from 1.5 to 2.0 mc will move the receiver setting from 14.5 down to 14.0 mc. A simple subtraction sum will confirm this!

If your existing receiver is not particularly hot on the 14 mc band, you should notice a marked improvement, both in signal strength and in signal-noise ratio. Your former RF stage or stages will now be contributing to the amplification, and also the selectivity, but at the IF. Furthermore, if the receiver is of a type with poor bandwidth on 14 and 21 mc, you will now have the advantage of tuning which is as easy as it formerly was on the 2 mc range. This factor alone will often justify the use of simple conversions such as this.

The whole object of the exercise is to show those readers who feel sufficiently interested to pursue the subject that their present receiver can be improved

Table of Values

Circuit for 14/21 mc receiver front end

C1 = 50 μ F variable	R4 = 390 ohms
C2 = 100 μ F silver mica	R5 = 10,000 — 50,000 ohms (see text)
C3 = 100 μ F variable	R6 = 100,000 ohms
C4 = 0.1 μ F, paper	RFC1 = 2.5 mH RF choke
C5 = 4.7 μ F ceramic	V1 = 6CW4 Nuvistor, RCA
C6 C7 = .0015 μ F tubular ceramic	V2 = 6C4
R1, R3 = 47,000 ohms	X1 = Oscillator crystal, see text
R2 = 22,000 ohms, 2 watt	

COIL VALUES

- L1—2 turns insulated wire adjacent to earthy end of L2.
- L2—14 turns 24g. enamelled at 30 tpi on 7/16-in. diam. dust-core former.
- L3—75 turns 32g. enam., close wound on 7/16-in. diam. dust-core former.
- L4—10 turns insulated wire wound over earthy end of L3.

by the use of a very simple unit. If the results are decisive enough, they will wish to go further; in which case this unit can be made into an all-band affair by the use of switched coils and switched crystals. Alternatively, those who have acquired some experience and are sufficiently intrigued can go the whole hog and build the G3BDQ receiver. The fullest possible details are available, in this issue and the previous one. They will then have a thoroughly modern amateur-band receiver and their existing one can take over the role of stand-by or serve as a “gap-filler,” if there are other parts of the spectrum they want to investigate from time to time.

We shall come back to the subject at various times, covering such points as the improvement of selectivity in an existing receiver, and conversions to make it more suitable for SSB reception. For the time being, however, the “front-end” discussion is wound up and it only remains to wish its followers many interesting and successful hours of listening.

READERS' FORUM

A prominent feature of the correspondence arising from “SWL” has been the number of letters from readers who have never put pen to paper before (at least in this direction!). This month the newcomers almost outnumber the old hands, and comments cover a wide variety of subjects. Once again, though, we must remind all concerned that lists of Calls Heard are *not* wanted. We know that conditions are varying all the time, but most listeners with an adequate receiver heard much about the same as other listeners with a similarly adequate receiver, and there is no news value in the statement that “CX2CO was coming in at S9 on June 1 at 2100 GMT,” or anything of that sort . . . unless it was on an unusual band or at an extremely unusual time.

With that little preamble, then, on to the more interesting of the letters. P. J. Lennard (Wartling) remarks that not all the bad operating comes from beyond the Iron Curtain, as one might sometimes be led to expect . . . David Hayes (London, W.3), aged 16, started in the usual way with Forty and

Twenty on the BC receiver. Now his chief interests are 80-metre DX SSB and propagation conditions. At present the main thing is the GCE—later in the year, RAE!

G. C. Steadman (Huddersfield) is a 15-year-old and a member of the local ATC, at which G3LUK operates on Top Band and Eighty. At home he has "an antique R.1155A" which seems to work better on a long wire than on dipoles and fancy aeriels. *M. Saunders (Churt)* has a /A location at Malvern College, where he does quite a bit of listening with an AR88D. Main interest is Twenty SSB, on which some quite nice rare ones have been heard. And his programme includes "trying for a ticket in September."

G. Lawrence (Leamington Spa) shares his listening with his son, using a CR-100 and a Geloso converter with dipoles for the HF bands and a 67-foot wire for the LF bands. Recent loggings on Twenty SSB and Fifteen AM have been interesting, but the main excitement will be the results of the recently-taken RAE.

R. Goddard (London. W.5) has been using a home-built receiver which has "come to the end of its life" and hopes to build something modern to replace it. Maybe the front-end unit on the preceding pages will prolong the life of the old one a little longer, while the new job is being built?

Christopher Pearson (Sevenoaks) reports that he has heard 152 countries on his HRO, for which he is building a miniaturised front end. His favourite band is Twenty. . . . *I. Graham (Newquay)*, although interested for some years, did not have a commercial receiver until last winter, when he acquired an R.1155; now he has been given an old BC-348A by an amateur friend. Main interests are Eighty and Twenty, with a two-metre converter on the way. The RAE results are awaited and the Morse test is coming up . . . and I.G. is fourteen, so we wish him good luck.

S. Foster (Lincoln) pushed his prefix score up by nearly 50, but will now be suffering from A-level QRM. During the summer holidays he looks forward to a 24-hour listening session, something he has wanted to do for some time. And an RF-24 converter is being added to the R.107.

Malcolm Healey (Horsham) echoes recent remarks here about the wisdom of having a careful listen on what seems to be a dead band. He collected a VQ9 on Twenty by this means, and, some minutes later, "masses of VK's sprang up" but the band soon went dead again. In two months he added 71 prefixes to his previous total.

Tim Eyre (Sheffield) is at school at Cambridge, and recently visited the GPO station at Baldock—"1,000 acres of aerial farm." Nearby was a monitoring station which has the power to tell people to QRT or QSY, and it was suggested that they should clean up Forty a bit! Several /MM's have been logged on Twenty SSB . . . and now the HRO is to receive front-end treatment.

A. W. Nielson (Glasgow) raised his already robust total to 542, having had a few days off work

and being free to listen on Fifteen in the afternoons. On May 22 sixteen JA's were logged (and in the past four years only three had been heard!). . . . *R. Adams (Shoreham)* is now enjoying the advantages of a BFO, with a Q-multiplier on the way. He is short of four Zones (6, 18, 19 and 23) and asks whether there are any genuine Chinese stations on the air. As far as we know, there aren't; but JT1KAA is active in Zone 23.

CW Listening

Bill and Robert Ferguson (Glasgow) are a couple of CW enthusiasts, a rarish breed these days. They listen mostly in the early mornings with a BC-348Q and a 67-ft. indoor dipole. (Talking of CW, it's a remarkable thing that the HPX scores for that mode are actually lower than those on Phone . . . one would have expected it to be the other way round, as it would undoubtedly have been ten years ago.)

R. R. Loe (Colchester) has been logging some of the really nice DX, such as FO8AN, KB6, VR2, VR3 and other Pacific pieces—all on Twenty. He also heard 4U1ITU, operated by HB9UD in Geneva. 4U is the authentic United Nations prefix, but there is some talk of granting this station "country status," since it is operated from internationally-controlled territory—and see "DX Commentary," p.246.

H. G. Shaw (Heswall) stacks up the enviable total of 618 prefixes, and he remarks that the American nuclear programme was a great help (those Pacific islands are thick with technicians, and many of the better technicians are amateurs!) TA2AR was logged, but we understand that no TA's are legit, at present.

D. A. Whitaker (Clitheroe) is G3IGW's brother, but as he works away from home he cannot share any



Here we see Neil Summers, 31 Chatham Road, Walthamstow, London, E.17, who must have set up some sort of record—for he has passed his R.A.E. and the Morse Test at the age of 13, before being old enough to hold a licence! His 14th birthday in September will see the issue of his own ticket, and in the meantime (as the holder of a G.P.O. certificate and an R.A.E. pass slip) he can operate from G2HR (Chingford, E.4) under supervision. We congratulate Neil on what is without doubt a most creditable achievement, and will watch his further progress with interest.

of the gear! He runs an Eddystone 840C, though, and says he is in the fortunate position of having plenty of listening time between October and May—too busy in the summer months; after some experimenting with aerials, he has settled for a 90-foot wire about 35 feet high, which seems to do well on all bands.

The ATRL

Edward Shield (Alnwick) is the secretary of the newly-formed Amateur Tape Recorders' League, the main interest of which is the recording of amateur transmissions on One-Sixty. Any amateur is welcome to make a sked, some time in advance; then, on the transmission appointed, a recording is made by members of the league, all over the country. Results are all transcribed on to one tape, so that the amateur concerned can hear what he sounded like in various places. Membership is open to all SWL's, who are invited to get in touch with Edward Shield, at Sunny Grove, Stepney Lane, Lesbury, Alnwick, Northumberland.

Brian Edwards (Hereford) has been an SWL since 1954, main interests being DX-peditions and certificates. He has 263 countries and all zones confirmed, having just got his Zone 23 card through from JT1KAA. For some time he has been running an S.750 and a CR.100, but awaits an AR88D to replace them both. Brian is probably another SWL who won't be staying with us for long, having taken the RAE this spring—and we wish him luck.

E. J. Boys (London, S.W.18) already has an AR88D, to say nothing of a Minimitter converter, a Q-Multiplier and a Radiovision preselector. In the aerial line, he has a Minibeam for Ten and Fifteen and a dipole for Twenty. VHF listening also comes into the picture, with 8 countries and 28 counties heard. RAE coming up in October!

Roger Western (Torquay) has the distinction of heading the HPX ladder for CW with the fine total of 443. He, too, is a keen award-chaser, covering all the bands from Top to Ten; and he, yet again, is awaiting RAE results. Once that is through, the CW presents no difficulty! (His father was the late G3LFL and his mother is G3NQD, so the tradition will be carried on.)

P. Whipps (Enfield) pushed his Phone total up by 100, and also starts now on the CW ladder. He ascribes the improvement to an MC8 converter added to the regenerative receiver formerly used. Most listening is done on Twenty, where he chases DX-peditions. He remarks that some of their operation is now so slick that, in order to find the call-sign, you have to catch them calling CQ. Fifteen he finds interesting around 1800, but the LF bands have been disappointing.

More DX-TV

C. N. Rafarel (Poole) continues with his DX-TV, new catches on Band I being Bucharest and St. Polten (Austria). He visited Jacques Herreman, the Belgian TV wizard, who has logged 119 TV stations in 26 countries . . . with the help of aerial arrays 150 feet

SWL • • • • •

continued

high! A Dutch DX-TV enthusiast also joined the party.

Colin Miller (Tayport) is a 14-year-old with 179 prefixes to his credit on a receiver with one valve and two transistors . . . G. Ferriday (Wellington) is 17 and has recently acquired a CR.100 for £10; he agrees that headphone listening makes for success . . . Leonard Birch (London, E.6) is 15 and runs an RA-1B with an ATU and a tuning indicator; he joins the ladder with a score of 331.

Brian Tarry (Warrington) collected his total of 170 prefixes on phone with a simple indoor aerial—he hopes for a twenty-metre dipole shortly . . . B. J. Curnow (Plymouth) remarks that Fifteen has been very good at times and has a long list of Far East stations heard in the afternoons. He logged the mysterious TA2AR, who says "QSL via PAØWWP" and asks whether we know anything about him. Nothing, except that he is certainly active, but probably unlicensed.

Aldo Bernasconi is a Swiss listener at present staying in Bournemouth. He uses an SX-38 and also an Army VHF receiver, and sends along a photo of the gear . . . Rodney Adkins (Brighton) is another newcomer, who in the last four years has run through equipment ranging from the BC receiver, through a 19 Set to an R.107. The 19 Set, now

HPX LADDER

(Starting January 1, 1960)

Qualifying Score—150

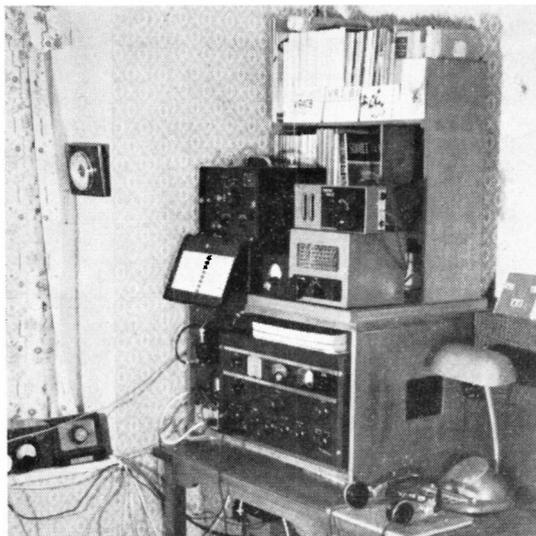
SWL	PREFIXES	SWL	PREFIXES
<i>PHONE ONLY</i>		<i>PHONE ONLY</i>	
R. Griffiths (Ventnor)	642	R. Ashby (Hinckley)	239
H. G. Shaw (Heswall)	618	W. S. Teanby (Scunthorpe)	239
A. W. Neilson (Glasgow)	542	B. Pack (Frome)	233
R. J. C. Coats (Cowie)	531	S. Foster (Lincoln)	231
P. J. Weyell (Richmond)	457	L. F. Meikle (Hexham)	230
C. N. Rafarel (Poole)	446	A. T. James (Exeter)	226
D. Edwards (Birkenhead)	409	M. Pennington (Southport)	226
B. M. Crook (Abingdon)	402	R. Hunt (Sheringham)	224
B. R. Edwards (Hereford)	372	R. Atkins (Brighton)	202
M. T. Bland (Oakham)	361	G. Lawrence (Leamington Spa)	200
R. K. Towers (Nottingham)	359	G. Docwra (Brighton)	198
R. K. Western (Torquay)	352	C. Miller (Tayport)	179
D. Gray (Easington)	333	B. J. Tarry (Warrington)	170
L. Birch (London, E.6)	331	D. S. Radley (London, W.10)	170
D. A. Whitaker (Waddington)	328	D. Hayes (London, W.3)	168
B. Curnow (Plymouth)	324	(3.5 mc only)	168
D. Bell (Nottingham)	320	D. Douglas (Edinburgh)	164
R. R. Loe (Colchester)	311	G. Steedman (Huddersfield)	157
H. M. Davison (Ashtead)	307	<i>CW ONLY</i>	
P. J. Lennard (Wartling)	291	R. K. Western (Torquay)	443
M. Healey (Horsham)	289	B. R. Edwards (Hereford)	441
R. Adams (Shoreham)	283	C. Harrington (Hounslow)	428
P. Stevens (Donnington)	278	P. J. Weyell (Richmond)	365
M. Warrington (Burnley)	277	R. Ferguson (Glasgow)	351
W. J. Atherfold (Southwick)	265	P. J. Lennard (Wartling)	333
G. Ferriday (Donnington)	261	W. Ferguson (Glasgow)	325
P. Whipps (Enfield)	261	H. M. Davison (Ashtead)	324
M. Saunders (Churt)	254	N. A. T. Hardy (Shepshed)	244
N. H. Maeer (Sutton Coldfield)	254	P. Whipps (Enfield)	181
M. Pettit (Teddington)	243		

(NOTE: Listing includes only those who reported for this issue on the May issue. Failure to report for two consecutive issues will mean removal from the list. Next list—September issue, continuing as above from January 1960.)

Correspondence from short wave listeners is welcomed for this feature, the next appearance of which is in the September, 1962 issue. Good photographs of SWL stations can be used and are paid for on publication; prints must be sharp, and should be accompanied by adequate descriptive notes. The closing date is July 30 and all mail should be addressed: "SWL," c/o The Editor, Short Wave Magazine, 55 Victoria Street, London, S.W.1. Please note that lists of calls heard are not required and cannot be published, on account of space.

greatly modified and incorporating bandspread, stabilised BFO and local oscillator, and top-band coverage. is used with an RF-24 converter at his school QTH, the R.107 being left at home (at Enfield). He finds Top Band listening very fruitful at Enfield, but not so at Brighton, where he concentrates on DX. (Other activities include 70-mc listening with an RF-27, and playing with a Creed Mk. III Teleprinter.)

C. Davies (Rhondda) changed the coils in a Marconiphone mains portable and managed to make it cover Eighty and One-Sixty. He also injected a little stray capacity into the IF circuit, and can now read CW or SSB by making the IF stage oscillate (his log for Eighty SSB includes VO1DN, VE3BQL/SU, HZ1AB and others, so the scheme obviously works well!) During the summer he hopes to build "a tidy short-wave receiver" and to cover the HF bands.



Neatly laid out station of SWL E. J. Boys, 17 Heathfield Court, Heathfield Road, London, S.W.18, his gear consisting of an AR88 as main receiver, with a Minimitter amateur band converter, a Q-multiplier and a pre-selector; he also has a Withers 2m. converter. The outside arrangements for this lot include a 10/15m. beam, a 20m. dipole, and a slot-fed 4/4 for two metres. The station rating is 162C in 39Z confirmed, with a card awaited from Zone 23 to complete the 40Z. Needless to say, a transmitting licence is the present objective, with the October R.A.E. in prospect.

Bob Towers (Nottingham) lists a lot of DX heard, but says that an interest in VHF has kept the score down a little. He now has a converter (for Ten and Fifteen) ahead of his HRO, and hopes for much better SSB reception. He is also interesting himself in DX-TV and expects to start on some two-metre work as well.

* Summing-Up

It has been very gratifying to note so many remarks in this month's mail which indicate that the writer has either taken or is taking the RAE this year. It has always been an obvious truism that the SWL of today is the transmitting amateur of tomorrow, but we are very glad to see this going through so effectively in practice. We only hope that the readers concerned will spare a few moments to tell us how they got on, and that we shall see them reporting (with a call-sign!) in "DX Commentary" some time in the near future.

Meanwhile, we hope that the other pleasant features of these columns—the number of very young and very keen newcomers—will continue to increase. We shall always be glad to hear from "starters" and to comment on their activities, but, please, once again—no lists of DX heard! Comment on receiving gear, on unusual conditions, on puzzling stations heard on the bands, but mere lists of call-signs are out . . . there just isn't the space.

AMATEUR RADIO IN NEW ZEALAND

Some statistics revealed in the April, 1962, issue of *Break-In*, published by the New Zealand Association of Radio Transmitters, are interesting. The NZART now has a membership of 2,056, of which 1,459 are transmitting, an increase of 8% on the previous year. On a total income of £3,173 the nett profit on operations for the year 1961 is £558, compared with £341 for 1960. It is also shown that from an income of 32s. 1d. per member per year, the cost of *Break-In* is 15s. per member, and of all other services, including Hq. expenses, it is 11s. 5d.—giving the nett profit to the Association of 5s. 8d. per member. This is a very satisfactory result, on which the NZART is to be congratulated.

