

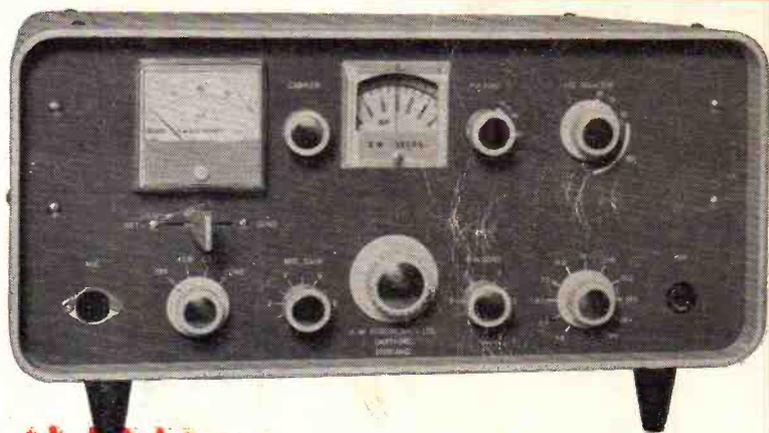
The SHORT WAVE Magazine

VOL. XXIV

SEPTEMBER, 1966

NUMBER 7

**FOR
THE
NEWLY
LICENSED
OR
'OLD
TIMER'
DX-CHASER OR
RAG-CHEWER**



THE
KW 'VESPA'
TRANSMITTER

THE ONLY
BRITISH SSB
TRANSMITTER
for all HF Bands

EXCELLENT
VALUE

ALL BANDS
10-160 metres

ALL MODES
OF OPERATION
SSB, AM
AND CW

£110

POWER SUPPLY 225

... from the factory of the famous KW Viceroy transmitter and the KW 2000 S.S.B. transceiver—The KW 'VESPA,' transmitter for S.S.B. AM and CW.

K.W. also stock Beams, Rotors, Co-ax Cable, Connectors and Relays. Hammarlund Receivers. Trade-in equipment besides the well known K.W. 'G' Line. KW2000A Transceiver, KW600 Linear Amplifier.

K. W. ELECTRONICS LTD.

1 HEATH STREET, DARTFORD, KENT

Phone: Dartford 25574. Cables: Kaydublew, Dartford

CONTACT YOUR LOCAL DISTRIBUTOR

AGENTS IN MANY COUNTRIES

DIRECT SHIPMENTS MADE ALL OVER THE WORLD



Eddystone

HIGH STABILITY
AMATEUR BANDS
COMMUNICATIONS RECEIVER

EA 12
£185



The Eddystone "EA12" receiver is specially designed and built to give the extremely high performance, allied with ease of control, necessary for communications on the amateur bands under present-day conditions. With the many refinements included, this model will produce first-class results with all modes of signal.

The first oscillator is crystal controlled. The oscillator which is tuned simultaneously with the first intermediate frequency section has very high stability, as is so essential with reception of s.s.b. and c.w. signals. The correct degrees of selectivity for optimum performance are obtained in the second intermediate frequency (100 kc/s) stages.

A more than adequate degree of bandspread is provided by the superb slow-motion drive (140/1 reduction ratio) in conjunction with the wide linear scales, each of which covers 600 kc/s. A crystal calibrator and cursor adjuster permit accurate frequency resolution.

Other features to note—full coverage on six amateur bands; switched sideband selection; fine tuning control (s.s.b.); crystal filter; deep slot filter; noise limiter effective all modes; large "S" meter; two AGC time-constants; independent gain controls; stand-by sensitivity control; bright scale illumination; robust construction; modern styling and fine finish.

Comprehensive information obtainable from any Eddystone Distributor or from the Manufacturers

Eddystone Radio Limited

Eddystone Works, Alvechurch Road, Birmingham 31

Telephone Priory 2231 Cables Eddystone Birmingham Telex 33708

“QUA”...RCA BEAM POWER TUBES



What makes “moonbouncing” possible? Obviously, the skill and ingenuity of stations involved, for one thing. For another, the RCA Beam Power Tubes they use in their “finals” to squeeze the maximum power output into their antennas.

But, you don't have to be a “moonbouncer” to enjoy the benefits of rugged, dependable RCA transmitting tubes. For technical details on all types, pick up a copy of the TT-5 RCA Transmitting Tube Manual at your nearest RCA Distributor.

TALK ABOUT DX!