NO DIFFICULTY IN SUPPLY

For the information of casual readers, and those overseas who may see *SHORT WAVE MAGAZINE* by chance—as well as those who write in so frequently to enquire—it is just as easy to get the *Magazine* in Berne, Bangkok or Bulawayo as it is in Belfast or Birmingham. Simply order on the local newsagent! In all large centres of population abroad, there is always at least one bookshop or periodical retailer who operates as an agency for the supply of foreign publications, and knows the trade channels through which a British periodical like *SHORT WAVE MAGAZINE* can be obtained. It is necessary only to give title, cover price (3s. sterling, or 36s. by annual subscription, converted into the local currency) and our publishing address at 55 Victoria Street, London, S.W.1, England.

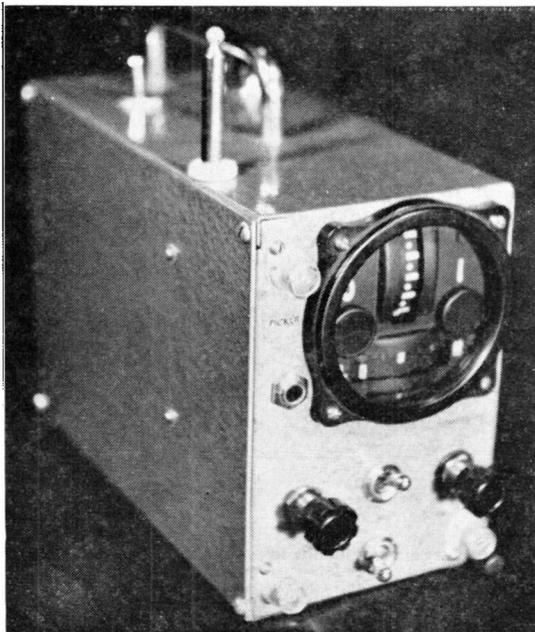
FIELD STRENGTH READINGS AND SWR CHECKS

USING VISUAL INDICATOR TYPE 3

J. K. FIDLER (G3OYP)

There has recently appeared on the surplus market in quantity an item described as Indicators Visual Type 3. These instruments contain two very well-made sensitive meter movements; these are 0-400 μ A and 200-0-200 μ A respectively, on vertical and horizontal scales. There are also two neons, and the whole is in a plastic case with internal metal screening, the size of the case being 3½ in. diameter by 4½ in. deep.

The writer (considering himself in some ways a typical radio amateur) bought one of these units, without any clear idea of what to do with it! There are obviously many uses to which such an instrument could be put, but in the writer's case it was thought that the combination of a sensitive field-strength meter and standing-wave-ratio indicator in the one box could have manifold uses in an attempt to produce a clean, strong, TVI-proof signal. It was also decided to make the whole thing portable, thus enabling field strength indications to be observed in various positions near the transmitter. The writer claims no originality for the circuits used, merely showing that with these circuits, and the Visual Indicator Type 3, a compact and very useful monitoring device can be produced.



The RF test unit as constructed by G3OYP and described in the article. It gives field strength and SWR readings, and the applications are explained in the text.

Of course, only comparative levels are given, definite quantitative measurements not being possible.

Looking at the indicator, the first modification is to the centre-zero meter movement. By removing the four screws (one of them is sealed) towards the rear of the case and taking this off, the zero adjustment can be put in such a position that the pointer goes to the extreme left of the scale. At the same time, the scale can be calibrated, this being easy, since it is "flat" and not in the usual circular form. The case, of what is now a twin 400 microamp. meter, is then replaced. At the rear of the case is a plastic panel, upon which is mounted a six-pin socket and the

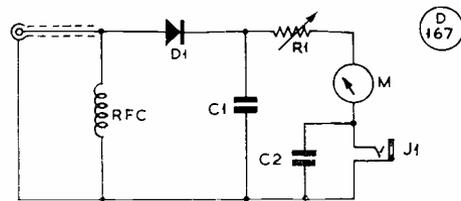


Fig. 1. Circuit of the field-strength meter, based on a conventional arrangement, using the Type 3 Visual Indicator panel instrument. C1, C2 are .001 μ F; R1, 10K potentiometer for sensitivity control; and D1 is a crystal diode. Speech can be monitored by plugging headphones into the jack.

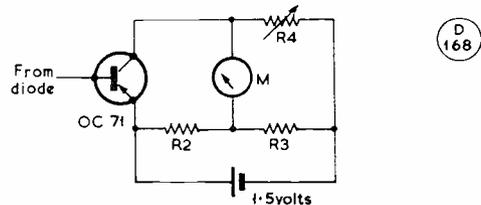


Fig. 2. If the straight circuit of Fig. 1 proves too insensitive, a transistor DC amplifier can be added to enable the F/S meter to be used further away from the transmitter, or aerial. The transistor can be an OC71, or anything similar; R2, R3 are 2K; and R4 is a 10K potentiometer; a 1½-volt U2 cell supplies the power.

housing entry for each neon. As neither neon was required and a matching plug was not at hand, the rear panel was removed by taking out three fixing screws. This uncovered a mass of wires, all of which were cut off, finally revealing the four meter terminals set in another panel—this time metal. Finding which pair is for which meter is easy—but for information and to prevent damage to the movements, the upper terminal and the left-hand terminals, for the vertical and horizontal meters respectively, are positive when viewed from the rear. The indicator is now ready for connection and was mounted with other components in an instrument box 6 in. x 6 in. x 4 in.—see photograph.

Circuitry

The circuit of the field strength indicator is shown in Fig 1, and is of the usual design. In the instrument as constructed, the FS section was built into a small box which once housed an American microphone amplifier, and the meter (the horizontal scale was

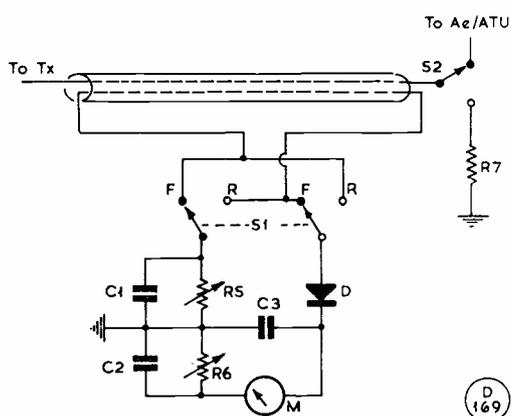


Fig. 3. The SWR device is the standard circuit adapted for the panel instrument in the Type 3 Visual Indicator. C1, C2, C3 are .001 μF ; R5 is a 200-ohm potentiometer for adjustment control; R6 is a 5K potentiometer for setting up (see text); and R7 is the non-inductive load resistor, which must be rated to the Tx input as it absorbs all the RF output in the test position for S2. Rectification for the meter is by the crystal diode D. See text for further details.

used) was connected *via* screened leads. There is provision for two pick-ups—a coax socket on the side panel of the case for an external aerial, and also an extendable aerial mounted on the case. It is worth pausing a minute here—for the writer considers that an FS meter with associated aerial inside the station is of little practical use, but a small aerial mounted outside and connected by coax is much more useful—then, the indication is of actual radiated RF and not just a measure of the RF usually found floating about the transmitter. The extendable aerial, which may be switched into circuit, is of course very useful when taking portable FS measurements. Also included in this circuit is a headphone jack, thus allowing monitoring of phone signals. If more sensitivity is desired, a transistor DC amplifier may be inserted ahead of the meter; this is a bridge circuit (see Fig. 2) requiring one more knob for the balance control, and has always been found to work well. There is no need to switch the battery supply, since the passage of a small current through the battery is thought, in some quarters, actually to preserve its life! The whole of the FS meter is screened and decoupled as much as possible to prevent the pick up of RF from the SWR section.

The SWR indicator is a common circuit, shown in Fig. 3. The writer has found that 4ft. of coax (twin type) is quite suitable for Top Band, it being more than enough of course for the other bands, hence the sensitivity control R6. There is provision for a 75-ohm resistor to be switched in instead of the aerial, thus enabling the SWR indicator to be adjusted; R5 is set so that with the 75-ohm load switched in, the meter gives maximum reading with S1 "forward" and minimum reading with S1 "reflected." S2 can then be switched to aerial, Z-match, ATU, or whatever,

and this is adjusted or loaded so that the transmitter is running the desired input and the reflected reading is minimum. If Top Band is not to be checked for SWR, then the length of coax should be decreased, thus reducing the possibility of standing waves being present on it.

In conclusion, the writer would emphasise that the instrument as described has been found invaluable in assisting with aerial tuning adjustments, running 10w. on 160m. and 75w. on 80m., and in producing a strong TVI-proof signal. For further information on SWR indicators and their use, see the 1962 Edition of the *ARRL Handbook*.

CAPACITY MEASURING BOX

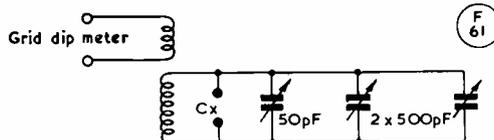
WITH DIRECT-READING SCALES

F. G. RAYER (G30GR)

A GRID dip meter is quite often kept to hand, and Fig. 1 shows the circuit of an extremely simple adjunct which can be used to measure capacity in the range of approximately 2.5 μF to .001 μF . The method of determining capacity by connecting the unknown capacitor in parallel with a known inductance, and finding the resonant frequency with the grid dip oscillator, is well understood. To avoid calculation, this box operates in a rather different manner, and readings are direct.

The actual method of construction is of little importance, provided the condensers and knobs are secure, and there is an insulated panel with two terminals, to take unknown capacitors. Spring grip terminals are convenient, and a short lead with a clip simplifies connecting. The box is for finding minimum and maximum capacity of surplus or other unknown tuning condensers, and the values of trimmers, or unknown surplus fixed capacitors. The 50 μF variable capacitor permits reading from 2.5 to nearly 50 μF , while the gang capacitor reads from 50 μF to about .001 μF —see circuit below.

The small coil is 3 or 4 turns of reasonably stout wire, about an inch in diameter, and self-supporting. Both scales are marked to read zero with the condensers fully closed (maximum capacity). The GDO is placed with its coil a few inches from the box coil (or as required for suitable coupling) and

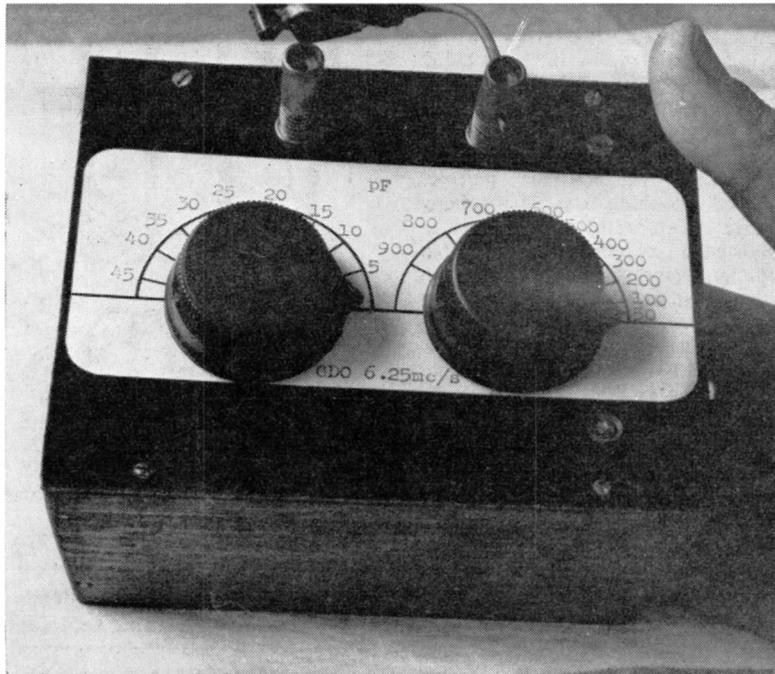


Circuit arrangement for the instrument described by G30GR. The energising source is the probe or output coil of a GDO, and the unknown capacity is connected across Cx. By the method explained in the text, a wide range of capacity measurements can be made.

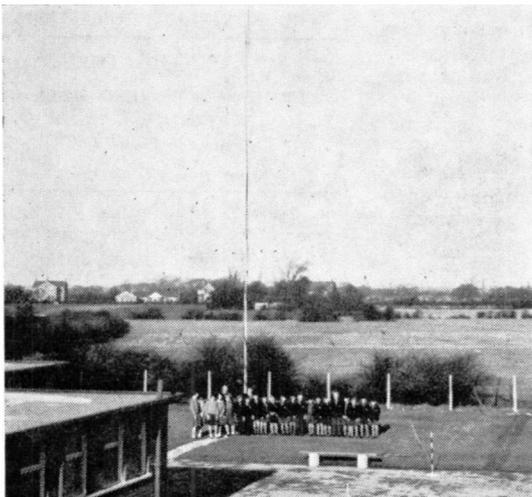
is tuned for the dip in grid current. This is likely to be around 6 mc, depending on the box coil. The actual frequency is not significant, but can be marked on the box, to simplify future use. The GDO is always carefully tuned for maximum dip, with the reference condensers at zero (capacitors closed).

The unknown condenser is then connected to the terminals, and resonance is restored by opening one of the box capacitors. The unknown value equals this reduction in capacity.

The box scales have to be calibrated. This can be done with sufficient accuracy for all ordinary purposes by connecting a few 1% known-value condensers across the terminals, then opening one of the variable capacitors to restore the dip, and marking its scale. Actual markings can be from 5 to 45 $\mu\mu\text{F}$ and 50 to 900 $\mu\mu\text{F}$. A simpler box, using a single 500 $\mu\mu\text{F}$ condenser, would allow reading from about 10 $\mu\mu\text{F}$ to nearly 500 $\mu\mu\text{F}$. A 60, 75, or 100 $\mu\mu\text{F}$ variable condenser would do as well instead of the 50 $\mu\mu\text{F}$.



This device will give direct measurement of unknown capacities over the ranges shown, when used with any usual GDO — see circuit and discussion in text. It is easily calibrated from a few condensers of known value, and the readings obtained are entirely suitable for practical work.



The 86-ft. mast, designed and erected — under the direction and inspiration of G3HDL — by the "local labour" of the Radio Society of the Bishop Rawstorne C.E. Secondary School, Croston, nr. Preston, Lancs. The project was grant-aided and undertaken in consultation with the County Architect, as the job had not only to be structurally sound but also in conformity with aesthetic considerations. The mast consists of four 21ft. sections of 3½-in. galvanized steel water-pipe with welded and reinforced joints, guyed four ways at three levels, with a 6-in. pulley and 2-in. rope halyard. The mast was given seven coats of paint before erection. The guy wire, insulators and other mast dressings alone were found to weigh 8 cwt. Quite an undertaking for a school radio society!

For Readers' Small Advertisements—see pp. 275-280



"... I've raised a Yank. ..."

WELL, since our last, *Oscar II* has been and gone. Starting out on the morning of June 2, he chirped happily round the course until about June 20. The burn-up, probably on orbit No. 291, was earlier than had been anticipated, apparently because the perigee started touching the atmosphere fairly soon; this produced a shortened orbiting period, the change being from 90.7 mins. at the outset to 88.2 mins., or thereabouts, at demise. As all who heard *Oscar II* will know, the keying characteristic was much better than in the case of *Oscar I*, even though the signal itself had a pronounced chirp; the hi-rate was easily determined, and on the nearer passes the signal-level was adequate, even with a simple single-element aerial; however, compared with the first *Oscar*, the strength was distinctly down. The frequency was a shade light of 145 mc, as before.

The advent of *Oscar II* inspired a great deal of useful and interesting work—as regards positioning, pass prediction, orbit forecasting and probable burn-up time—by, in particular, G3JAM in collaboration with G2AOX, assisted by G5LK (as the most consistent observer) and several others who provided a number of heard-reports, from which the data could be adduced for the preparation of prediction curves; those extrapolated by G3JAM produced very accurate results, and a number of passes were observed by your A.J.D. working entirely on the basis of G3JAM'S predictions. In view of the failure of the "official" organisation to provide reliable forecasting, the results of the G2AOX / G3JAM collaboration reflect the greatest credit on them—what is unfortunate is that, because of the exigencies of the situation, it was not possible for G3JAM'S very accurate predictions to be made available for all who might have been interested in following *Oscar II*. This is almost unavoidable, for the reason that the timing of these shots cannot be announced more than a few hours in advance and so there was no opportunity for anything in the way of reliable data to be published. However, once *Oscar II* was under way, it was not long

VHF BANDS

A. J. DEVON

**Oscar II in Orbit, June 2-20—
GDX Worked in Patchy
Conditions—
DX-Pedition Results and Notes—
Station Reports and The Tables—**

before G2AOX/G3JAM were able to work out the details, with considerable accuracy. All very commendable, particularly as their forecasts were the only reliable predictions available.

From quite another direction, a very interesting report has come in from G3OJY, in West Cornwall, showing that he, too, was able to make his own calculations for successive appearances; what he found was a "daily error"—which fits G3JAM'S prediction curves—and it is probable that G3OJY also would have arrived at the conclusion that *Oscar II* was in fact spinning in (his report is dated 17 June). What G3OJY does suggest is that the "error increase" might be connected in some way with propagation conditions, as there is a correlation between *Oscar II*'s behaviour and the state of the two-metre band a short time after the error began to increase. But in view of what has already been deduced, and explained in the foregoing paragraphs, this correlation is unlikely and seems to have been fortuitous.

Because yet another *Oscar* shot is in prospect, we shall be publishing further material on satellite observation in an early issue—to show how prediction data can be calculated and orbit forecasting

is done. Incidentally, for the information of those who have raised the point, the firing plans for both *Oscar*'s have been kept secret not because they are themselves in any way "secret," but because they have formed merely a part of the load put into orbit by U.S. rockets launched for quite different, and strictly military, purposes. It is understandable, therefore, that advance information would not be forthcoming.

EDX/GDX Conditions

Getting down to deck-level again, and looking at conditions on the VHF bands during the period, it seems that over Whitsun the Met. chaps must have been using the wrong piece of sea-weed—they gave us "hot and high pressure," whereas the glass went steadily down and it turned dull and unpromising over all England. Since Questions were asked in the House about this (with the usual facetious comments), we will not pursue the subject further, but leave the Meteorological Office (so often the unhappy target for censure and criticism) to its misery.

That there have been good GDX openings since the end of May, most VHF operators will

70 CENTIMETRES

COUNTIES WORKED SINCE

SEPTEMBER 1, 1961

Starting Figure 4

From Home QTH Only

Worked	Station
18	G3KEQ, G3KPT, G3NOX/T
17	G3LQR
16	G2CIW, G2FNW
14	G3KPT
12	G3HAZ, G3NNG
11	G3JHM/A
10	G3HWR
9	G3LHA
8	GW3ATM, G5UM
5	G3FIJ, G5QA

This Annual Counties Worked Table is reckoned from September 1st, 1961 and will close on August 31st, 1962. All operators who work four or more Counties on the 70-centimetre (430 mc) band are eligible for entry. Counties should be claimed as they accrue, and otherwise the rules are as for the Two-Metre Annual Table

know. As always, these conditions were directly related to the weather, and on certain evenings it was possible to read the signs quite clearly, even without the aid of a recording barometer. But when the weather is really fine and warm, the troposphere cannot "give" until there has been time for the cooling layers to form—and this may not be until quite late, in terms of clock-time.

Which brings us to the interesting fact that many VHF operators are beginning to discover the attractions of early - morning operation on two metres. For years, it has been known that in fine-weather periods, the best VHF conditions occur from dawn until the sun is fairly well up—say, about 0430-0830 BST, when you read this. Whether *you* can be on the two-metre air at this sort of time (having been awakened, as your A.J.D. so often is, by the dawn-chorus) obviously depends on many things, but if you can take a turn round two metres one of these fine mornings, you might be surprised at the level of activity. There are several reports in this time about "how astonished I have been to find so many stations on the air at 0700." There is no guarantee that you will get a contact, but it is always worth putting out a couple of CQ's . . . and then trying again at lunch-time.

Some DX-Pedition Items

The City & Guilds party, GB2IC, down in the Scilly Is., worked hard and did well under what for them were rather adverse conditions for most of the time. Having polished off the locals, they then started on the more difficult stuff in the London area and the Midlands, and many good GDX contacts were recorded—which shows what can be done by trying, as of course GB2IC was giving a rare and difficult county (by our reckoning) and most people were prepared to scratch in the noise in order to make the QSO. A fuller report on the GB2IC results will appear in our next. In the meantime, G3OZF and the GB2IC group can rest content in the certain knowledge that their effort (and their slick

operating) was much approved of by the VHF fraternity.

On the other hand, the EIØAB chaps on Inishmore off Galway, over June 9-11, had a bad break as regards VHF conditions and, being much further out in the blue, they could QSO only with EI/GI; however, they did try, and just about all the available Irish stations were worked.

For those wanting GW counties like Merioneth, Caernarvon, Denbigh and Anglesey, G3FRV will be signing GW3FRV/P, or /M as circumstances dictate, during August 3-11; he will be with G3IQM, and an attempt will be made to give as many QSO's as possible—though, says G3FRV, "it is primarily a holiday trip."

Another such is the Birmingham University visit to Southern Scotland in September (final dates not yet settled) when they will be trying sites in about seven GM counties; operators will be G3NAQ, G3OAD and G3PLS, presumably under their own calls with the appropriate prefix and suffix. Withers gear will be used, on a frequency of about 145.78 mc, with a nuvistor converter into an Eddystone 960 transistor receiver, and a 6/6 J-Beam.

The Tabular Matter

The tables are spread out in full this month and in all some 60 movements are recorded—correctly, we hope! Suggestions

are sometimes made that the tables should be reduced or even eliminated, particularly the All-Time. But surely it will be evident not only that the Annual tables stand as a record of progress, but also that the support for them alone justifies their continued existence; as to the All-Time, its name describes it — All-Time means all time, and what it also records is progress over a period (in this case about 14 years). While it is true that many whose calls figure in the All-Time have not reported for years (some even, shown in *italic*, are no longer with us to report) the fact is that this Table still accumulates the most claims over any given period. It is also a very interesting fact that there are people who start up on two metres and come into the All-Time; then go off on to other bands; to reappear years later (perhaps having got married and started a family in the meantime), to take up their old position on the ladder, just as if nothing had happened! They expect to find that whatever else may have changed, A.J.D. and "VHF Bands" still go on . . . we try not to disappoint them.

We now have enough data to start a 4-metre counties table, and it is hoped to introduce this next time . . . and there are also a number of VHFCC claims in hand, which will be processed before the next issue appears (all being well). [over



The board of directors, Project Oscar, at a recent meeting at Sunnyvale, Calif. Fourth round from the left is VE2AGF/W6, director of communications, who is none other than Tommy Lott, ex-G2CIN, well known in the U.K. before he emigrated to Canada about 1948. He is now at San Mateo, Calif., and, by the American-Canadian reciprocity agreement, is able to operate using the W6 suffix.

TWO METRES

ALL-TIME COUNTIES WORKED LIST

Starting Figure, 14

From Home QTH Only

Worked	Station
82	G5YV
81	EI2W, G6NB
80	G3CCH
78	G5MA
74	G3KEQ
72	G2CIW (391), G6XM
71	GM3EGW (310)
70	G3BA, G3EHY, G3HBW, G3IUD
68	G3BLP (967), G3BW, G3GHO
66	G2OI (585), G3KPT*, G5BD
65	G6XA (333)
63	G2FJR (542), G3FAN (1,000)
61	G2HIF, G3HAZ, G6RH
60	G3DMU, G3IOO, G3JWQ (548)
59	G4SA, G8VZ
58	G5DS (827), G8OU
57	G3DKF, G8SB
56	G3WW (770)
55	G2HDZ (495), G5BM, G4LU, GW5MQ
53	G2AJ (519), G3LHA (387), G4CI
52	EI2A, G2NH, G3FZL, G6XX, GM3DIQ, GW2ADZ
51	G5ML
50	G3ABA, G3GSE (518), G3NAQ, GW3ATM
49	G3CO (467)
48	G3AYC, G3FIH, G3LAR, G6TA (487), GW3ATM
47	G3JYP, G5WP, GW3MFY
46	G3MTI (242), G3PBV, G4HT (476), G5BY, G6YU
45	G2AHP (647), G2DVD (362), G2HOP, G2XC, G3BJQ, G3GFD, G3MPS, G5JU, G6GN
44	G3BK, G3DVK (282), G3LTN, G3NBQ (218), G8DA
43	G2DDD, G2FCL (322), G3BNC, G3COJ, G3DLU*, G3GSO, G3HWJ, G3KHA (262), G3KQF, G3KUH, G3NNG, G3OJY, G3WS, G4RO, G5DF
42	G2AXI, G3DO, G3IER, G6CI (220)
41	G2BHN (173), G2CZS (282), G2FQP, G3JAM (481), G3OHD
40	G3CGQ, G3FUR, G5MR (366), G8KL

Worked	Station
39	G2IQ, G3GBO (434), G3LTF, G3OSS, G3VM, G5UM (868), G8IL (325), GC2FZC
38	G3APY, G3CKQ, G3HTY, G3JM/A, G8VN (190)
37	G2FNW, G2FZU (180), G3DLU, G3MAX, G3OSA, G8DR (482), GC3EBK (260)
36	G2DCI (155), G3CXD, G3DLU*, G3IIT, G3OBD, G6CB (312), G8IP
35	G3FYY (235), G3HCU (224), G3IOE, G3JLA, G4LX, G5TN, GI3ONF
34	G2AHY (295), G3AEP, G3HWR (506), G8IC
33	G3FIJ (412), G3HHY (125), G3ICO, G4JJ/A
32	G3HIL, G3OBB, G3NUE (132), G8QY, G8VR
31	G3HXO, G3KPT (180), G5RP
30	G3FRY, G3GOP (208), G3GVF (129), G3IRA, G3KEF (110), G5NF, G8NM, GW8UH
29	G2CVV, G3AGS, G3AKU, GM3LDU
28	G3ITF, G8DL, GM3BDA
27	G3CVO (231), G3DAH, G3ISA (160), G3JGY, G3LTF/A, G6GR, GI3GQB, GW3GWA
26	G2BRR, G2DHV, G3CFR (125), G3MED, G3NNK, G3SM (211), G3YH, G4MR (189)
25	G3JHM, G3JMA, G3JXN (220), G5SK, G6PJ
24	G3FD, G3FEX (226), G3FXG, G3FXR
23	G3BDO, G3CWW (260), G3HSD (168), G3OPR (144), G5PY, G8VN (125)*
22	G2DRA, G3AGR (135), G3ASG (150), G3BPM, G5AM
21	G2AOL (110), G3DVQ, G3IWI, G6XY
20	G3EYV
19	G2BLA (113), G2HDR, G3GCX, G5LQ (176)
18	G3DBP, G3NPF (103), GC2CNC
17	G3EGG, G3MHD (195)
16	G3FRE, G3MLS, F3XY (200)
15	G3IWA
14	G3CYY

Note: Figures in brackets after call are number of different stations worked on Two Metres; starting figure for this classification, 100 stations worked. QSL cards are not required to verify for entry into this Table. On working 14C or more, a list showing stations and counties should be sent, and thereafter added to as more counties accrue.

* New QTH

Two-Metre Round-Up

G4LU (Oswestry) found conditions patchy, but good at times, as evidenced by the reception of GB3CTC, the Cornish beacon, on a number of occasions—though the direction is a bit off the beam heading; and when G3OJY (Penzance) was worked, the beacon was not in evidence. G4LU has been trying to raise GC2FZC, his many calls "resulting only in a blue complexion and no QSO"; EI2W was a good signal on June 7, coming over the top of high ground immediately to the west; and G4LU also reports that he has been working the Pye (Cambridge) stations G3EDD and G3PYE during lunch-time sessions, the best QSO of the month being with G3PYW in Lowestoft, for Suffolk, at the same period. And G4LU adds something about "getting uxorial permission for a tour of the westerly GW counties during August."

G2DHV will be /P from the Exmoor district (for Somerset) during August 11-18, on 144.70 or 145.25 mc. G3OBB (Christchurch) says that his "PA is now being thrashed to pieces by a pair of KT66's," which has raised his mod. level to something a bit better than he could get with the old 12A6 arrangement; GB2IC was worked on July 17. G3KWH (Welwyn) is now on two metres, with 30w, to an 832, a 5-ele flat-top and a converter with which, says G3KWH, he "is not very happy." GW3MFY (Bridgend) got GB2IC, of course, which puts him up one in both tables. G3NUE (Worcester) is now at 123S worked in 32C, with 18 counties confirmed. And G3GWL (Coleshill, Warks.) reports working EI2W in the middle of the morning of June 7.

EI2A, of Navan (or An Uaimh, in that language) has got to 52C worked, which is a remarkable effort having regard to his geographical location; he has covered 28 counties in England, five in GI, six each in GM and GW, one in GC and GD, and five in EI itself—the latter being EI2AG for Louth; EI2W, Dublin; EI6AI, Donegal; EI9AK, Wicklow; and EI0AB, the expedition station, for Galway. These results

represent a lot of concentrated hard work, on which EI2A is to be congratulated.

For Bob of G5MA, Great Bookham, Sy., the period has been quite productive. He has got ahead in the Annual with 63C, which gives him two counties in hand; his GDX count for the period includes EI, GI, GM, G3JYP (Westmorland), GB2IC and G3OJY for Cornwall; so Bob is one of those who *has* been shining his beam to the south-west. And from that direction, G3PBV (Wolverton, Bucks.) reports that GB3CTC is a "fairly regular S1-4 signal and a good indicator of conditions"; G3PBV still runs 60w., some new equipment has been built, and an R.1475 Rx is being overhauled and modified for use as a 2m./70 cm. IF/AF strip; and the recent improved conditions gave him contacts with EI2W, G13GXP and G5ZT/M for

Devon.

For G3OHD (Petts Wood) the most interesting evening was June 12, when signals from Cornwall were heard for the first time, with G3KMS/M (at St. Agnes) worked, and G2BHW (Falmouth) heard for an abortive QSO. G3OHD has difficulty in finding the GW's, though GW3OAF/P was raised for Radnor, and he is still looking for GI and GM—they'll come in due time, and so will the big EDX opening he says he is eagerly awaiting. G3BNL (Nottingham) got 10 more for the Counties tables, and G3KPT (West Bromwich) also goes up in the Annual.

G3OJY (Penzance) covers for the Cornish boys, reporting that with the improved conditions more contacts have been obtained, but still not enough people look south-west, and a lot of signals are heard which would be workable if beams were headed their way. G2BHW is now on 144-07 mc, and G3OJY on 144-06 mc, other stations active being G3CZZ and G3XC, with G3AET coming on. Those wishing to work Cornwall are asked to "avoid calling on frequencies near GB3CTC, as they will not be heard."

G3AOS (Ringway, Ches.) reports increased activity in the improved conditions, with many excellent QSO's recorded, and both beacons logged with signals varying from S6 to S7-9; other DX heard included F8MJ and GC2FZC, the latter "frequently called but never raised"—we seem to have heard that before! G3AOS says that many northern sector stations are calling GC2FZC, never having worked GC. An outstanding signal for G3AOS was G3NAE (Bournemouth) on SSB, peaking S9, but apparently suffering from TV birdies. And G3AOS is another to mention the unexpectedly high level of activity in the 0730-0830 morning period.

G3JHM/A (Worthing), still operational on all three bands 4m. to 70 cm., goes up to 9C in the Counties table for two metres, having worked ON4TQ. Jack, G2CIW (Birmingham) got some GDX during the period, but worked nothing new—and he also recommends the breakfast-hour session on two metres. This is

TWO METRES
COUNTIES WORKED SINCE
SEPTEMBER 1, 1961

Starting Figure, 14
From Home QTH Only

Worked	Station
63	G5MA
61	G2CIW
59	G3BA
52	EI2A
51	G4LU
50	G3NNG
49	G3BNL
45	G3BOC, G3KPT, G3PBV
43	G3LTF
40	G2AXI, G3CO, G8VZ
38	G3OJY
34	G3PLS, G5DW
33	G2BHN
32	G3GWL, G3JYP, G3NUE
31	G3FUR, G13ONF, GW3MFY
28	G3OAA, G5UM
27	G3JLA, G3OSA
26	GW3ATM
24	G3GSO, G5QA
21	G3FIJ
20	G2DHV/P, G3HWR, G3OJY*, G5DS
19	G3JWQ
18	G3NPF, G8VN
17	G2BLA, G3ICO, G3OBD

This Annual Counties Worked Table opened on September 1st, 1961, and will close on August 31st, 1962. Only amended scores from those already standing in the Table will now be accepted, unless they are new claims from operators licensed w.e.f. June 1962.

beginning to get quite a thing! G5UM (Knebworth, Herts.) claims for both tables on both bands, and is now at 868 different stations worked on two metres—a pretty impressive total, by any standard.

G3PLS (Birmingham) started up on two metres immediately the ticket came through last October, and now runs 15w. to an 832 in the NBFM mode, with a 5-ele flat-top at 35 ft. (shortly to be replaced by a slot-fed 6/6); his Rx is a double - conversion converter, 10-0-2.5 mc using a 7500 kc crystal, with 1.5-3.5 mc tuned on a CR-100, the result

TWO METRES
COUNTRIES WORKED

Starting Figure, 8

- 20 G3HBW (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OH, OK, ON, OZ, PA, SM, SP)
- 19 G5YV (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OK, ON, OZ, PA, SM, SP)
- 19 G3CCH (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, OE, OH, OK, ON, OZ, PA, SM, SP)
- 18 G3LTF, G6NB (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OK, ON, OZ, PA, SM, SP), ON4BZ
- 16 G3GHO, G3KEO, G5MA, G6RH, G6XM, PA0FB
- 15 G2XV, G3AYC, G3FZL, G4MW, GM3EGW
- 14 G2CIW, G2FJR, G2HDZ, G3BLP, G3FAN, G3HAZ, G3IOO, G3JWQ, G3KPT, G3WS, G5BD, G6LI, G8OU, OK2VCG
- 13 G2HIF, G2HOP, G3BA, G3CO, G3DKF, G3DMU, G3DYK, G3GPT, G3NNG, G5DS, G6XX, G8VZ
- 12 EI2W, F8MX, G3EHY, G3GFD, G3GHI, G3JAM, G3OBD, G3PBV, G3WW, G5CP, G5ML, G8DR, GW2HIY
- 11 G2AJ, G2CZS, G3ABA, G3BDQ, G3GSO, G3IUD, G3JZN, G3KUH, G3LHA, G4RO, G4SA, G5UD, G6XA, OK1VR
- 10 G2AHP, G2AXI, G2FQP, G3BK, G3BNC, G3DLU, G3GSE, G3KQF, G3LAR, G3MED, G3OSA, G5MR, G5TN, G8IC, GC2FZC, GW3ATM, GW5MQ
- 9 G2DHV, G2DVD, G2FCL, G3FIJ, G3FUR, G3JHM/A, G3JLA, G3LTN, G4LX, G5UM, G8GP, GC3EBK, GM3DIQ
- 8 EI2A, G2DDD, G2XC, G3AEP, G3AGS, G3BOC, G3EKX, G3GBO, G3HCU, G3HWJ, G3KHA, G3MPS, G3OHD, G3VM, G5BM, G5BY, G8SB, GW3MFY

being good bandspread with excellent stability. G3FRV was out /M in Cheshire during the period and, "with the usual 10w. and a halo," raised among others EI2A for his 6th country as G3FRV/M.

Louis, G3EHY, Banwell, Som. says "Conditions on two have been very much up and down during the past 30 days"—but he found some good openings, with very strong signals from EI2A and G13GXP. G3JLA (Stevenage) has a QQV06-40A in the PA, input variable 25-100w., modulated by a pair of 5B/254M's in Class-B, the Rx being a 6CW4 cascode job into an SX-28 tuning 4-6 mc; his beam is a slot-fed 8/8 at 34 ft., and the site is 280 ft. a.s.l.; G3JLA has accounted for 9 countries so far, with 35C for the All-Time.