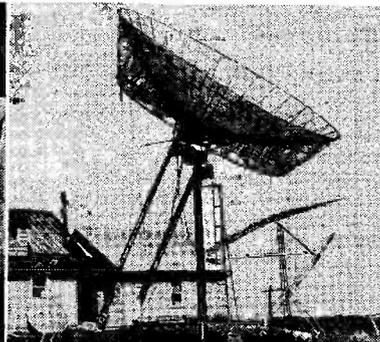
Here's how RCA Power Tubes help pioneering amateurs break records...

Using RCA-8122 and -7650 Beam Power Tubes, amateurs have found a new way to communicate...These pioneers are now bouncing UHF signals off the moon—for a total transmitter-to-receiver distance of *half a million miles!*

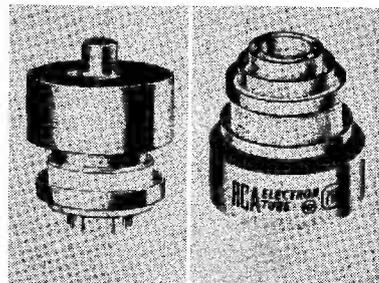
Consider the power this takes. The transmitting antenna on earth sends a relatively straight beam to the moon...but the convex lunar surface, as a passive reflector, dissipates the beam so that the received signal on earth is less than one trillionth the strength of the transmitted signal. Because of this power dissipation, you need utmost efficiency in power output such as offered by these RCA tubes.



First lady “moonbouncer”—Mrs. Oliver J. Smith III of Millersville, Pa., operates transmitter used to bounce CW signals off moon and back to receiving station in Puerto Rico.



Moonbounce antenna—the 27-foot diameter parabolic dish built by Mr. Vic Michael, W3SDZ, of Williamsport, Pa.; a measure of the initiative and dedication of moonbouncers.



RCA 8122 Beam Power Tube—used in several “moonbounce” transmitters, can provide useful power output of 300 watts up to 500 Mc/s in CW operation with a plate voltage of 2000 volts.

RCA 7650 Rugged Cermolox Beam Power Tube—operated by a European “moonbouncing” team, can provide up to 600 watts useful CW power output at frequencies of 400 Mc/s.



The Most Trusted Name in Electronics

RCA GREAT BRITAIN LIMITED
Associate Company of Radio Corporation of America

Electronic Components and Devices Sales, Lincoln Way, Sunbury-on-Thames.
Telephone: Sunbury 5511