Four-Metre Build-Up

There is no doubt about the greatly increasing activity on the 4-metre band, and we have a big clip of reports this time. For the contest over June 16/17, conditions were reasonable and the support good. G3JHM/A worked 29 stations in 15 counties, with DX into the Midlands, and G3JQI for Norfolk; among stations heard down in Worthing were G2ANT, G3GVM/P and G3OHH. G3BNL/P, from near Nottingham, had 34 contacts in 20 counties, the best DX being GM3EGW; G3BNL is on regularly, freq. 70-26 mc, Sunday mornings. G5JU (Birmingham) is another, who can be found working CW on 4m., and says he has no TVI trouble.

G3PJK (Middleton Junction, Lancs.) is one of the numerous group of northerners who are active on the 70 mc band. G3PJK runs 40w., the Tx being EL91-5763-6146, the Rx an RF-27 Unit into an Eddystone S.640, and the aerial a slot-fed 4/4 J-Beam; a consistent 4-metre signal with him is G3EHY, and since starting up in March last, 8 counties have been worked. G3OHH (Macclesfield) has worked 15C and 5 countries, and G3AYT (Hyde, Ches.) can claim 8 counties; his beam is a "ZL Special" (a design very adaptable to four metres, and distinctly gainy). Both G3AYT and G3OHH worked GM3EGW on June 18.

SEVENTY CENTIMETRES ALL-TIME COUNTIES WORKED Starting Figure, 4

Worked	Station
37	G2XV
30	G3KEQ, G6NF
28	G3HAZ, G3HBW, G3JMA, G3NNG
27	G2CIW, G3JWQ, G5YV
26	G3KPT, GW2ADZ
25	G3LHA
23	G3BKQ, G6NB
21	G3IOO
20	G3LQR, G3LTF
17	G3BA, G3JHM/A, G3MPS
16	G2DDD, G3MED
15	G2OI, G4RO
14	G2HDZ, G3FAN, G5UM
13	G6XA
12	G5BD
11	G3AYC, GW3ATM
10	G3HWR, G3IRW
9	G5DS, G5QA
7	G2HDY, G3JHM
6	G3KHA, G3WW
5	G3FUL, G3IRA, G3IUD, G3JHM, G5ML
4	G3JGY

On working four Counties or more on the 70-Centimetre band, a list showing stations and counties should be sent in for this Table, and thereafter new counties worked notified as they accrue

G3OKJ (Pinner) now has 12C, while G5FK (G.E.C., Wembley) is up to 22C on an all-time basis.

From G3PMJ (Gorton, M'cr.) comes an amusing story of how the G.P.O. came round to say he was causing TSI (taxi-service interference); this was quickly cured by some adjustment to the 4m. PA, which is a QV04-7 running 12w.; his Rx is an RF-27 into an R.1155; and the aerial no more than a dipole at 13 ft. SWL Andrew (Oldham) obliges us with some further information about stations in that area not already mentioned; they are: G3OEJ (Stockport), with 10w. and a bi-square; G3JIJ (Rochdale), 30w. input and also a bi-square; and G3NSW (Blackley), who has a 4-ele beam and 10w. Activity night up there is Friday, from

11.0 p.m. onwards, and they also listen on 160m. for cross-band QSO's.

Harry, EI2W (Dublin) was on for a short time during June 16/17, and on 4m. worked G3KEU/P, G3OHN, G3OYP/P, G3PJK and G3PSA/P; he heard G3BNL/P ("best signal on the band during the contest"), and also G2BNR/P, G3JGV and G3PVU, with G3EHY coming in "at terrific strength, like a local."

Some 70-Centimetre Notes

From 70 megacycles to 70 centimetres: G2CIW worked GW3ATM at the hour of 0745-clock one morning, and is also getting very loud signals from G3NOX/T at the same sort of time; Jack runs a regular schedule with G3LTF at 119 miles, 2200-clock Mon.-Wed.-Fri., and they find they can make it under any conditions—not bad for 430 mc (it's the sort of thing we used to say about two metres, years ago). G3KPT has got to 18C in the Annual, which is nice going, and G5QA (Exeter) chalks up two more counties. G3PUR/T (Worthing) is keeping a cross-band schedule with G5NF (Farnham), and aims to get his CW up to scratch, to pass the Morse Test very shortly; he will then be in a Go-condition (in the current vernacular) for the other bands.

GW3ATM (Portskewett, Mon.) reports pretty regular reception of the 70 cm. beacon GB3GEC—which may surprise those concerned at Hammersmith. GW3ATM is now on 432.7 mc, running 25w. to a QQV03-20 and reports much improved results on the regular G5QA schedule, over their 70-mile path.

And Finally—

There has been a lot to cover this time, and we trust that it is all in. Anyway, let's hope for a sustained EDX opening, and don't forget to look out for sporadic-E conditions, which could give you a fleeting-opportunity contact with EDX like I, OE, YU or HA—but keep it short, to give others a chance. Closing date for our next is **Wednesday, July 18**, addressed: A. J. Devon, "VHF Bands," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. 73 de A.J.D. and keep the Rx open.

BUILDING A LATTICE MAST

AND RAISING IT

N. E. READ (G6US)

This article shows how a strong, good-looking lattice mast or tower can easily be constructed from "two-by-two" by anyone capable of using the ordinary wood-working tools. Heights of up to 45 feet are practicable in the design adopted by our contributor.—Editor.

HAVING become interested in the 2-metre band, it soon became obvious that the beam should be pushed up as high as possible, and made rotatable, in order to obtain the fullest advantage from the high-gain directivity of the slot-fed six-over-six J-Beam, which had for a time been erected on a temporary 25 foot pole.

A good deal of thought was given to the problem of the best and cheapest form of rotation; it is admitted that to be able to sit at the operating console and turn a knob to the appropriate point of the compass, thereby setting in motion an electric motor for the purpose of turning the aerial, is an attractive proposition (if only to impress visitors)—until one goes into the relative cost of a simple mechanical system as compared with the electrically operated one. The mechanical method is simpler and cheaper provided that the supporting mast can be erected near the operating room. Furthermore, the mechanical method allows for much more rapid rotation, and the beam can be lined up very accurately on a weak DX signal.

In the writer's case it was an easy matter to erect a mast close to the wall of the house, thereby obviating the use of guy wires. It was then decided that the cheapest and most practical beam support would be a lattice mast, or tower, especially as this form of construction had in the past proved both economical and effective. The choice of material rests between either slotted metal angle or wood, but as the latter works out at about a quarter the price of metal, and if treated with a good wood preservative, will last long enough for all practical purposes, timber was the material chosen. It was decided to build a tower 32ft. high, and to fit a metal top-mast which would bring the total height to 40ft.

Materials Required

The first step was to procure the necessary wood from a local builders' merchant, where they had a good stock of a Russian straight-grain timber free from knots, sold as "two-by-two" but planed down to about 1½ ins. square. The material is normally available in lengths up to about 22 feet, but it was decided to use lengths of 16ft. as this would go into the garage and thus enable most of the preliminary work to be done indoors. 128 feet was purchased in

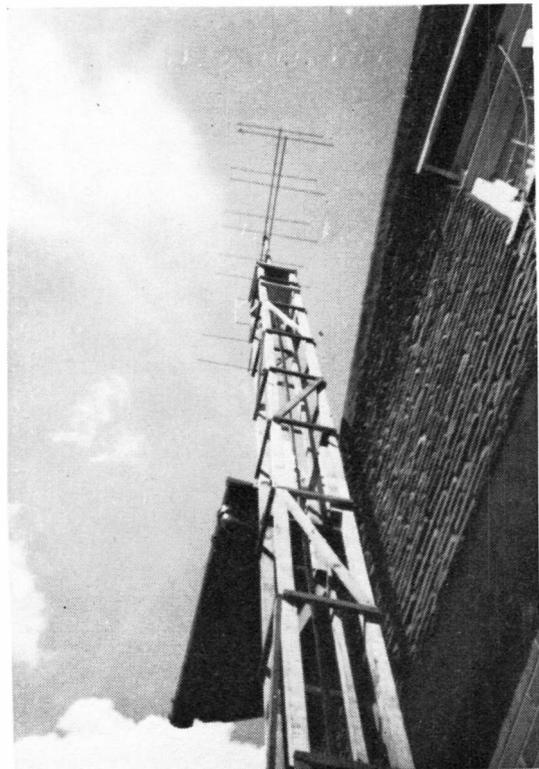
eight 16ft. lengths, plus a further 12 feet for jointing. Furthermore, should it be necessary to take the mast away to another QTH, the 16ft. sections could be easily unbolted at the centre, thereby making the matter of transport that much simpler. The "two-by-two" provides the four main supports; the cross pieces may be ordinary cheap slating lath, although care should be taken in the choice of this, avoiding knotty pieces which would weaken the structure.

Constructional Procedure

The construction is extremely simple, and can be followed from the drawings. It is not necessary to have had any previous experience of joinery, there are no complicated joints or mortices to cut, and the only tools required are a hammer, saw, screw-driver, drill and tee-square.

The first step is to cut 40 cross-pieces, each 12ins. long. At this stage all the timber should be given one coat of wood preservative and allowed to dry, care being taken to apply plenty of the preservative to the ends of the grain. Should a painted finish be preferred, then the timber should receive one coat of pink primer instead of the wood preservative.

Each corner of the tower is made up of two lengths of "2 x 2" joined end to end. The joint is made by placing two lengths end to end and bolting on a similar piece of timber 3ft. long, thereby giving



General view of the G6US lattice tower, in position with the 6/6 J-Beam at a height of about 40ft. The article describes its design, construction and erection in detail.

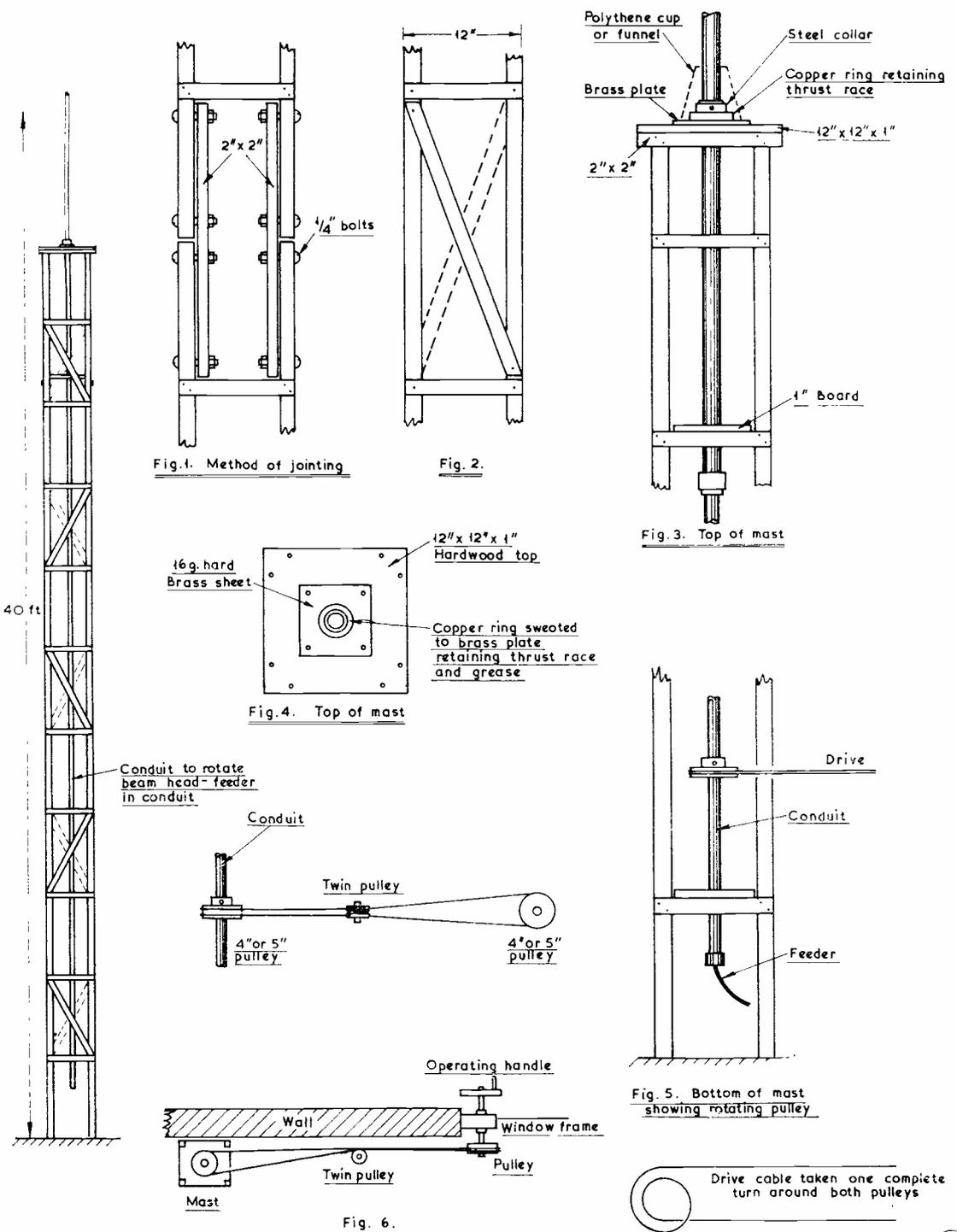


Fig. 1. Method of jointing

Fig. 2.

Fig. 3. Top of mast

Fig. 4. Top of mast

Fig. 5. Bottom of mast showing rotating pulley

Fig. 6.

Drive cable taken one complete turn around both pulleys

Working drawings for the G6US design. Methods of raising are shown in the sketches opposite.

an overlap of 18ins. each side of the join. Ordinary round-headed $\frac{1}{4}$ in. bolts with nuts and washers are used for this purpose—see Fig. 1. Two of the completed lengths should then be laid out flat, making sure that they are equal, with the ends exactly in line. The cross pieces may now be screwed on with $1\frac{1}{2}$ in. x 8 countersunk screws, at 3ft. intervals. The lath should be drilled first in order to prevent splitting. Once the cross pieces have been screwed firmly on, the diagonals can then be attached (see Fig. 2). Each should be accurately positioned by placing a piece of lath over the point where it is to be fitted, marking the angle with a pencil. It is better to make the diagonals about $\frac{1}{4}$ in. longer than the actual measurement so that they may be forced into place to make a really tight joint.

The two sides of the tower are completed in the same manner, taking care that the diagonal pieces are placed exactly the same way on each side, so that when the mast is assembled, what one actually sees is a criss-cross pattern, as shown in the photographs. The two completed sides should now be stood on edge and two or three temporary cross-pieces tacked on in order to give the correct separation of 12 inches. The remaining cross-pieces and diagonals are then screwed on, also the pieces of "2 x 2" at the top, and about three feet down from the top.

It will now be found that the structure has become extremely stiff, and not at all the sloppy affair it was before joining the sides up.

The top of the tower is capped by a piece of hardwood one inch thick. In the writer's case this consisted of a piece of teak which had already done yeoman service as a draining board for about 35 years. A sheet of 16g. hard brass is screwed to the top of the board, and a clearance hole drilled through both brass and wood, to take the conduit used to support the beam (Fig. 4). A suitable thrust bearing should be fitted to this plate. A nylon ring would be preferable as this would not require lubrication, but as this was not available at the time, local G3100 produced an excellent ball-type thrust race. This is retained in position by a copper ring which was cut from a piece of scrap copper sheet, and sweated to the brass plate. This copper ring also serves to retain the thick grease which is packed around the bearing. A further piece of board is screwed across the mast 3ft. below the top; this also has a brass plate attached in order to prevent wear at this point.

Above tower level, the top mast consists of a piece of $1\frac{1}{2}$ in. welded steel conduit 12ft. long. This is fitted with a $1\frac{1}{4}$ -to-1in. reducer just below the point where it passes through the lower board. Three further cross pieces, drilled 1in. to clear, are placed at equal intervals across the tower in order to centralize the conduit and also prevent whip. The 1in. conduit is screwed firmly to the reducer, and locking nuts are used at this point and also on both sides of all couplings. The 1in. conduit comes down to within two feet of the ground, and the coax cable from the beam is threaded through from top to bottom. Precautions must be taken to prevent chafing of the cable at the points of entry and exit; two pieces of polythene hose are used for this purpose, by thread-

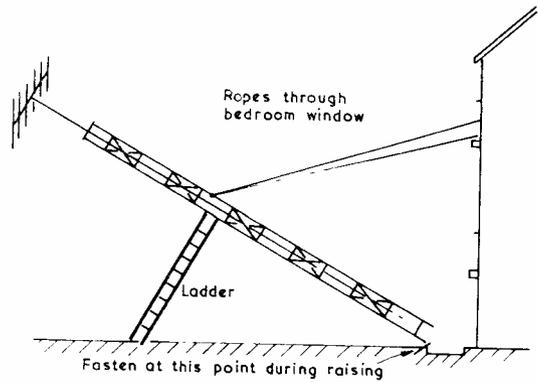
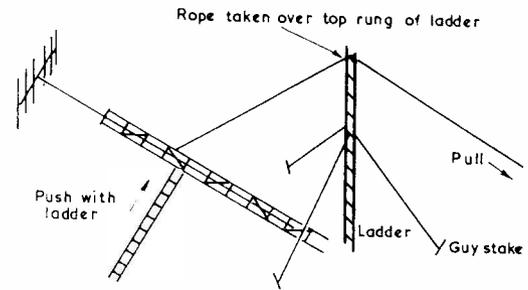


Fig 7



Remove temporary guy and ladder after making mast guys secure

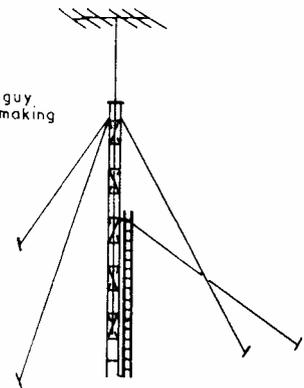


Fig. 8

ing over the cable and pushing into the conduit for a few inches. The hose is secured by a good wrapping of insulation tape and afterwards given a coat of paint or shellac.

Rotation System

Several systems of rotation were considered before adopting the method suggested by G3100. This is simple, cheap and above all, most reliable (see Fig. 6). G3100 has had a similar arrangement in use for many years. The pulleys should be 4ins. or 5ins. in

diameter and should have either flat, or have slightly concave faces; vee-type pulleys are not suitable as the operating wires tend to bind. If the pulleys are lined up correctly there is no tendency for the wire to slip off.

Should the operating room not be as conveniently situated relative to the mast as in the writer's case, the operating wires may be run for any reasonable distance, even around corners, by taking them over twin pulleys of the kind used for lifting the old-fashioned type of clothes airer (see Fig. 6). Providing that the flat-faced pulleys at either end are of the same diameter, the operating handle inside the station only needs one complete rotation in order to swing the beam through 360°. The best type of driving line found to date is ex.-W.D. telephone wire; this is very strong, does not stretch, and grips to the pulleys.

It will be observed (from the photographs), that in the writer's case the mast is placed close to the wall of the house, near to the operating room, which is on the ground floor. This is extremely convenient as it allows a shorter coax cable—and, furthermore, the wire run between the pulley at the base of the mast and the window frame is quite short and completely out of the way.

The four legs of the mast are set in a small block of concrete, and the mast is secured to the house by a piece of angle-iron which is screwed into place at the eaves.

The total cost of materials including screws, wood preservative and conduit, but excluding pulleys, should not exceed £6 10s. The total time taken for the construction was 13 hours. A mast of this design could of course, be made 40 or 45ft. long, without increasing the one-foot square measurement. With the addition of the 12ft. piece of conduit it would enable one to raise the beam to an excellent height for DX working.

RAISING THE TOWER

Before attempting to raise the mast, the two legs resting on the ground should be secured to two stakes or pieces of angle-iron which have been firmly driven in, to prevent the foot of the mast kicking up during the raising; this is extremely important, as if the base kicked up during the process, a nasty accident could easily result.

If the mast is to be erected near to the wall of the house, the easiest method of lifting is by means of a block and tackle. This should be attached at gutter height, and the lifting rope tied around the mast at about 16 to 18ft. from the base. In the writer's case it was not possible to attach a block and tackle to the house, so the lifting rope was taken up through a convenient bedroom window, and hauled on by two people inside. The initial lifting should be carried out with the help of a short ladder and a couple of (hefty) assistants. As the mast is pushed upwards by means of the ladder, the strain should be taken by the lifting tackle, or rope through window. Once the mast has reached an angle of 40 degrees, it will go up very easily indeed—see Fig. 7.

Should it be decided to erect the mast in open ground away from the house, much the easiest method



Close-up of a section of the mast described in the article — and see drawings which, when read with this view, make the fabrication clear. The central element is the metal tube (actually 1-in. electrical conduit) for driving the beam head, and the coax feed-line is also run up this tubing — see text.

of raising is to erect a short ladder of about 20 feet in a temporary manner, as shown on the drawing, Fig. 8. The mast may then be pulled into a vertical position by taking a rope over the top rung of the ladder. The initial lift is again given by the (same two) hefty assistants, using a short ladder. As before, the two lower legs should be secured to stakes driven into the ground. Alternatively, the legs may be loosely bolted to two pieces of angle-iron which have been previously embedded in the small concrete base on which the tower is to stand. The bolts can be pulled tight once the mast is in the vertical, and the two remaining legs bolted to two more pieces of angle-iron which have previously been set at the correct distance.

In the event of the mast being erected in the open, it will be necessary to have three guy wires from the top of the lattice section. These guys may consist of seven-strand galvanized clothes-line wire which is excellent for the purpose, and is readily obtainable from most ironmongers.

It is advisable to earth the bottom of the steel conduit to a good ground connection. This can be done by using an ordinary electrical earth clip at the base of the conduit, with a length of braiding of the type which can be stripped from heavy coax cable to make a flexible connection.

THE OTHER MAN'S STATION

VQ5IB



ONLY a few licences are in force in Uganda—here is one of the eight stations out there, which was active until a short time ago. VQ5IB (who has since become G8AP again) was owned and operated by Dr. Eric Pawson at Makerere College, Kampala. He first held an AA licence as 2AFU back in 1936, graduated in that year to G8AP, and ran under that call until the war came in 1939. For a number of reasons, the licence was not taken up again immediately after the war, and it was not until 1959 that gentle prodding by the 16-year-old son revived interest. After some listening with a borrowed receiver, a 1-V-1 was constructed and preparation started for the R.A.E. This was passed in London in 1960, while on leave from Uganda, and VQ5IB was licensed in August of that year. For the first few months operations were very modest, as the only gear possessed (apart from the 1-V-1) was an ex-W.D. 21 Set. However, U.S.A. and Europe were worked on 21 mc CW, and various East African stations on 7 mc phone. At the end of 1960, a U.K. licence was again taken out, and the G.P.O. courteously re-issued the original G8AP call—after a lapse of 21 years!

The VQ5IB station is shown in the photograph. Construction is a major interest, and on the left can be seen the home-built 3-deck transmitter. Power supplies are at the bottom, with separate 200, 300 and 700v. units, and in the middle is a conventional speech amp./modulator, with 12AX7-6C4-p/p 807's. The top deck houses the RF section, with the following line-up: 6AH6 Clapp VFO, with 6C4 cathode follower and 6AK6 isolating buffer, followed

by three 6C4 switchable multiplier stages and a 5763 buffer/doubler; the latter has a multiband tuner covering 80 to 10 metres and drives a single 6146 in the final; a pi-net output circuit is built in, and the whole RF unit is totally enclosed. The VFO is remote tuned, and the tuner box can be seen next to the watch in the middle of the picture. The multiplier stages are band-pass coupled, so no tuning controls other than the remote tuner and the multiband are required before the PA. For CW, 12AU7 and 6BL7GT keyer valves provide differential keying of the oscillator and the 5763.

On the desk can be seen the AR88 and 1-V-1 receivers, and above these, from left to right, the practice audio oscillator, Clapp tuner, home-brew frequency standard, and PSU/LS unit for the HRO above. The original 21 Set is also on the top shelf as an emergency stand-by.

Aerials are a major interest at this station, which began with a dipole for 40m., then changed to a parallel cluster of three dipoles, covering 40-15, 20 and 10 metres. The system latterly in use was one-aerial one-band, with separate dipoles on 80 and 40m., a rotary 3-element beam for 10 metres, and separate ground planes on 20 and 15m. The ground planes are made from copper plumbing pipe, and each is mounted on its own 30-ft. steel lattice tower.

Work envisaged for the future includes an improved version of the same transmitter, with one less tuning control, and a good double-conversion receiver (after the necessary alignment instruments have been built!) [over

The operator of VQ5IB/G8AP is, and always has been, primarily interested in CW, with phone a rather poor second; the latter is used, however, for local contacts. He is keen on working DX but not on collecting countries—especially if they consist of heaps of sand with temporary stations on them. It is believed that a little over 100 countries have been worked, but the actual number has never been counted; rather more interest is felt in WAS and, so far, Idaho, Wyoming, Utah, South Carolina and Delaware have evaded the net. Contacts were particularly welcomed with G and W/VE, as well as Commonwealth stations, and QSL policy is 100% sent through the bureau. Occasional hold-ups of a month or two have been regretted, but were due to lengthy delays in the arrival of new batches of printed cards. So as to help the SWL, a simpler card was specially printed for confirming their reports, as the large number received (the great majority from Central Europe, and usually of no value) was making it difficult to cope with them. VQ5IB/G8AP is a regular reader of *SHORT WAVE MAGAZINE*, and a supporter of the amateur organisations. He was hon. secretary of the Amateur Radio Club of Uganda. So, if you hear or work G8AP, it will be VQ5IB back in the U.K.

SPECIAL-ACTIVITY STATIONS

Further to the list of stations being operated under special call signs for short public appearances—as published on p.212 of the June issue—the following have also been notified:—

GB3BRS, Croston, Lancs., July 9-13: Bishop Rawstone School celebrations, with operation mainly on 3.5 and 14 mc, under the direction of S. E. Kelly, G3HDL, Bishop Rawstone School Amateur Radio Society, Out Lane, Croston, Nr. Preston, Lancs.

GB2LS, Liverpool, July 19-21: Operated by the Liverpool and District Amateur Radio Society, using CW and phone on all bands 10-160m., on the air 24 hours each day. The Liverpool Corporation has donated a special QSL card, which will be sent to each station worked. Given good weather, an attendance in the region of 100,000 people is expected, as the Liverpool Show, with which GB2LS is associated, is a well-established annual event. QSL address: H. James, G3MCN, hon. secretary, L.D.A.R.S., 448 East Prescott Road, Knotty Ash, Liverpool, 14.

GB3SMG, Stoke Mandeville, July 22-29: In addition to the details already notified, special permission has been obtained from the Post Office for G2FQW to sign GB3SMG/M, and for SM2BZU (who is undergoing treatment at Stoke Mandeville) to operate the Games station GB3SMG when one of the authorised additional operators is present.

GB2CHS, Castle Bromwich, July 31-August 1: In connection with the local Horticultural Show, on all bands 10-160m., using CW and phone. Operators

will be G2AGK, G2FLY and G3PBQ. QSL address: M. Keen, G3BPQ, 63 Sheffield Road, Sutton Coldfield, Warks.

GB3KEC, Folkestone, July 30-August 9: In association with the Kent Education Authority's summer school for secondary teachers, on the subject of "Introducing Electronics." A VFO-controlled Heathkit DX-40U will be operated on all bands, and QSO's with teachers and other school organisations are specially sought. The station is being run by G3FCT and G3LCK, who is also the course tutor. Address: D. J. Bradford, G3LCK, 43 Mount Road, Canterbury, Kent.

GB3SRC, Chingford, Essex, August 3-6: The Silverthorn Radio Club station, under canvas between Chingford and High Beech (Essex), manned by five operators, using mainly Top Band and two metres. QSL by special card—address: B. A. Lea, G3ICY, 9 Balgonie Road, Chingford, London, E.4.

GB3SFS, South Shields, August 10-12: In connection with the South Shields Corporation Annual Flower Show, the local Club group will as usual provide and man a station, operating on all bands, using AM phone. A newly-designed card is being issued, and will be sent to all stations worked. Visitors to the Club stand will be very welcome. QSL address: D. Forster, G3KZZ, hon. secretary, S.S. & D.A.R.C., 41 Marlborough Street, South Shields, Co. Durham.

RADIO CLUB OF SCOTLAND

We are asked to announce that a new organisation has been formed for Scotland, as an entirely independent group, running its own periodical, *The GM Magazine*, and QSL bureau. The annual membership fee for The Radio Club of Scotland is £1, and the hon. secretary is A. Barnes, GM3LTB, 7 Southpark Terrace, Glasgow, W.2, Scotland. The support of GM's at home and overseas is solicited, and one of the objectives of the Scottish national society (which has no affiliation) is to encourage the use of the Gaelic language amongst radio amateurs.

INTERESTING COMPANY RESULTS

In his report to shareholders of Birmingham Sound Reproducers, Ltd., the chairman, Dr. D. M. McDonald (who, incidentally, is qualified as a doctor of medicine) reports nett profits of over £1.8 million for the year to end 1961, enabling a 40% dividend to be paid. This has been earned on 70% of the output going to export, so that B.S.R., Ltd. is one of those progressive radio firms looking forward to the Common Market.

On the other hand, the chairman of Murphy Radio, Ltd. has had to report a nett loss of £215,726 for 1961, which followed on a loss of £91,655 for the previous year. The directors have recommended that the take-over offer made by The Rank Organisation should be accepted.

NEW QTH's

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

G2AQB, W. Jardine, 4 Balcaskie Road, Eltham, London, S.E.9. (*re-issue.*)

G3OQT, R. F. McLachlan, 27 Lake Rise, Romford, Essex. (*Tel.: ROM 41733.*)

G3PNE, J. M. Passmore, Crosswinds, White Place, Taplow, Bucks.

G3PNI, M. T. Perkins, 17 Durban Road, Margate, Kent.

GM3POT, J. G. Walford, 11 Brims Road, Thurso, Caithness.

G3PPT, L. G. Sear, 3 Baldock Road, Royston, Herts.

G3PQD, D. E. A. St. John, 25 Dial Road, Gillingham, Kent.

G3PSR, M. J. Gibbs, 8 Hunters Way West, Chatham, Kent. (*Tel.: GILL 51904.*)

G3PTM, A. Griffiths, 50 Redlands Road, Solihull, Warks.

G3PTR, G. F. Merchant, 31 Whitaker Street, Derby.

G3PTT, S. H. Goodall, Park Farm, Brailsford, Derby.

G3PUH, Royston and District Amateur Radio Club, c/o Manor House Social Club, Melbourn Street, Royston, Herts.

G3PUZ, D. Hogan, 101 Radbourne Road, London, S.W.12. (*Tel.: KELvin 2061.*)

GM3PVP, T. M. Finlayson, 15 Edgehill Road, Bearsden, Dunbartonshire. (*Tel.: Bearsden 0444.*)

G3PVW, J. G. Everest, 29 Fortescue Road, Parkstone, Poole, Dorset.

G3PVZ, D. J. Bagwell, 82 Hay Green Lane, Bournville, Birmingham, 30.

G3PWW, P. Seaman, 91 Ockleys Mead, Godstone, Surrey. (*Tel.: Godstone 241.*)

G3PWX, A. S. G. Boyd, Larksfeld, Crockham Hill, nr. Edenbridge, Kent.

G3PXN, B. R. Thompson, Wych-Elm, Atwick Road, Hornsea, Yorkshire.

G3PXW, Z. L. Williams, 30 Brooklands Avenue, Sidcup, Kent.

G3PYF, J. L. Green, 274 The Street, Hilperton, Trowbridge, Wilts.

G3PYL, D. A. Justice, 9 Leslie Road, Sheffield 6, Yorkshire.

G3PYM, A. S. Barlow, 31 Watergate Street, Ellesmere, Shropshire.

G3PYP, G. F. Hibberd, 20 Bowden Crescent, Melksham, Wilts.

G3PYQ, F. Wright, 1 Fox Covert Rise, Misterton, via Doncaster, Yorkshire.

G3PYT, J. Nuttall, 27 Penswick Avenue, Anchorsholme, Blackpool, Lancs.

G3PYY, S. A. Denner, 14 St. Catherine's Close, Newark, Notts.

G3PYZ, Radio Hobby Club, Junior Leaders Regt., Royal Signals, Denbury, Newton Abbot, S. Devon.

G3PZE, C. J. Burkitt, 89 Carlton Crescent, Luton, Beds.

G3PZH, C. J. Shakeshaft, 11 Old Hall Drive, Ellesmere Port, Wirral, Cheshire.

G3PZJ, R. J. Bowser, 14 Hemingford Drive, Luton, Beds.

G3PZP, M. L. Aspinall, 19 Nicholes Road, Hounslow, Middlesex.

G3PZS, F. B. Stanbridge, 56 Laburnum Crescent, Kidlington, Oxford.

G3PZT, F. J. Thompson, 41 Boverton Drive, Brockworth, Gloucester.

G3PZX, A. A. Ward, 5 St. Hilda's Way, Gravesend, Kent.

G3PZZ, P. D. Smith, 38 Leasway, Belmont Avenue, Wickford, Essex.

G3RAA, G. S. Fitton, 18 Beverley Drive, Edgware, Middlesex. (*Tel.: Colindale 4470.*)

G3RAE, R. A. Eldridge, Portree, Smallfield Road, Horley, Surrey. (*Tel.: Smallfield 2011.*)

G3RAG, Rev. R. A. J. Axtell, 37 Nathaniel Walk, Tring, Herts. (*Tel.: Tring 3444.*)

G3RAS, P. M. Brown, 7 Fernbank Road, Undercliffe, Bradford 3, Yorkshire.

GW6GW, Blackwood Amateur Radio Society, c/o P. M. Fulton, 36 Sunny Bank Road, Blackwood, Mon.

CHANGE OF ADDRESS

DL2PN, J. M. Passmore (*G3PNE*), R. Signals, c/o Officers' Mess, 1st Signal Regiment, B.F.P.O. 32.

G3AWD, S. A. Wood, 167 Rochester Way, Kidbrooke, London, S.E.3.

G3BNI, D. L. K. Coppendale, 27 Braemar Close, The Lawns, Swindon, Wilts.

G13HNM, C. E. Davies, 29 Blenheim Drive, Belfast, 6.

G3JZL, W. K. Montford, 45 Cecily Road, Cheylesmore, Coventry, Warks.

GM3NRP, P. McC. Daniels, 10 Stonecraig Road, Wishaw, Lanarkshire.

G3OJI, J. H. Sleight, The Poplars, Ulceby Road, South Killingholme, nr. Grimsby, Lincs.

G3OKE, P. W. Copeman, 255 Highbridge Road, Burnham-on-Sea, Somerset.

G3OMU, A. Bradbury, Norbreck, Chestnut Drive, Basingstoke, Hants.

G3OWR, A. Brown, 30 Beechcroft Road, Grantham, Lincs.

G3PFB, E. Milne, 24 Darwin Street, Northwich, Cheshire.

G13PMK, J. C. Buick (*ex-GM3PMK/VP2ST*), 8 Nelson Drive, London-derry.

G13PMK/MM, J. C. Buick, *H.M.S. Yarmouth*, c/o G.P.O., London.

G3PUA, C. W. Timmins, 4 Tarnway Avenue, Thornton Cleveleys, nr. Blackpool, Lancs.

G4AP, J. G. Rooke, Nightingales, Folly Wood, Wootton Bassett, Wilts.

AMENDMENTS

GW3PEX, L. France, 4 The Copse, Trefechan, Cefn Coed, Breconshire.

G3PXH, M. J. Bartlett, 6 Douglas Road, Southbourne, Bournemouth, Hants. (*Correction for "G3PXN," June.*)

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for August Issue : July 13)

(Address all reports for this feature to "Club Secretary")

SOME of the Clubs do an excellent job in the way of "showing the flag" at public fetes, galas, garden parties and so on; not only do they demonstrate to the public something of what Amateur Radio is all about, but they provide an interesting activity for all the members, including those who have no gear of their own, and the juniors who are SWL's or even only would-be SWL's.

One such is reported this month by **Northern Heights**, who laid on a show at the Halifax Charity Gala. G3MDW/A was put on the air with G3MDW, G3OMM and G3FQH operating, while other members provided transport and labour (including aerial erection) and the local Scout troop arranged the tenting and an overnight security watch for the equipment. After sundry crises, including the chasing of the local Electricity Authority only two hours before opening time, they were on the air to schedule. QRM was provided by fairground equipment on the site and a brass band contest near their tent, but all went off successfully and "an excellent day was had by all."

Clubs whose members suffer from boredom might well look around their district and see what opportunities await them. Apart from the stimulating effect of this kind of activity on the club members, it does give genuine pleasure and create much interest among the general public . . . it should be looked on as one of the activities that clubs exist for.