TECHNICAL PUBLICATIONS
LATEST ISSUES

	Post Free
AMATEUR RADIO CIRCUITS BOOK (by R.S.G.B.)	8s. 0d.
AMATEUR RADIO HANDBOOK (R.S.G.B.)	36s. 6d.
ANTENNA ROUND UP (by CQ)	25s. 0d.
ANTENNA HANDBOOK (A.R.R.L., 10th Edition)	19s. 6d.
BASIC MATHEMATICS FOR RADIO AND ELECTRONICS	18s. 3d.
BEAM ANTENNA HANDBOOK, New Edition	28s. 0d.
BETTER SHORT WAVE RECEPTION	24s. 0d.
CHART OF INTERNATIONAL FREQUENCY ALLOCATIONS—GENEVA, 1960 (Official, 10 Kc. to 40 Gc., 51" x 34", wall mounting)	8s. 6d.
COMMUNICATION RECEIVERS	3s. 5d.
CQ ANTHOLOGY 45-52	16s. 9d.
CQ ANTHOLOGY (1952—1959)	25s. 0d.
COURSE IN RADIO FUNDAMENTALS (A.R.R.L.)	10s. 6d.
ELECTRONIC CIRCUITS HANDBOOK	24s. 0d.
FOUNDATIONS OF WIRELESS	22s. 3d.
FUNDAMENTALS OF SINGLE SIDEBAND (Collins)	48s. 6d.
GETTING STARTED WITH TRANSISTORS (GERNSBACK)	28s. 6d.
GUIDE TO AMATEUR RADIO (New Edition)	5s. 7d.
GUIDE TO BROADCASTING STATIONS (new edition available November)	8s. 3d.
HINTS AND KINKS Vol. 6	11s. 0d.
HOW TO BECOME A RADIO AMATEUR (A.R.R.L.)	10s. 0d.
HOW TO IMPROVE SHORT WAVE RECEPTION	20s. 0d.
HOW TO LISTEN TO THE WORLD (1965 Edition)	20s. 0d.
LEARNING MORSE	1s. 9d.
LEARNING THE RADIO TELEGRAPH CODE (A.R.R.L.)	4s. 6d.
MANUAL OF TRANSISTOR CIRCUITS (Mullard)	13s. 6d.
MOBILE HANDBOOK (Published by CQ)	24s. 0d.
MOBILE MANUAL (Published by A.R.R.L.)	24s. 6d.
NEW RTTY HANDBOOK	32s. 0d.
NEWS FROM AROUND THE WORLD (1966)	15s. 0d.
NEW SIDEBAND HANDBOOK (by CQ)	25s. 6d.
NOVICE HANDBOOK, Tx and Rx, 150 pages	23s. 6d.
OPERATING AN AMATEUR RADIO STATION (A.R.R.L.)	2s. 8d.
PORTABLE TRANSISTOR RECEIVER	3s. 0d.
QUAD ANTENNA	23s. 0d.
RADIO AMATEUR EXAMINATION MANUAL (temp. out of print)	5s. 9d.
RADIO AMATEUR HANDBOOK (A.R.R.L.), 1966	Paper 42s. 6d. Buckram 52s. 6d.
RADIO AMATEUR OPERATOR'S HANDBOOK (Data Publications)	5s. 6d.
RADIO AMATEUR CALL BOOK. U.K. only	6s. 7d.
RADIO CONTROL MANUAL	25s. 0d.
RADIO CONTROL FOR MODELS (F. C. Judd)	16s. 0d.
RADIO DATA REFERENCE BOOK	14s. 0d.
RADIO HANDBOOK (Wm. I. Orr)	86s. 0d.
S9 SIGNALS	8s. 6d.
SHORT WAVE RECEIVERS FOR THE BEGINNER (Data Pubs.)	6s. 6d.
SHORT WAVE RADIO AND THE IONOSPHERE (Hffe)	11s. 9d.
SINGLE SIDEBAND FOR THE RADIO AMATEUR (A.R.R.L.) (4th Edition)	22s. 6d.
STEREO HANDBOOK	11s. 4d.
SURPLUS SCHEMATICS (Published by CQ)	21s. 0d.
SURPLUS HANDBOOK (Editors and Engineers)	24s. 0d.
SURPLUS CONVERSION HANDBOOK (including "Command Sets") New!	24s. 0d.
SURPLUS CONVERSION MANUAL Vols. I, II and III, each	24s. 0d.
TECHNICAL TOPICS FOR THE RADIO AMATEUR	10s. 8d.
TELEVISION EXPLAINED (Hffe)	13s. 6d.
TRANSISTOR RADIO CIRCUITRY AND SERVICING (Mullard)	5s. 9d.
TRANSISTORS THEORY AND PRACTICE (R. P. Turner)	23s. 0d.
TRANSISTOR TECHNIQUES (Gernsback)	12s. 6d.
TRANSISTOR RADIO HANDBOOK (Editors and Engineers)	45s. 0d.
UNDERSTANDING AMATEUR RADIO	19s. 6d.
VHF HANDBOOK (Orr W6SAI)	24s. 0d.
VHF MANUAL by A.R.R.L.	21s. 6d.
VHF FOR THE RADIO AMATEUR (CQ)	28s. 0d.
WORLD MEDIUM WAVE GUIDE (1966)	15s. 0d.
WORLD RADIO HANDBOOK (1966)	29s. 0d.

Available from SHORT WAVE MAGAZINE
Publications Dept., 55 Victoria St., London S.W.1 · Abbey 5341

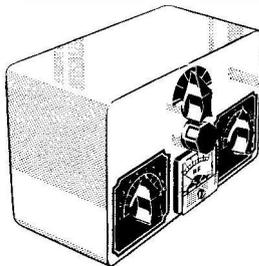
JOYSTICK

VFA ONLY 7' 6" LONG!



GUARANTEES A SOLUTION TO ANTENNA PROBLEMS

The revolutionary JOYSTICK ANTENNA SYSTEMS presents a satisfactory solution to all the problems of restricted space transmission and reception antennae. A completely new range of tuning units have been designed to allow the maximum possible efficiency with absolute simplicity of tuning and operation. For transmission on all amateur bands from 1.8 Mc/s to 30 Mc/s, for general short wave and broadcast reception and for commercial application (static and mobile). This VARIABLE FREQUENCY ANTENNA SYSTEM has been acknowledged as the most successful solution to a host of aerial problems. Over 5,500 are in use all over the world (as at July 1966). Hundreds and hundreds of terrific testimonials may be seen at the Joystick Office—the selection shown here will prove the point.



Above: One of the new JOYMATCH 'EASY-TO-USE' units with built-in RF indicator.

JOYSTICK VFA CAN BE HEARD ON THE BANDS EVERY DAY—START THE NEW SEASON WITH A POTENT SIGNAL—ORDER YOURS TODAY!

W2CCT, Cornell University, ITHACA, N.Y.: "Joystick 15ft. above ground. First call—11YBA... followed by YU3FS, DL2DK, GW3PPW... located in valley.... It works!"