Acton, Brentford and Chiswick hold their July meeting on the 17th with a talk on the New STD Telephone System, by G3OIX. Usual place—66 High Road, Chiswick, W.4. at 7.30 p.m. **Bradford** have an informal meeting on July 10, and on the 24th the subject is "160 metre SSB, QRP" and the lecturer G3OGV.

Chesham have been getting good coverage in the local press, and the Club's net operation times are included. They are going ahead with plans for a two-metre net and also raising funds for a second station site.

Chesterfield meet on the second Wednesday at the Newbold Observatory Lecture Room. They were formed only last January, and are keen to increase their numbers; prospective members welcome at the meetings, or through the post to the secretary (see QTH in panel). Their last talk was by G2CVV, on Radio and TV Interference.

Dorking pursue their policy of holding summer

meetings in the outlying districts, with one on July 10, at The Black Horse, Gomshall, and another on July 24 (8.30 p.m.) at The Royal Oak, Brockham Green. The August rendezvous will be the Barley Mow, East Horsley, on the 14th (same time).

Flintshire meet for a Quiz on July 30 at the Railway Hotel, Prestatyn; their June meeting took the form of a talk on Aerial Fundamentals, by GW3FPF. **Halifax** have a ragchew on July 17, and, on August 7, a talk on Amateur TV by G3EKE.

Crystal Palace transfer to their new premises (CD Training Centre, Bromley Road, Catford) after their June meeting, which will be the last at the old Windermere House location. The opening at Catford is on July 21—any interested visitors will be welcome.

Morecambe meet on the first Wednesday at the Liberal Club, Balmoral Road, where any new members will be welcome, as will amateurs visiting the district. In June they had a show of home-built equipment; on July 4, they visited the automatic telephone exchange in Lancaster; and on August 1, they meet for a ragchew. During one of the Sundays in July they will be on the air as G2FCL/A and G3GPH/M, both on Top Band.

Northern Heights are booked for an informal meeting on July 17 and a Treasure Hunt on the 31st (organised by Mr. H. Crewe). They have recently visited Holme Moss TV station, and, as mentioned,



"... You never told me Club nights could be so exciting..."

had a demonstration station at the Halifax Charity Gala. G3MDW/A will be operating on August 4 from the Warley Charity Gala.

Paddington elected a new secretary (see panel) to replace G3LVK, now on a travelling assignment. They meet every Wednesday, 7.30 p.m. at Beauchamp Lodge Settlement, 2 Warwick Crescent, W.2; an outside activity is to be participation in the Little Venice Fete.

Preston will be meeting at St. Paul's School, Pole Street, on July 10 for a talk on Amateur Affairs by G2AMV; this will be followed by a demonstration of mobile equipment by G3CSG. **Purley** held their AGM and elected G3OGO chairman, G3GKF secretary; on July 6 G3NRW will be talking about his visit to Moscow, and on the 20th there will be a tape-recorded lecture.

The **QUA Club (Jersey)** recently organised a draw to help with funds, and approached 62 other Clubs in this connection (we gather that five of them replied!) One member has passed the R.A.E. and another is in for the next exam; meanwhile more members are needed and anyone interested is asked to contact the secretary (see panel).

Southgate meet at Arnos School, Wilmer Way, N.11, on July 12 for some Hints and Tips from G3HJL; there is no August meeting, but the subject on September 13 will be SSB, by G2BVN. **Verulam** (St. Albans) report for the first time; they recently visited the BBC at Daventry and, after seeing round the transmitters, spent the evening in the club quarters (G5XX). Normal meetings are on the third Wednesday of the month.

West Kent will be visiting Servomex Ltd. at Crowborough on July 6, and on the 20th they have a Film Show. August 3 is the date of their Garden Party at Pembury. Normal meetings at the Adult Centre, Culverden House, Tunbridge Wells.

Wirral have shifted their QTH and are now using the Boy Scout Hq. in Claughton Village. On July 8 the subject of the meeting is Radio Maths. Simply Explained (by G3EGX), at 7.45 p.m. This will be preceded by a Junior Section Meeting at 6.30 p.m.

Wolverhampton will gather on July 16 and 30, 8 p.m. at their Hq., both meetings being described as "short talks." **York** have decided to meet twice a week in future—on Tuesday evenings for Morse and R.A.E. instruction, and on Thursdays to put the Top Band Tx (G3HWW) on the air. Once a month a special function will be arranged, and it is also hoped that some sort of outdoor social gathering can be fixed in the near future.

Yeovil continue to meet every Wednesday at the British Legion Hq. On June 13 they were visited by VP2AB/2MC, who talked about Amateur Radio in Antigua. On July 11 the club will be visiting the GPO station at Somerton, which should be a very interesting trip.

Burnham-on-Sea held their AGM, at which they elected G3FWW chairman and G3JFY secretary. A good year's running was reported, and they will be moving into their new clubrooms almost at once.

Next meeting, however, will be at the Crown Hotel on July 10—no meeting during August.

The **Radio Club of Scotland** held its inaugural meeting on June 1, and will be getting together every Friday at St. Andrew's Halls, Glasgow, the first Friday of the month being set aside for beginners. All subjects are covered, including SSB, RTTY and SWL.

Slade will be hearing two tape-recorded lectures on July 13; on the 27th Mr. K. W. Morris (GPO Telephones) will be talking on Technical Aspects of STD. **Barnsley** are to visit Holme Moss TV station on July 13, after which they go into recess until September 14, when they hold the AGM at King George Hotel, Peel Street. **Cornish** met at Falmouth on June 6; 9G1CC presented colour slides and talked on Life in Ghana. **Crawley** have made an informal mobile outing of their July meeting, on the 25th, when they will trek to the Hog's Back (Guildford) and hope to meet members of other clubs from 2000 GMT onwards. Their mobiles will be on 144-637 mc.

Cray Valley will gather at the Station Hotel, Sidcup, on July 24 to hear G3BCM on The Radio Amateur and Interference. **Derby** will hear a talk on The Problems of Sightless Radio Enthusiasts (by L. Ball) on July 11. The 18th is the date for their D/F League fixture, No. 4, and the 25th an Open Evening.

The **IHHC** report that VK5KO and his XYL are still on an extensive tour of Europe, and also that VK3AHR and his XYL are in the London area. The club now run week-end nets (7095 kc, 1200 GMT)—anyone interested invited to join in.

Lincoln held their Annual Dinner at the Grand Hotel on June 6, when their retiring president (Dr. Walters) handed over to his successor (Mr. Church). The president, in his speech, praised members who gave comfort to sick and bedridden amateurs in the form of skeds and general friendship.

Loughton held their inaugural gathering in June and will meet again on July 20 to hear G3HGE talk about the T.W. two-metre and VHF equipment. **Manchester** have Practical Nights on July 11 and August 8, Morse and R.A.E. courses on July 18 and August 1, and a lecture on July 25—all at the King George VI Club, Moston.

Newbury will meet on July 27 for a talk and demonstration by G3LLK on Contest Techniques; visitors and prospective members welcome, as always.

CLUB PUBLICATIONS RECEIVED

We acknowledge, with thanks, the receipt of the following Club Publications: **ARMS** (*Mobile News*, May); **Enfield** (*Newsletter*, May); **Hastings** (*Natter-Net Notes*, May); **North Kent** (*G3ENT News Letter*, June); **Purley** (*Splatter*, June); **RAIBC** (*Radial*, June); **Reigate** (*Feedback*, May); **South Birmingham** (*QSP*, May); **West Kent** (*Newsletter*, May); **Wirral** (*Newsletter*, Vol. 15, No. 5); **Wolverhampton** (*Newsletter*, June-July); **Radio Club of Scotland** (*GM Magazine*, June); **Crystal Palace** (*Newsletter*, No. 79); **Southgate** (*Newsletter*, June); **Newbury** (*NADARS Newsletter*, May); **Mitcham** (*Newsletter*, June); **Derby** (*Newsletter*, No. 3, 1962); and **Guildford** (*Monthly Natter*, June).

**Names and Addresses of Club Secretaries
reporting in this issue :**

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, London, W.3.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10.
 BARNSELY: P. Carbutt, G2AFV, 19 Warner Road, Barnsley.
 BRADFORD: M. Powell, G3NNO, 28 Gledhow Avenue, Roundhay, Leeds 8.
 BURNHAM-ON-SEA: M. Lillington, G3JFY, 19 St. Mary's Road, Burnham-on-Sea.
 CAMBRIDGE: H. Lowe, 34A Verulam Way, Cambridge.
 CHESHAM: Capt. C. G. Stephenson, G3CLJ, 21 Lynton Road, Chesham.
 CHESTERFIELD: K. S. Hudson, 20 Tennyson Avenue, Chesterfield.
 CORNISH: W. J. Gilbert, 7 Poltair Road, Penryn.
 CRAWLEY: R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley.
 CRAY VALLEY: S. W. Coursey, G3JJC, 49 Dulverton Road, London, S.E.9.
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.
 DERBY: F. C. Ward, G2CVV, 5 Uplands Road, Littleover, Derby.
 DORKING: J. Greenwell, G3AEZ, Wigmore Lodge, Beare Green, Dorking.
 ENFIELD: V. Croucher, G3AFY, 15 Nelson Road, London, N.15.
 FLINTSHIRE: H. T. Jones, GW3NQP, Bedwyn, Queens Walk, Rhyl.
 GUILDFORD: D. Hobden, 121 Great Goodwin Drive, Guildford.
 HALIFAX: G. Sunter, 24 Booth Fold, Luddenden Foot, Halifax.
 HASTINGS: W. E. Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea.
 I.H.H.C.: M. Allenden, G3LTZ, 16 Grovefields Avenue, Frimley, Aldershot.
 LINCOLN: Cpl. Tech. Russell, J. S., G3PMT, RAF Scampton, Lincs.
 LOUGHTON: J. Atkinson, G3OPA, 6 Rochford Avenue, Loughton.
 MANCHESTER: A. B. Langfield, G3IOA, 2 Rowland Street, Moston, Manchester 10.
 MIDLAND: C. J. Haycock, G3JDJ, 360 Portland Road, Birmingham 17.
 MORECAMBE: K. J. Singleton, G3NLM, 8 Westmoor Grove, Heysham.
 NEWBURY: G. T. Allen, G3JTK, 83 Huntshook Road, Tadley, Basingstoke.
 N.A.R.M.S.: B. Crisp, G3LHQ, Ashmount, Moorhouse Lane, Birkenshaw, Nr. Bradford, Yorks.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogdon, Halifax.
 NORTH KENT: B. J. Reynolds, G3ONR, 49 Station Road, Crayford.
 NORTH NOTTS: E. W. Badger, G3OZN, 20 Tennyson Drive, Worksop.
 PADDINGTON: L. Orbach, 2 Warwick Crescent, London, W.2.
 PLYMOUTH: R. Hooper, 2 Chestnut Road, Peverell, Plymouth.
 PRESTON: W. K. Beazley, 9 Thorngate, Penwortham, Preston.
 PURLEY: E. R. Honeywood, G3GKF, 105 Whytecliffe Road, Purley.
 QAU CLUB (JERSEY): E. Banks, GC2CNC, 23 Marett Court, Marett Road, Jersey.
 R.A.I.B.C.: W. E. Harris, G3DFH, 4 Glanville Place, Kesgrave, Ipswich.
 REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.
 SCOTLAND: A. Barnes, GM3LTB, 7 South Park Terrace, Glasgow.
 SLADE: C. N. Smart, 110 Woolmore Road, Birmingham 23.
 SOUTH BIRMINGHAM: T. W. Legg, Flat 3, 80 Alcester Road, Birmingham 13.
 SOUTHGATE: R. W. Howe, G3PLB, 162 Victoria Road, London, N.22.
 SUTTON & CHEAM: F. J. Harris, G2BOF, 143 Collingwood Road, Sutton.
 TORBAY: Mrs. G. Western, G3NQD, 118 Salisbury Avenue, Barton, Torquay.
 VERULAM: B. Cockell, 119 Gurney Court Road, St. Albans.
 WEST KENT: H. F. Richards, 17 Reynolds Lane, Tunbridge Wells.
 WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebington.
 WOLVERHAMPTON: J. Rickwood, 738 Stafford Road, Fordhouses, Wolverhampton.
 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil.
 YORK: N. Spivey, G3GWI, 80 Melton Avenue, Clifton, York.

Plymouth held a Field Day, open to the public, at Central Park on June 2 and 3. They made 128 contacts in 20 countries, mostly on phone, and much interest was shown. Virginia House will be closed during August, but meetings will be held on Plymouth Hoe, with G3PGJ/M in attendance.

Reigate report that their member R. A. Eldridge has been allotted the call G3RAE! In July, their Juniors' meeting will be combined with a two-metre event over the week-end of the 7th/8th; on the 21st, at The Tower, Redhill, G3NZP will speak on QRO on Two Metres, and on the 25th there will be the inter-Club "meet" with Dorking and Crawley on the Hog's Back.

Sutton and Cheam will meet for a talk on the Mohican receiver, by G8DF, on 17th July (The Harrow, High Street, Cheam). **Torbay** said farewell to their vice-president G2GM, who is leaving Torquay and starting up at Freshwater, I.o.W. Next meeting, July 14 at the Torquay YMCA, for a talk on BCI and TVI by G3LKJ.

North Notts were busy at the Hobbies and Leisure Exhibition in Worksop, running a 150-watt station, phone and CW on all bands with an LG.300 and an 888A. G3MBQ and G3LLV also set up an RTTY station; and exhibitions of crystals and valves were yet another feature. The venture was very successful and the club gained ten members.

Midland meet on July 17 (7.30 p.m. at the Birmingham and Midland Institute, Paradise Street, Birmingham) for a lecture on Tape Recording, by Mr. H. C. Smith.

A new group is the **Northern Amateur Radio Mobile Society**, inaugurated at a well attended meeting in Bradford. In May, N.A.R.M.S. put on their own first Rally at Harewood Park, with an attendance of over 100 people. They are to organise the Northern Mobile Rally at Harewood on September 2—see "The Mobile Scene" in this issue.

At **Cambridge**, where the Club signs G3PKF from Hq. in Victoria Road, activities are towards getting on the air on all bands, with weekly meetings held on Fridays; the July 13 occasion will include a B.A.T.C. tape-lecture on amateur TV. At the June meeting, the Withers talk and demonstration on VHF was very well received by a large attendance.

Guildford are getting themselves well organised following the AGM, and the immediate objective is a permanent Hq., where a station could be established. Forthcoming meetings are on July 12 (City Café) and July 25, when they rendezvous with Crawley at the Hog's Back for what is described as "a /P exercise"—details from the hon. secretary.

ALL THE DETAILS, PSE!

If writing in, please print your name and address and include your call-sign (if you have one). We are getting an increasing number of letters with totally illegible signatures and incomplete QTH's. You in your village may be very well known in your distant part of the country, but that is no help to us, or the Post Office.

SMALL ADVERTISEMENTS

("SITUATIONS" AND "TRADE")

9d. per word, minimum charge 12/-, No series discount: all charges payable with order. Insertions of radio interest only accepted. Add 25% for Bold Face (Heavy Type). No responsibility accepted for errors. Replies to Box Numbers should be addressed to The Short Wave Magazine, 55 Victoria Street, S.W.1

TRADE

EQUIPMENT CONSTRUCTED, serviced, modified. Special SWL service. Enquiries welcomed, s.a.e. to — G2VV, 53 Thames Street, Sunbury-on-Thames, Middlesex.

BINOCULARS AND PERISCOPES wanted in exchange for Radio equipment.—Details to Busfield's, Astro-Marine Sales, 45/47 Eastborough, Scarborough, Yorkshire.

WANTED FOR CASH: Good clean communications receivers and SSB equipment. Please state price. — Short Wave (Hull) Radio, 30/32 Princes Avenue, Hull. (Tel. 18953.)

QSL's and Logs by Minerva. The best there are.—Samples from Minerva Press, 2 New Road, Brentwood, Essex.

QSL CARDS AND LOG BOOKS, GPO. APPROVED. CHEAPEST, BEST, PROMPT DELIVERY. SAMPLES. — ATKINSON BROS., PRINTERS, LOOE, CORNWALL.

WEBB'S LOG BOOK for recording signals heard and worked; 112 pages 9½ in. x 8 in., approved format, semi-stiff covers. Excellent value; 6s. 0d. post free, or callers 5s. 4d.—Webb's Radio, 14 Soho Street, London, W.1.

QSL CARDS: Buff, blue, pink, green, 100, 14s. 6d.; 250, 23s.; 500, 40s.; 1,000, 75s.—Samples (s.a.e.): Reilly, Panxworth, Norwich, 56.Z.

RADIO AMATEUR COURSE.—A postal course for those wishing to take the Amateur Examination. A sound basic training in radio communication. Very reasonable terms. Send for brochure.—Premier School of Radio, 3 Kerry Crescent, Calne, Wiltshire.

WANTED FOR CASH: All types of radio equipment. — Details of Busfield's, Astro-Marine Sales, 45/47 Eastborough, Scarborough, Yorkshire.

COLLINS KWM-1 SSB Transceiver with DX adaptor, AC PSU, perfect. £280. Valiant 10-160m. £32. AR88LF (exceptional condx.) £38. HRO, PSU and Coils £22 and £25. Hallicrafters "Super Skyrider" £16. National NC-303 (as new) £145. Eddystone 680. £55. 888A £75. Geloso G.209R (as new) £65. Hammarlund HQ-170 (as new) £140. Hammarlund HQ-180 (as new) £150. — K. W. Electronics Ltd., Vanguard Works, Dartford, Kent.

TUNING METERS. AR88 only, calibrated S-units. etc. Zero to right, new, now available; s.a.e. details.—Carter, 224 Cavendish Avenue, Ealing, London, W.13.

READERS' ADVERTISEMENTS

3d. per word, min. charge 5/-, payable with order. Please write clearly, using full punctuation and recognised abbreviations. No responsibility accepted for transcription errors. Box Numbers 1/6 extra. Replies to Box Numbers should be addressed to The Short Wave Magazine, 55 Victoria Street, S.W.1.

WANTED: Good Standing Wave Ratio meter.—Write Box No. 2644, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: B2 Tx/Rx, PSU, in first-class condition, no key, no earphones, three xtals in wooden case, circuit supplied, all plugs, £13.—Box No. 2645, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: AR88LF £35. 1250-0-1250v. Transformer, 400 mA, suitable filament transformer, with v/holders, £3. Mobile power supply, Tx valves, etc., s.a.e. enquiries—G3JGP, 17 Firs Road, Milnthorpe, Westmorland.