G2VF, Southampton: "Letter from Dartmund SWL reads—it is almost unbelievable what the advertisements of Partridge Electronics say every month... but to tell the truth your signal was really FB and the most outstanding from all the signals from England."

G3LUJ, Bristol: "I am really pleased with the 'Joystick VFA' and have no hesitation in thoroughly recommending it. It is an ideal aerial for someone with a difficult QTH."

James C. Cox, Hull: "I find it successful in all ways—am an avid SWL."

U.K. AGENTS

G. W. Smith & Co. (Radio) Ltd., 3 Lisle Street, London, W.C.2.
 Brian J. Ayres & Co., 8 Hartfield Road, Wimbledon, London, S.W.19.
 Stephens-James Ltd., 70 Priory Road, Liverpool, 4.
 Chas. H. Young Ltd., 170/172 Corporation Street, Birmingham, 4.
 Or ask your local dealer.

France

Vareduc-Comimex, 2 Rue Joseph-Riviere, Paris, Courbevoie, France.

West Germany

Ing. Hammes Bauer, 86 Bamberg, Hornthalstrasse 8, West Germany.
 Dressing GMBH, 45 Osnabruck, Bohmter Str. 32, West Germany.
 Stotz & Goessl, 8 Munchen 15, Bayerstrasse 3, West Germany.

AND WORLD-WIDE AGENCIES



This brochure gives you the facts and only the facts!

SEND TODAY

PARTRIDGE ELECTRONICS LTD.,
 CAISTER HOUSE, PROSPECT ROAD, BROADSTAIRS, KENT.

NAME..... CALL/BRS No.....

ADDRESS.....

SW9

MORE TITLES AVAILABLE FROM STOCK

- AMATEUR RADIO ANTENNA HANDBOOK.** 157 pages (by H. D. Hooton, W6YTH) 24/-
- AMATEUR RADIO** (by F. G. Rayer, G3OGR) 31/6
- BEGINNER'S GUIDE TO RADIO** (Newnes) 9/-
- BEGINNER'S GUIDE TO COLOUR TELEVISION** (Newnes) 15/8
- BEGINNER'S GUIDE TO ELECTRONICS** 15/6
- DICTIONARY OF ELECTRONICS** (Penguin Books) 8/-
- ELECTRICAL HOBBIES** (Collins) 5/6
- ELEMENTS OF RADIO ENGINEERING** (Cleaver-Hume) 15/10
- HAM ANTENNA CONSTRUCTION PROJECTS.** 157 pages (Sams) 24/-
- HANDBOOK OF HAM RADIO CIRCUITS** (by W9CGA) 24/-
- INTRODUCTION TO VALVES** (Iliffe's) 9/4
- RADIO ASTRONOMY FOR AMATEURS.** 220 pages (by Frank Hyde) 26/6
- REMOTE CONTROL BY RADIO** (Philips) 10/9
- RADIO & ELECTRONIC HOBBIES** (by F. C. Judd, G2BCX) 22/-
- SHOP & SHACK SHORTCUTS** (by W6TNS) 32/-
- SHORT WAVE AMATEUR RADIO** (by PA0HH, Philips Technical Library) 22/-
- TECHNICAL TOPICS FOR THE RADIO AMATEUR** (R.S.G.B.) 10/8

SHORT WAVE MAGAZINE
55 VICTORIA STREET : LONDON, S.W.1
PUBLICATIONS DEPARTMENT

TAURUS ELECTRICAL SERVICES

Prop.: G3TED

Class "D" Wavemeters, 65/-, carriage paid.
Special Offer. New RF Power Transistors, 2SO36 10 watts RF up to 9 Mc, at 5/6, post paid.
 G.P.O. Type Handsets, 8/6, P. & P. 2/-.
 Variometers, 17/6, post paid.
 Morse Keys, 4/6, P. & P. 1/6.
Special Offer. New Flexible Drives for Pots, etc., including knob and fixing plate, 1/9 each, P. & P. 6d.
 Rotary Converters, 12v. to 250v. D.C., 31 watts, 12/6, P. & P. 2/9.
 Rotary Converters, 12v. to 490v. D.C., 32 watts, 6/-, P. & P. 3/-.
 Transistors, RF, AF and mixed, 3/6 a dozen, post paid. White spot, red spot, 1/- each. OC76, 3/-, P. & P. 3d., any number.
Special Offer. Super Aeraxial 75 Ω, super low loss co-ax. 1/3 a yd. or 60-yd. roll at £3 10s. All new stock. P. & P. 2/9, any length.
 Ferrite Pot Cores, 1/-, P. & P. 5d.
 BM3 Mikes, 35/-, P. & P. 3/6. Spare xtal inserts, 10/6, P. & P. 9d.
 4 x 150 Valves, 30/-, P. & P. 1/6.
 Car Ammeters, 30-0-30 1 1/2" dia., new, 8/-, P. & P. 1/6.
 19 Set Power Supplies, Mk. II and III, 25/-, post paid.
 All Leads, etc., for 19 sets, head and mike sets, 10/-, post paid.
 Chamois. Padded type, 13/6, post paid.
Sound Powered Inserts. Ideal intercom. 3/6 each, post paid.
 Cosor Double Beam Oscilloscope 339, £13 10s., post paid.
 Relays. New 12v. or 24v. 2-pole, 2-way plug-in type, 5/-, P. & P. 1/3. Bases for same, 1/6, P. & P. 6d.
 Octal Base Relay, mains AC type, 2-pole, 2-way, 25/-, P. & P. 1/6.
 Lash Up Wire in Bags, 4 colours, 2/6, P. & P. 6d.
 Bargain Soldering Irons, mains 40w., 7/9, P. & P. 1/3.
 Printed Circuit Board, 6/- sq. ft., any size cut up to 3 ft. 6 in. by 3 ft., P. & P. 2/-, any size.
Valve of the Month. New and boxed 6V6, 3/9, post paid.
 Belling Lee Twin Feeder Outlet Box, L739, 2/-, post paid.
 Cards of 10 47k, 100k, 470k, 10% 1/2 watt resistors, 1/- a card, P. & P. 4d.
 TCC Visconal x Metalpack, 500v. .05 mfd. condensers, 4/- a dozen, post paid.
 Tank Aerials, three 4-ft. sections, making 12 ft., 7/6, extra base sections 2/6 a time, P. & P. 4/-, Bases to suit, 4/6, P. & P. 2/-.
 Miniature Motors, 2 1/2" x 1 1/2", 12v. and 24v., 6/-, post paid.
 New High Quality Jack, plug and sockets, 5/- a pair, post paid.
 Hole Saw Sets for meter holes, 1", 1 1/4", 1 1/2", 1 3/4", 2", complete set, 8/6, post paid.
 AVO Model 7 multipliers, 3/6, post paid.
 AR88 Spares. S.A.E. for list. Set of valves for AR88, 40/-, P. & P. 5/6
 Small RF Chokes, 2/6 a dozen, post paid.
 Creed 7B Teleprinters, good, £15, P. & P. 30/-.
 Creed 7B Teleprinters, as new, £30, P. & P. 30/-.
 All spare parts for Creed 7B Teleprinters in stock.

26 NOTTINGHAM ROAD, LOUGHBOROUGH, LEICS.
Telephone: 5131

PHILADELPHIAN ELECTRONICS Ltd

FOR FIRST-CLASS COMMUNICATION EQUIPMENT
SWAN AGENTS

		£	s.	d.
Swan 350 transceiver	...	205	0	0
Swan 400	...	250	0	0
230 A.C. power supply, speaker	...	45	0	0
406 Phone band VFO and 22 adaptor	...	50	0	0
410 full coverage VFO and 22 adaptor	...	57	0	0
VX-1 plug in VOX	...	16	0	0
SSB-2 Selectable Sideband kit for 350	...	8	15	0
100 kc. Calibrator kit for 350	...	9	10	0
SB-34 Transceiver, mint	...	165	0	0
Hallcrafters HT-37 transmitter, AM CW SSB	...	105	0	0
VOX 2 x 6146 PA, excellent	...	105	0	0
Hallcrafters SX-III receiver, 80-10m. selectable	...	90	0	0
sidebands, notch filter	...	95	0	0
Drake 2-B receiver, Q Mult. speaker, Cal.	...	45	0	0
R.C.A. AR 88 D receiver, mint	...	28	10	0
Eddystone 840 A receiver, in original carton	...	35	0	0
Geloso G 209 receiver, immaculate	...	45	0	0
Heathkit HO 13 E panoramic adaptor, 455 kc. IF	...	6	0	0
Pye reporter transceiver, unmodified, suitable	...	30	0	0
4 metres	...	10	0	0
Heathkit SB 10 U sideband adaptor	...	4	0	0
Electroniques front end, new	...	9	10	0
Shure 201 microphone	...	55	0	0
Shure 444 microphone	...			
Green LA 600 linear	...			