FOR SALE: HRO voils GC. 1-7-30 mc, 50s. carr. paid.—L. Arnold, 24 Albert Road, Stechford, Birmingham, 33.

WANTED: Bandsread HRO Coils 14, 21 and 7 mc, Bug Key, quote price. — G3FVC, 18 Lansdown View, Tisbury, Bath, Somerset.

SELLING UP, home-built desk, built-in power unit, valves, speakers, phones, all kinds of components, name your price. — Golder, 92 Belmont Street, Oldham, Lancs.

FOR SALE: Elizabethan 150 Watt Tx, £35; CR-100 £17 10s.—G3HVP, 19 Parsonage Road, Chalfont St. Giles (Tel. 2543), Bucks.

WANTED: Labgear low-pass filter E.5034. — Billing, Monument Road, Helston, Cornwall.

EXCHANGE Marconi Aircraft Transmitter AD97 with modulator and handbook, will exchange for decent receiver or 2-metre mobile equipment, or W.H.Y.?—Details to Box No. 2646, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

PANDA PR120V Table-Top all band Transmitter, £40. 160m. Mobile Rig, Command Sets and 12v. PSU, £7. WANTED: 2m. Mobile Rig, would exchange PR120V. — G3MEO, 93 Thurlow Street, S.E.17.

LG.300 Transmitter with rack mounted power supplies and modulator, £55; R.107, £7 10s.; 19 Set supply unit, £2 10s. Buyer inspects and collects. — G3MIX, 50 St. Mark's Crescent, Maidenhead, Berks.

WANTED: Communication Receiver and test equipment, etc., suitable for amateur use.—J. Ayres, 151 Brighton Road, Surbiton, Surrey. (Phone Elmbridge 5660)

SELL: Gonset G76 (Model 3338) fitted 100 kc calibrator (Model 3269), also AC power supply with speaker (Model 3349) and DC Mobile power supply (Model 3350), all connecting cables, manual, etc. Original cartons, factory mint condition, and only used about three hours owing to business commitments, cost £360; offers invited for cash sale. First-class desk or mobile rig. Also sell HRO-60T cabinet with coil fronts, etc., engraved (cost £40), £10 to clear.—Write Box No. 2647, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: April 1960 *Short Wave Magazine*: also information on any modifications, improvements and additions to CR-100 and R.1392; also manual or circuit for R.1392, buy or borrow.—Lee, 15 Cedar Road, East Croydon, Surrey.

MINIMITTER 10/15m. Minibeam, £9; G4ZU FB5 aerial, new, £4. Lots of other bargains, lists, s.a.e.—G3JBU, 31 Beverley Crescent, Northampton (Tel. 33944).

AMATEUR RADIO HANDBOOK

New (R.S.G.B.) publication slanted for the U.K. amateur—More than 500 pages, large format, in stiff covers with dust jacket—Twenty chapters of practical interest to the British AT station operator—Well illustrated in line and half-tone—Complementary with current American amateur manuals—Full of constructional designs and ideas covering all amateur bands HF/VHF/UHF—Basic data and circuitry for U.K. amateur station equipment of every kind—A recommended text book on the subject.

Price 36s. 6d., post free
(delivery from stock)

PUBLICATIONS DEPARTMENT
SHORT WAVE MAGAZINE, LTD.
55 Victoria Street, London, S.W.1
(Tel.: ABBey 5341)

QUARTZ CRYSTAL UNITS

Hermetically sealed, Gold Electroded Crystals in the Frequency range 3 Mc/s to 15 Mc/s at £1. 1. 0 each and 20 to 30 Mc/s at £1. 10. 0 each post free. State holder type preferred—HC-6/U or FT243.

PROFESSIONALLY MADE FOR THE AMATEUR

Send cash with order stating exact frequency and you will receive an Oscillator Circuit Diagram with your crystal.

Booklet "Guide to Specification and Use of Quartz Oscillator Crystals" 5/-.

CATHODEON CRYSTALS LTD. Linton, Cambridge

SMALL ADVERTISEMENTS, READERS—continued

EXCHANGE BC-221 with charts and manual, plus Furzehill output meter, plus GPO standard resistance box with Tinsley light galvo, all in excellent condition, for best Communication Receiver offered, s.a.e. for particulars. **WANTED:** Manual for BC-47.—Melhuish, 31 Shepherds Bush Green, W.12.

RECEIVER 1475 13 valves; BFO; voltage stabiliser; scale check, etc. 1.8-20 mc, PSU; 240v. AC, in immaculate condition, £16.—D. Wood, 250 Worples Road, Staines, Middx.

SALE: R.206 Rx, good condition, 55 kc to 30 mc, £14, o.n.o.? **WANTED:** PSU No. 33, good condition, state price; and manual R.206. — Walker, Thirty Nine Steps, Old Pool Bank, Pool-In-Wharfedale, Yorkshire.

WANTED: Command Receiver 3-6 mc, new or in perfect order.—Farmer, 31 Osborne Avenue, Newcastle-on-Tyne, 2.

HAMMARLUND HQ120X Receiver, general coverage plus separate amateur bandspread, S-meter, £30, o.n.o.? Eddystone 898 dial, brand new £2. Philpotts standard instrument case, new, 16in. x 9in. x 9in., complete with front panel and chassis, grey enamelled, £1 10s.—Shaw, 9 Daver Court, Mount Avenue, Ealing, London, W.5 (PER 0439).

ELIZABETHAN Tx, CW, Mod. and PSU, £20. Double superhet Rx, Geloso front end, £10. R.107, mint condition, £8. Top Band Tx, CW with mod., £8. Two Tele "F," £3.—G3OYS, 18 Paget Close, Tidworth, Hants.

WANTED: Unmodified Collins TCS Tx, in good condition, price and details to—Pim, Warren House, Mill Road, Bluebell Hill, Rochester, Kent.

SALE: Table Top Tx, 10m.-160m. TT21, KT88's mod. Tiger 60B unmodified, FB condn., £35. Top Band Tx, mod., PSU, £10. Delivery 25 miles. Offers.—G2ASL, 68 Middle Park Road, Birmingham.

GELOSO G210 Tx, 35 watts, 80 to 10 metres, with matching G207 80 to 10m. double superhet Rx.; excellent condition and appearance, best offer. **WANTED:** Tiger Tiglet or Minimitter Mobile Tx.—Write G3LGZ, 63 Dosthill Road, Twogates, Nr. Tamworth, Staffs.

FOR SALE: KW Vanguard Tx, 10-80m., requires slight attention, £35 or offers? Inspection invited.—Sgt. T. Wallace, 83 Queens Road, Brighton, Sussex.

SALE: Hammarlund HQ170. Class-D Wavemeter. RCA AR77 Receiver. Advance E2 signal generator. Geloso VFO. Labgear wide-band coupler. Heathkit 0-12-U Oscilloscope. Taylor 100A Testmeter. McMichael all-wave radio. Belling Lee TV Aerial. Woden UM4 mod. transformer. Radiovision 2-stage (AC) pre-selector. High voltage mains transformers, HT chokes, valves, quartz crystals, short wave gear, etc. All at low prices.—Ellis, G3SN, 12 Hillside Road, Saltash, Cornwall.

WANTED: Manual and/or instruction book on AR88LF Rx. — R. Broadberry, 4 Temple Terrace, Louth, Lincs.

HALLICRAFTERS HT11A Marine 160m. Tx/Rx. complete 12-volt p/pack, press-to-talk mic., manual, £20, o.n.o.? **WANTED:** Minimitter 160m. whip.—G3NQX, 1 Gib Lane, Hoghton, Nr. Preston, Lancs.

SMALL ADVERTISEMENTS, READERS—continued

HRO, nine GC coils, 50 kc-30 mc, speaker, HRO PSU, handbook, condition as new, never used, £25. 1 mA meters (2), new, £1 each.—G3MEJ, 60 Fieldend Road, London, S.W.16.

EDDYSTONE 358X, v.g.c., PSU, o/p stage, 9 coils, 90 kc-31 mc and handbook, £15. ZC1 Mk.II, less vib. unit, have suitable rotary gen., plus mike, headphones, £7 10s. RF-24 and PSU, £2. W.1191 wavemeter, £3. Aerial c/o relay with meter, 10s.—G3KIFY, Old Orchard, King's End, Powick, Nr. Worcester. (Tel.: Powick 267)

CREED 3X Teleprinter, good working order, £9, buyer collects. — Years, 19 Waterloo Road, Epsom, Surrey. (Epsom 3045)

SALE: CR-100, £10; SSB Filter Exciter, £3 10s.; SSB 160-10m. mixer, £3; 80-10m. CW exciter with 807 PA, £4; 200 valves, £3; AVO, £5; 813 SSB/CW PA with 813, £3 10s.; 680-volt PU, £2 10s.; 500-volt PU, £2. Lots of junk.—Jones, 28 Barnmeadow Road, Newport, Shropshire.

HALLICRAFTERS SX-28 Rx, in good condition, £38. Brand new PA Type AM912/TRC ex-U.S. Army Sig. Corps, including 4X150, £15.—G5DF, 20 Church End Lane, Tilehurst, Reading, Berks (Phone: Reading 67876)

EDDYSTONE 358X, mint, 8 plug-in coils covering 90 kc to 31 mc, finished in grey crackle and chrome, p./pack to match, with manual.—Rott, 16 Harleen Grove, Offerton, Stockport, Cheshire.

MCR-1 with power unit and coil packs, for sale, full working order, £4, or offer.—Box No. 2653, Short Wave Magazine Ltd., 55 Victoria Street, London, S.W.1.

HELP! SWL requires 7B Teleprinter or good receiving-only type printer.—D. Gray, 1 Sunderland Road, Easington Village, Co. Durham.

SALE: Wilcox-Gay VFO, complete, £2 10s. carriage. WANTED: Bug, TA12, TCS12, similar Tx; 5763, 6CL6, 837, 811; ART13 oscillator knob.—GM3PCQ, 137 Grieve Street, Dunfermline, Fife.

EXCHANGE DX-100U, world coverage record, for equivalent rack job. CR-100 perfect, not ex-Service, £17 10s. Minimitter 5-band converter, nearly new, £10, or with CR-100, £25. BC-348/0, mains, a beauty, £14.—Box No. 2654, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

HALLICRAFTERS S-38B Receiver, 0.5-32 mc. bandspread, AM/CW, receive/standby, 4 spare valves, line cord, £15 o.n.o.—Stone (Museum 1600, Ext. 123).

HELP! G3LHN seeking shack N.E. London. within 30 miles Stepney; no sharing. FOR SALE: Eddystone 680X, modified coax antenna input, good condx., best offer; buyer arranges collect.—Police Constable 620H Muir, Moyland House, King David Lane, Stepney, E.1.

CLEARING OUT: HRO in fair condition; HRO rebuilt and partly re-stripped; 14 coils; BC-453, five RF units; 640 stripped; Modulator p/p 807 AB2, less mod. trans.; Labgear Wide Band Multiplier, VHF field strength meter; plus large junk box of condensers, transformers, valves, magazines, £25 o.n.o.? Buyer to inspect and collect.—Lievens, 82 Weybourne Road, Farnham.

"DOES ALL YOUR RF GO INTO THE ANTENNA, OR DO YOU USE YOUR FEEDERS FOR SPACE HEATING?"

"A TIGER ANTENNA COUPLER WILL REDUCE YOUR SWR."

"DO YOU WAKE UP IN THE NIGHT, BEING CHASED BY ANGRY NEIGHBOURS BRANDISHING 21-INCH TV SETS?"

"A TIGER ANTENNA COUPLER PROVIDES INDUCTIVE COUPLING AND AT LEAST A 10db REDUCTION IN HARMONIC OUTPUT."

1. The Tiger Antenna Coupler is based on the "L" Network or "Z" match as it is sometimes called. This is a combination of series and parallel tuning which enables an accurate match to be made between a coaxial feeder from the transmitter and a variety of Antenna Feeder impedances.

2. The new range of couplers are contained in a box measuring 8" wide by 3½" high by 6½" deep. The finish is stoved grey hammer.

3. Three controls are provided, two tuning controls with 0-100 Scales and a switch for the HF or LF bands. The input socket is on the right of the unit and the output connections on the left.

4. All three types listed below will handle the output of a 150 watt transmitter at 52-80 ohms impedance:—

Type 75 AC 52 — 80 ohms unbalanced output

Type 300 AC 52 — 400 ohms balanced output

Type 600 AC 400 — 1000 ohms balanced output

Any type PRICE £6. 19. 6 plus 5/6 post and packing.

TIGER RADIO LTD.

36A, KIMBERLEY ROAD, SOUTHBOURNE, BOURNEMOUTH, HANTS.

Telephone: Bournemouth 48792

G4GZ's BARGAINS

VALVES: EA50, EF50, 1/6. 6H6M, EB34, 6K7G, 2/-, 2X2, 6B8G, 12SC7M, EF36, EF50(S), 2/6. 6AL5, 6AM6, ARP12, AR8, EAC91, EB91, EF91, EL32, TT11, VP23, Z77, 3/-, 1L4, 6C4, 6J6, EF39, 3/6. 6AC7M, 6SN7GT, 1626, 1629, DC70, DF73, DL70, 4/-, 6AK5, 6J7G, 6ST7M, 12A6M, 12K7G, 12Q7G, 12S17M, 35Z4G, 959, EBC33, 5/-, 3Q4, 6BH6, 6BJ6, 6F6M, 6K8G, 6S17M, 6SL7GT, 6X4, 5/6. 1S5, 1R5, 6AU6, 6/-, 12AU7, 12AT7, 80, KT33C, ECC81, ECC82, P780, 6/6. 12AT6, 6L6G, 6V6G, 12AU6, 12BE6, 12CB8M, 42, GT1C, PCF82, PY83, VR150/30, 7/6. 2A3, 6BW6, 6L7M, 12SQ7M, ECC84, EBF80, 8/6. 3A5, 6K8M, 6L6M, PCC85, 9/-, 50L6GT, EM80, 5R4GY, 6Q7GT, EL84, 9/6. 12K8M, 836, EABC80, EC80, GZ32, VLS631, DET24, 10/-, 5763, 446A, ECH42, 10/6. 805, 3E29 (829S) 25/-, 4E27 (HK257B) 40/-.

Post/packing 6d. per valve. Free over £3.

SPECIAL QUANTITY OFFERS !!!

EC80 (GGT, 12 m/a pv), 3 for 20/- (P/P 1/6); £25 per 100. 446A, 3 for 20/- (P/P 1/6); £25 per 100. EF91, EB91, 6AM6, 15/- doz. (P/P 2/6); £5 per 100.

AR88 cer. tub. timmers, 4 for 6/-, AR88 smoothing chokes, 3 for 21/-; 65/- doz. ET4336 Transformers, 190-250v. input, 10v. CT 10A, 2½v. CT 10A twice, 35/- each; £16 per doz. Potted U.S.A. xfms. 230v. input; 32, 34, 36v. 2A output, 17/6.

MC METERS: 3½" rd.fl. (2½" dial) 0-500 m/a, 16/6; £7 per doz. 0-15v. AC (MI Cal. at 50 cps.), 16/6 each; £7 per doz. 2½" rd.fl. (2" dial) 0-1 m/a, 22/6. 2" rd.fl. 0-500µ amps, 17/6. 0-30 m/a (5 m/a basic), 10/6. 2½" rd. plug-in electrostatic 0-1500v., 19/6 each; £8 per doz.

B9A moulded valveholders and cans, 11/6 doz.; 75/- gross. Micalax ditto, 13/6 doz.; 90/- gross.

GEC Pyranol 10 mfd. 2Kv. condensers, oil filled, 27/6 each. 25 pfd. air spaced trimmers, 3 for 5/-; 17/- doz.

JOHNSON 500 E20, 500 PF Tx variables, 27/6 each.

BSR Monardecks, new boxed, £6 10s.

also

EDDYSTONE RECEIVERS — FERROGRAPH TAPE RECORDERS — LEAK — QUAD — GOODMAN'S — WHARFEDALE, ETC. HI-FI EQUIPMENT. FINEST SELECTION IN THE COUNTY.

JOHN ANGLIN

385, CLEETHORPE ROAD, GRIMSBY, LINCNS. Tel. 56315

PETER SEYMOUR

COMMUNICATION EQUIPMENT SPECIALISTS

	£	s.	d.
HALLICRAFTERS SX110. 540 Kc.-33 Mc. with large bandspread amateur bands dial, "S" meter, xtal filter, etc. As brand new ...	60	0	0
AIRMEC. C864. 15-45 and 300 Kc.-30 Mc. As new ...	95	0	0
MARCONI CR100/8 Mod. Brand new, 60 Kc.-30 Mc. 200-250 A.C. ...	35	0	0
CR100 in good used condition ... (P/P £1)	18	10	0
R208. 10-60 Mc. 100-250 A.C. input, built-in speaker, etc. ... (P/P £1)	10	10	0
RI07. 1.2-18 Mc. 100-250 A.C. input, built-in speaker, etc. ... (P/P £1)	12	10	0
EDDYSTONE S680X. As new, 480 Kc.-30 Mc. 100-240 A.C. ...	85	0	0
EDDYSTONE S640. 1.8-30 Mc. 200-240 A.C. input. Sep. electrical Bandspread ...	25	0	0
EDDYSTONE 358X with ten coils and power unit for 240 A.C. 40 Kc.-30 Mc. ... (P/P £1)	18	10	0
Works reconditioned BC348 in original condition with dynamotor ...	20	0	0
Marconi ELECTRA AND MERCURY marine station giving coverage from 15 Kc.-23 Mc. continuous with matching power unit. Brand new condition ...	120	0	0
NATIONAL SW54. 540 Kc.-30 Mc. built-in speaker, 110-230 A.C./D.C. ... (P/P 10/-)	17	10	0
HALLICRAFTERS S38D. 540 Kc.-30 Mc. electrically OK. ... (P/P 10/-)	12	10	0
BC1147A. 1.5-30 Mc. Similar valve line up to AR88. 110-240 A.C. ... (P/P £1)	20	0	0
SX62A. 540 Kc.-108 Mc. AM/FM. Short wave listeners dream receiver ...	125	0	0
HALLICRAFTERS SX101A. As brand new ...	150	0	0
BC221 guaranteed OK. ... (P/P 10/-)	10	10	0
ADVANCE E2 signal generator. 100 Kc.-100 Mc. ...	12	10	0
TAYLOR VALVE TESTER, complete with modern adaptors, less charts ...	4	10	0
BC639A. 95-155 Mc., built-in 200-250 A.C. power unit. First class VHF receiver ... (P/P £1)	20	0	0
AVOMETER, model 7 ...	10	10	0
PANORAMIC ADAPTOR, input 5.25 Mc. suitable for 527 or R44/ARR5 ...	20	0	0
" B2 " complete with mains-battery pack and all coils. Receiver converted to Ham bands only with good bandspread ... (P/P 10/-)	10	0	0
RCA AR88D, fully reconditioned ... (P/P £1)	40	0	0
DUMONT HIGH GRADE MINIATURE SCOPE, DC-8. Mc. within 20dB, built-in calibrator, trigger, etc. Brand new ...	80	0	0
K.W. VICTOR, as brand new 80-10 Mtrs. 120W A3150W. A1 ...	60	0	0
K.W. TOP BANDER. As brand new 10W A1/A3, VFO, Plate and Screen Mod, etc. ...	22	10	0
4X150A valve bases, £2 10 0; 3 Gang 15 pf capacitors, 2/6; Miniature CR19U 1 Mc. xtals, £1 each; Collins potted 6 henry 150 Ma chokes, 12/6; Panda PRI20v. manuals, 10/- each.			