*All equipment guaranteed, easy terms arranged
Modern communication receivers and transmitters
wanted*

Mail order or by appointment, Tel. MAIda Vale 6638

PHILADELPHIAN ELECTRONICS LTD.
188-190 BROADHURST GARDENS, LONDON, N.W.6

Come and join the

ROYAL NAVAL RESERVE COMMUNICATION BRANCH

and make the most of your spare time

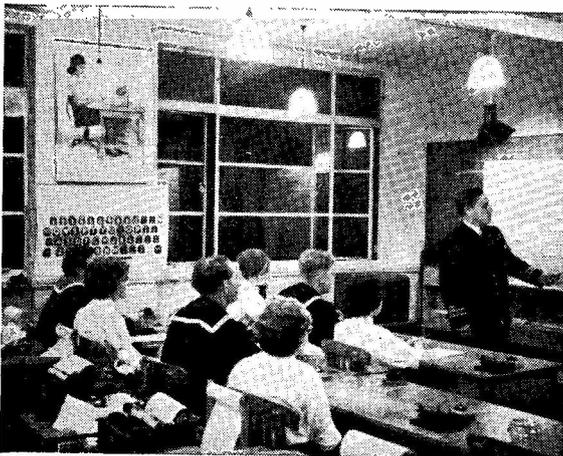


Men between 16 and 26 and women between 17 and 40 may join. Those with previous experience of this branch of the Royal Navy may be accepted up to the age of 45. Training takes place 2 or 3 evenings a week with opportunities for occasional visits abroad.

You will not be out of pocket

as Pay, allowances, tax-free bounty and uniform are provided.

Besides professional training there is ample opportunity for social and sporting activity giving you the chance to meet people with the same interests in a friendly atmosphere. There are numerous Wireless Training Centres throughout the United Kingdom.



Write for full details of this interesting service to:-

**ADMIRAL COMMANDING RESERVES,
MINISTRY OF DEFENCE, LONDON**

or ask at your nearest Royal Naval Careers Office.

We are the Antenna People

**TRAP
MASTER**



V-4-6

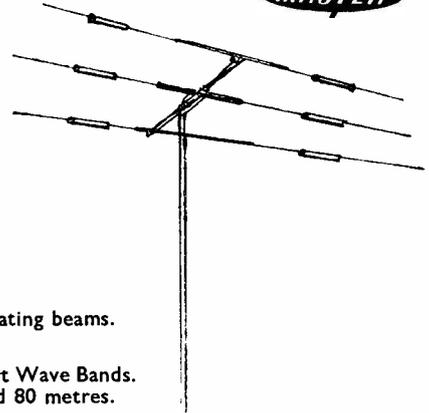
SOME OF OUR ANTENNAS

VERTICALS : RV-4. 10, 15, 20 and 40 metres.
V-4-6. 10, 15, 20 and 40 metres.
V-3 Jr. 10, 15 and 20 metres.
VTD Jr. 10, 15 and 20 metres.
TW-3X. El Toro. 20, 40 and 80 metres.
TA-31 Jr. 10, 15 and 20 metres. Also Horizontal.
MA-3. Mobile Whip. 10, 15 and 20 metres.

HORIZONTALS: TA-33 Jr. TA-32 Jr. 10, 15 and 20 metre beams.
A-142. 14 element, 2 metre beam.
A-203-C. 20 metre monoband beam.
A-315. 15 metre monoband beam.
A-310. 10 metre monoband beam.
TA-33, TA-32 and TA-36. 10, 15 and 20 metre 2 kW rating beams.
TD-3 Jr. 10, 15 and 20 metres. Trapped dipole.

Short Wave Listeners' Antennas: SWL-7 Broadcast Short Wave Bands.
RD-5 Ham Bands. 10, 15, 20, 40 and 80 metres.

Accessories : D-4BCA. Base loading coil for 80 metres with V-4-6.
AK-60. Masthead Adaptor.
Polythene, cord and rope.
Rotators.
Coax cable and twin feeder.
S.W.R. indicators.
Towers.



TA-33

Send for complete Catalogue, containing full details of Antennas and other technical information. 25 pages 1/-.
Telephone: Costessey 2861, orders only

Mosley Electronics Ltd. 40, Valley Road, New Costessey, Norwich, Norfolk Nor. 26K

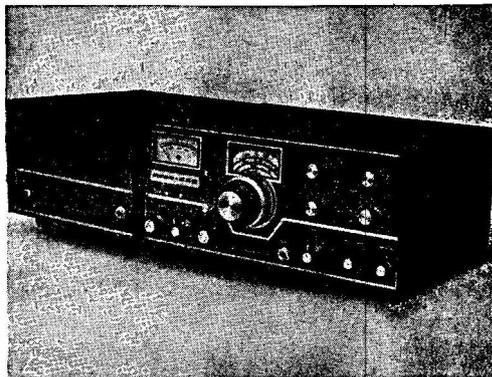
SWAN THE MOST RELIABLE AMATEUR TRANSCEIVER EVER MANUFACTURED. ASK THE AMATEUR WHO OWNS ONE

Sideband suppression :
40 dB.

Carrier suppression :
50 dB.

Lower sideband 80m.-40m.

Upper 20-15-10m. (opposite sideband kit available).



Basic transceiver with A.C. supply/speaker, £250

● Big Signal well in excess of 400w. P.E.P. SSB, up to 320w. C.W., 125w. A.M.

Precision dual ratio tuning.

Full coverage of all bands 80-10 Mtrs.

Immediate delivery. Top allowances on modern trade-in equipment.

First class after sales service.

Latest brochures available from your supplier.

Full range of accessories :

100 Kc. calibrator kit £9. 10

Opposite sideband kit £8. 15

Transistor V.O.X. ... £16. 0

Remote V.F.O. with 22 adaptor for up to 200 Kc. split frequency working ... £50. 0

Remote V.F.O. with 22 adaptor for full band split frequency working ... £57. 0

We have now appointed the following Agents
Central London: G. W. Smith & Co. North West London: Philadelphian Electronics, 188 Broadhurst Gardens, N.W.6.
Midlands: J. B. Lowe, 115 Cavendish Road, Matlock, Derbyshire. Scotland: L. Hardie, 542 George St., Aberdeen.

PETER SEYMOUR LTD
410 BEVERLEY ROAD, HULL, YORKSHIRE
Tel. 41938 (43353 after 7.30)

VHF NEEDS TW EQUIPMENT



TW means unequalled performance and throughout the world there are thousands of highly satisfied users.



TW COMMUNICATOR 2- and 4-metre Transreceivers with all-transistor receiver 10-15w transmitter QQVO 3-10 P.A. Single-band unit—12-volt operation—high-level modulation. 2-144-146 Mc/s: 4 70.1-70.7 Mc/s. Size 12in. x 4½in. x 7in. deep.
£75 . 0 . 0

TW VHF TRANSMITTER Available for 2 and 4 meters; giving optimum performance under the most arduous conditions. P.A. efficiency better than 50% at 2 meters. 10w Modulator: Crystal-controlled, completely stable. Size 6in. x 5in. x 7in. deep.
£29 . 0 . 0

TW MOBILE RECEIVER A full specification receiver in miniature—available for 2, 4 and 160 meters. Fully transistorized—full bandsread. Size only 6in. wide, 2½in. high and 6in. deep.
160m £23 . 0 . 0 2m £34 . 0 . 0

TW NUVISTOR CONVERTER Over 2000 in use by amateur and professional alike—low noise—high gain; available for 2 and 4 meters, and is supplied with or without built-in power pack. No receiver modifications required.
£17 . 0 . 0 or 13 guineas, less PSU

TW ELECTRONICS have now moved into a much larger factory, custom designed for the manufacture of fine quality VHF/UHF equipment for both amateur and professional alike.

TW Electronics

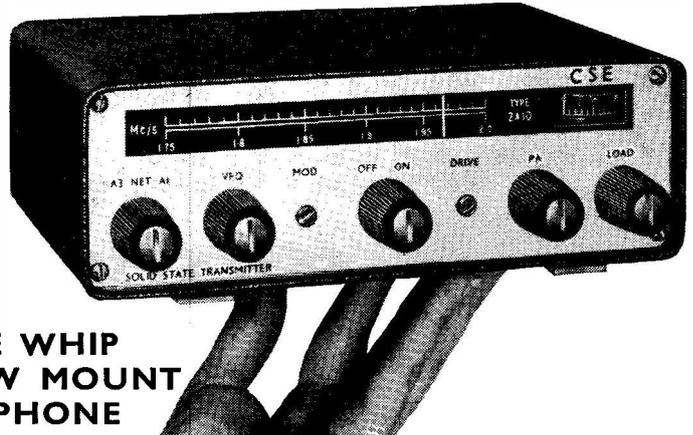


120 Newmarket Road, Bury St. Edmunds, Suffolk. Telephone: Bury St. Edmunds 3931.

SOLID STATE TRANSMITTER

type 2A10

£43.7.0 U.K.