HIRE PURCHASE TERMS ON ALL EQUIPMENT OVER £35 inclusive
Deposit 20% available over 12, 18 or 24 months.

PART EXCHANGES HIGHEST TRADE-IN ALLOWANCES

Equipment of all types purchased
We urgently require modern equipment, please state your price.

EXPORTERS TO ANY PART OF THE WORLD

All items delivered by return, ex stock Callers welcome

410 BEVERLEY ROAD, HULL, YORKSHIRE

Tel. Hull 41938. After 6 p.m. 41166

SMALL ADVERTISEMENTS, READERS—continued

FIRST REASONABLE OFFER secures: National NC-156-1, 550 kc-30 mc, S-meter, good condition. Also unmodified R.1392.—Box No. 2648, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

EDDYSTONE S680, £35. KW Vanguard, 10/80-metre, £40. 2DAF Rx components, Philpotts cabinet, Electroniques IF's, coils, switches, condensers and crystals, £20. 144 mc Tx. £5. G2IQ Converter, £2. Modulators p/p 807 UM3, £6; p/p 6V6 UM1. £4. All o.n.o., carriage extra.—GW3HEA, Burke, Cefn Collfryn, Criccieth, Caerns.

RECEIVER CR-100, 60 kc to 30 mc. re-wired, re-aligned, phones, handbook, £15. — Lock, 47 Ashurst Road, Cockfosters, Herts. (Barnet 8691.)

WANTED: CR-100/8, AR88, Hallicrafters or Eddystone; state condition and lowest price; exchange or sell PCR2 and R.1132A Rx's.—Farrell, 65 Harrowside, Blackpool.

£65 AVAILABLE for Eddystone 680X, under 3 years old (produce bill of sale). £75, "940." —Box No. 2649, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED URGENTLY: PSU. 750v. 200 mA. or 750-0-750 transformer; also CR-100 manual, and Gelo VFO dial and escutcheon.—Box No. 2650, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Gelo 75w. Tx. 80m.-10m.. mic., ATU. £45. Gelo R209. £50. Mosley Vertical, 40m.-10m., never used, £12.—Box No. 2651, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: American National NC-60 communications receiver, full coverage; 6 months old; complete with transformer, also tape recording socket; £22.—G. W. Strong, Business Hours (Mac 7121).

MARCONI TF144G signal generator, £25. Cintel square wave and pulse generator, Type 1873, £20. BC-221, no case or book, £4 10s. 829B, TZ40. 15s.; 5B/254M, 6AG7, 6s. 6d.; 6AG5, 6AH5, 6AL5, 6J6, 6AS6, Z77, EF91, 6AM5, EF92, 2s. 6d. 150 brand-new condensers, resistances, mixed, 10s.—Brawson, 2 Park Avenue, Burnley.

WANTED: Viceroy Tx. Mk. II; Class-D Wave-meter; ATU, Panda-type, or similar.—Box No. 2652, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

HALLICRAFTERS SX-28 for sale, excellent condition and appearance, handbook, £20, plus carriage. Marconi B.28 (CR-100), rebuilt by Marconi in 1952, new coil packs in p.v.c., new appearance and fitted NL, £15, plus carriage. **WANTED:** Facsimile receiver for experimental work; must be cheap; particulars, please.—Scott, 27 Waverley Avenue, Whitley Bay, Northumberland.

REMOVAL SALE: Two 3X Teleprinters, £6 ea. RAVO Multiminor, £6. Mosley V4-6, £10. Mosley MR3 mobile whip, £7. GM3BQA, 3-band Quad, £8. Also much assorted junk; please call and naggle.—G3LAS, 12 Beech Avenue, Buckhurst Hill, Essex. (BUC. 5335.)

WANTED: BC-348 or CR-100 Receiver in reasonable condition. All letters answered.—G3GWL, 9 High Brink Road, Coleshill, Warwickshire.

SMALL ADVERTISEMENTS, READERS—continued

3-EL 3-Band beam, 25ft. mast, rotator and control with indicator, home-built, £15 o.n.o.? Buyer to remove but assistance given with stripping. Owner moving to DX (Rutland). Also: AR88D, with speaker, £30. SX-27 Rx, no case, £15. German SW field Rx, mains or 28-volt, 7 valves, £10. Part-built table-top A3 xmtr. with final 813, £8. Q5'er with PSU, £3. B2, modified, PSU and mod., £8. (12-volt) MCR-1, complete, £5. SSB linear, 829B, £4. TR 1985/1986, with all relays and valves, £10. PSU 400v. 250 mA, £5. Another, 400v. and bias 150 volt, £6. Audio amplifiers, generators. The lot, plus odds and ends, £100 o.n.o.?—Miller, G3CFB, Monument Lane, Chalfont St. Peter (Tel.: Chalfont St. Giles 753), Bucks.

BARGAIN: MINIMITTER Mercury Transmitter. 3.5-28 mc. 120 watts Phone/CW Table Topper, £60.—Montford, 45 Cecily Road, Cheylesmore, Coventry.

TAYLOR SIGNAL GENERATOR, Model 68A. 100 kc-240 mc. new condition, £20. Taylor Meter, Model 127A, unused, in original packing, £7 10s. Marconi TF643A Absorption Wavemeter. 20 mc-300 mc, new condition, less transit case, £5. Also a large box of valves, meters, and W.H.Y.? First reasonable offer secures.—G3MEL, 12 Links Avenue, Felpham, Bognor Regis, Sussex.

FOR SALE: Barker-Williamson 5100-B Transmitter with 51SB-B Generator; both in factory mint condition; as new; first-class American Tx of finest quality; original cost, £405; only used for about 10 hours; genuine offer requested. Also brand-new, unused "Hy Gain 18HT" vertical tower; list price, £55; offers invited? Also Webster Bandspanner, bargain, £5.—Box No. 2655, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1 (Advertiser, please communicate with SHORT WAVE MAGAZINE office, quoting "No. 68, July," as no address given with advt.)

COLLINS 75S1, fitted filter and crystal by Collins as extras; recent model absolutely factory mint condition, used only few hours; cost £275 with extras; sell £200.—Box No. 2656, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. (Advertiser, Evesham, Worcs., please communicate with Magazine office; no address given.)

FOR SALE: RCA AR88D, reconditioned 14-valve receiver, good condition; any offers?—Telephone Elsley, Tudor 2327, evenings after 6.30.

JULY 1958, or 1958 complete, *Short Wave Magazine* wanted; also HRO-MX and TA-12 manuals.—Clark, 68 Abbey Row, Malmesbury, Wilts.

FOR SALE: Panda Explorer Tx, £30; Heathkit DX-40U with VF-1U VFO, £20.—Napper, 43 Albemarle Road, Taunton, Som. (Tel. 2718.)

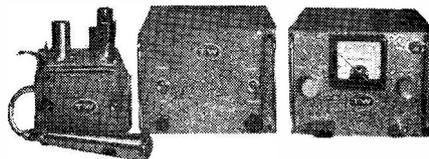
R. 107, good condition, with spare valves, £10 10s. Denco CT7B Turret, £2 10s. 85 kc IFT's, 8s. each.—Tibbert, 397 Uttoxeter Road, Derby.

PANDA PR120V Transmitter, 150w. CW, 120w. Phone, FB, TVI; can deliver reasonable distance; £40. Minimitter converter, £10. — K. Wright, 27 Haverstock Court, St. Pauls Cray, Kent. (FOO 4266.)

LG. 300 (Mk. II) with mod. and PSU, £45; AR88, £35; 8KW converter, £12; CR-100, £12.—E. R. Bartholomew, 151 Watling Street, Gillingham, Kent.

TW MEANS V.H.F.

MANUFACTURERS OF V.H.F. EQUIPMENT FOR THE RADIO AMATEUR AND INDUSTRY



This neat Table-Top 2m Station consists of:—
THE NUVISTOR CONVERTER, TW-2 AND P.S.U.

- TW-2 10w. TX complete with mod.... 23 gns.
- TW Nuvistor Converter (You choose I.F.) 11 gns.
With built-in P.S.U. £15
- TW Mains Supply/Control Unit (All supplies necessary for TW-2 and Converter) 13 gns.
- TW Nuvistor Preamp (Built-in P.S.U.) ... 6 gns.
- TW Halo Aerial (easily mounted) ... £2/17/6
- All Transistor Mobile Receiver (TOPMOBILE) Bandspread 1.8-2.0 mc/s. "TWOMOBILE." Tuneable I.F. 4-6 mc/s only 6 in. wide, 2½ high, and 6 in. deep. Available shortly.

BOB LEE | **ORBIS OY** | **STUDIO IV**
U.S.A. | **FINLAND** | **S. RHODESIA**

For full details write to:—

T. WITHERS (Electronics)
15b GILBERT STREET, ENFIELD, MIDDX.
G3HGE Tel. Waltham Cross 26638 G3HGE

SHORT WAVE (HULL) RADIO

G5GX

	£	s.	d.
NATIONAL HRO 60. Very clean. 4 coils	185	0	0
NATIONAL NC 190X. General coverage plus bandspread on Amateur Bands. 240v. mains	113	4	0
NATIONAL NC 155. Amateur Bands. 80, 40, 20, 15, 10 and 6. S meter. AVC with SSB, etc. 110v.	106	17	6
NATIONAL NC 105. 550 kc/s. to 30 mc/s. S meter. Q Multiplier, etc.	63	6	0
HALLICRAFTERS HT 37. SSB TX. Demonstration only	175	0	0
HALLICRAFTERS SX 101A. 80, 40, 20, 15, 10	147	0	0
HALLICRAFTERS SX 111. Very clean...	89	10	0
HALLICRAFTERS SX 111. 80, 40, 20, 15, 10	88	0	0
HALLICRAFTERS SX 140. 80, 40, 20, 15, 10 and 6	49	10	0
HALLICRAFTERS S 120. 550 to 30 mc/s. A.C. D.C. 110v.	35	0	0
G.E.C. BRT 400. 150-350 kc. 550 kc/s.-33 mc/s.	75	0	0
MINIMITTER MR 44. Amateur bands only	39	0	0
MINIMITTER PA. Pair TT21's	12	0	0
EDDYSTONE 940. 550 kc/s. to 30 mc/s.	125	0	0
EDDYSTONE 840C. 550 kc/s. to 30 mc/s.	58	0	0
KW ELECTRONICS VICEROY MARK III with extra filter	150	0	0
KW ELECTRONICS VICEROY MARK II	135	0	0
MOSLEY CMI. Amateur Bands. 80, 40, 20, 15 and 10	86	0	0
PANDA PR 120. Transmitter. Hammer tone cabinet	50	0	0
PANDA ATU	6	10	0
PLESSEY. 2-metre TX. 3-tier cabinet in grey crackle, in excellent condition	75	0	0
GELOSO 209R. 160, 80, 40, 20, 15, 10	50	0	0
AR88D. Modified to double superhet with 85 kc. IF's	32	0	0
THE R.S.G.B. AMATEUR RADIO HANDBOOK	1	14	0

Carriage extra on all above items

30-32 PRINCES AVENUE, HULL

Telephone: 408953

SMALL ADVERTISEMENTS, READERS—*continued*

MINIMITTER Tx, including matching ATU, coax changeover relay, spare valves, microphone, £40. BC-454, 12AX7 output, mods. for 12-volt 160-metre, with speaker, 50s. Prefer buyer collect.—Box No. 2657, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

HAMMARLUND SUPER PRO, BC-794, £19; 1250 kc-40 mc, bandsread two RF, three IF, xtal filter, var. select, amp. AVC, noise limiter, push-pull o/p, 16 valves, rack mounting, perfect. AR88D plus S-meter, £29. CR-300 plus power pack, £10. BC-342 plus speaker, £12. Hallicrafters S38, £7. **HALLICRAFTERS MARINE, £8*.** LM 17 frequency meter plus charts, £11. BC-221 plus uncal. book, £6. BC-221 less xtal and charts, £3. BC-221 spares. Enormous VFO, v. stable, £3. Collins TCS Tx, £7. BC-683, 100-150 mc. All in excellent condition except *.—Box No. 2658, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Teletype 14 Teleprinter, 220v. AC motor, suitable 45/50 band working; recently overhauled and unused since; £23 o.n.o.?—Box No. 2659, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

S 358X with 10 coils, 90 kc. to 32 mc, plus PSU. Also R.1155A plus PSU; £10 each o.n.o.?—King, 18 Minto Street, Edinburgh, 9.

BACK NUMBERS FOR SALE. *Radio Electronics:* 1960, May, June, August and November; 1961, July and October; 1962, Feb. to June. *Audio:* 1960, Oct. to Dec.; 1961, May to Oct. and Dec.; 1962, Jan. to March. *Radio and TV News:* 1961/2, Oct. to Jan. All 2s. 6d. each. *CQ:* Dec. 61; Feb. 62; April 62; May 62; at 3s. each. *QST:* April and May 62, at 3s. 6d. each. *Short Wave Magazines:* 1956, Jan. to April and July to Sept.; 1957, June to Sept.; 1958, Sept. to Dec.; at 2s. each.—Box No. 2660, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SPECIAL AMATEUR LICENCE MORSE COURSE

THE NEW "RHYTHM" METHOD of teaching takes all the drudgery out of learning Morse. Passes secured in all cases, even after previous failures.

By using **SPECIALLY** prepared recordings students learn automatically and without effort, perfect Morse in half the time required by any other method. Please S.A.E. for booklet.

"ROBUCK" 3-speed Tape Recorders **NOW IN STOCK**

G3HSC, 45 GREEN LANE, PURLEY, SURREY

STILL AVAILABLE

The famous **DEPENDAPAC 12v.** Transistor Inverter — the only one of its kind on the world market giving maximum efficiency in the "Receive" as well as the "Transmit" position! Two built-in relays operate the two outputs of 250v. 100 ma and 500v. 220 ma.

150 WATTS OF TRANSISTORISED POWER

For only **21 Gns.** Terms available.

A MUST for the keen mobile operator.

Other voltages made to special order —

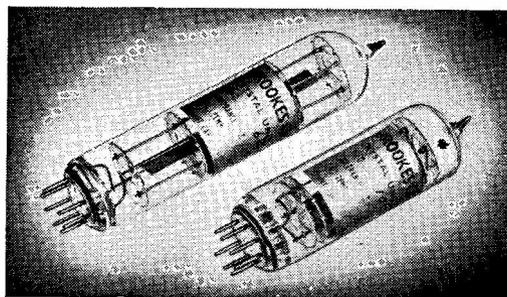
Send for illustrated brochure to:

DEPENDABLE RELAY CO. LTD.

8a, Ainger Road, London N.W.1.

Telephone: Primrose 8161

BROOKES Crystals



mean **DEPENDABLE** frequency control

Illustrated above are (left) Type G2 Crystal Unit, Frequency 62 kc/s; (right) Type G1 Crystal Unit, Frequency 100 kc/s.

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



BROOKES CRYSTALS (1961) LTD.

Suppliers to Ministry of Supply, Home Office, BBC, etc.

CORNHILL FACTORY, ILMINSTER, SOMERSET

Tel.: Ilminster 2402

G2ACC offers you—

POPULAR CATALOGUE ITEMS

Woden. Modulation Transformers: UMO, 25 watts R.F. input, 54/6; UMI, 60 watts R.F. input, 73/6; UM2, 120 watts R.F. input, 102/-; UM3, 240 watts R.F. input, 110/- . Driver Transformers: DT1, 49/6; DT2, 56/-; DT3, 48/- . Mains Transformers: RMS10A, 44/6; RMS11A, 44/6; RMS12A, 59/6; PTTM13A, 81/-; PTTM16, 118/6; PTTM17, 151/6.

Postage extra on orders under £3.

These are some of the items held in stock for immediate delivery. CATALOGUE No. 12. 56 pages, illustrated with over 2,000 new guaranteed items by leading makers. 9d. post free (refunded on first order).

SOUTHERN RADIO & ELECTRICAL SUPPLIES

SO-RAD WORKS · REDLYNCH · SALISBURY · WILTS

Telephone Downton 207.

JACK TWEEDY G3ZY

SPEEDY AND RELIABLE SERVICE

EDDYSTONE receivers and accessories stocked

Most first class manufacturers' components available
Quotations for specific requirements on request.

Mint Eddystone 840A, £40; really good AR88LF, front panel completely chromed, case professionally re-crackled 'S' meter, £35; Hamobile De Luxe, 144 mc/s, TX/RX 25 watts; aut. QV03—20A in final, Rotary power pack for mobile with chromed halo which slides over normal car aerial. Additionally 5 element Yagi and Sectional mast for portable working, matching P.S.U. 230 volts AC. Breast mike with switch, also morse key, £45. Two only BC221 frequency meters, original calibration charts, spare valves and P.S.U., £15 each. Wilcox Gay VFO as new, complete with handbook, £6.

H.P. terms now available, generous trade-in allowance on your used equipment.

21, Birkin Lane, Grassmoor, Chesterfield, Derbys.

Telephone: Holmewood 506