UNIQUE TUNED MOBILE WHIP
WITH INSTANT WINDOW MOUNT
AND MOBILE LIP MICROPHONE
AS OPTIONAL EXTRAS

MOBILE—PORTABLE—FIXED

FULL U.K. TOP BAND
INPUT IN YOUR CAR

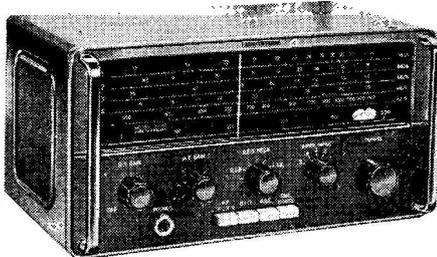
- | | | |
|----------------------------|-----------------------------|------------------------|
| * Direct 12 volt operation | * Silicon transistors | * 1 Amp. nominal! |
| * Supply + or — earthed | * Wide temp. range | * Economical |
| * Circuit protection | * Clean A3 and A1 operation | * Designed reliability |
| * High efficiency | * Pi-tuned output | * Light and compact |

WIDEN YOUR HORIZON FROM ANY LOCATION WITH THE CSE 2A10

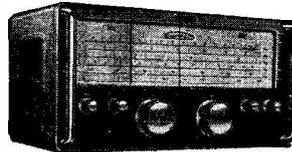
CONTACTOR SWITCHGEAR (ELECTRONICS) LTD. MOORFIELD RD.
WOLVERHAMPTON, STAFFS. Telephone: Wolverhampton 23883 Ext. 1.



HOME RADIO (MITCHAM) LTD. 187 London Road, Mitcham, Surrey. 'Phone: MIT 3282



The Eddystone EC 10 is a transistorised Communications Receiver operating from six U2 cells (a mains unit is available). Gives continuous coverage from 550 Kc to 30 Mc/s, £48. (H.P. Terms available.) Send for free brochure.



The Eddystone 840C is an 8-valve Superhet covering from 480 Kc to 30 Mc/s in 5 ranges. For A.C. mains operation. A fine receiver at a moderate price, £66. (H.P. Terms available.) Send for free brochure.



We also have in stock
EDDYSTONE Model
EA12 and EB35. Send
for FREE Brochures.

IF IT'S BARGAINS YOU REQUIRE, SEND 1/- FOR OUR BARGAIN LIST, CONTAINING OVER 100 ITEMS OFFERED AT A FRACTION OF THEIR ORIGINAL COST.

Our Catalogue comprising 218 pages, plus a 21-page supplement, containing some 6000 items (1000 illustrated) is available price 7/6, plus 1/6 postage and packing. Every Catalogue contains 5 coupons, each worth 1/- if used as directed. Send the attached Coupon with your cheque or P.O. for 9/-.

Please write your name and address in block capitals

NAME

ADDRESS

HOME RADIO LTD., DEPT. SW, 187 LONDON ROAD, MITCHAM.

**INDEX TO
ADVERTISERS**

	PAGE
Britec	439
Cathodeon Crystals ...	440
Charles H. Young ...cover iii	
Codar Radio Co.	447
Contacto Switchgear, Ltd.	392, 447
Courier Communications...	441
D. Cursons	446
Data Publications, Ltd. ...	439
Daystrom	cover iv
The Doppler Press	443
Eddystone Radio	cover ii
Eley Electronics	440
E.M.S.A.C., Ltd.	446
Finnigan Speciality Paints	439
George Francis	443
Green	438
G3HSC (Morse Records)	446
G.W.M. Radio	445
Hamgear Electronics ...	440
Henry's Radio	439
Home Radio	392
A. Imhof, Ltd.	445
Jack Tweedy	441
K.W. Electronics	front cover
J. B. Lowe	cover iii
JXK Converters	438
Mosley Electronics ...	390
N.W. Electrics	438
Partridge Electronics, Ltd.	387
Peter Seymour, Ltd. ...	390, 447
Philadelphian Electronics, Ltd.	388
RCA Great Britain, Ltd.	385
R.N.R.	389
Short Wave (Hull)	442
Small Advertisements ...	439
Smith & Co., Ltd.	394
Stephens-James, Ltd. ...	444
S.S.B. Products	444
Swanco Products	446
S.W.M. Publications	386, 388, 442, 446, 448
Taurus Electrical Services	388
Withers	391
Yukan Products	443, 446

SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXIV

SEPTEMBER, 1966

No. 275

CONTENTS

	Page
Editorial	395
General Purpose Test and Monitor Unit, by D. A. Hollingsbee (G3TDT)	396
Full CW Break-In, by R. E. Bona, Grad.I.E.R.E. (G3SGX)	399
Variable HT Supply, by D. J. Bean (G3TJQ)	400
The Mobile Scene	402
VHF Bands, by A. J. Devon	406
Communication and DX News	410
Discussing Single Sideband, Part IX, by B. A. Watling (G3RNL) ...	417
“ SWL ”— <i>Listener Feature</i>	422
<i>Rules, HPX</i>	425
<i>SLP, September</i>	423
The Other Man's Station—G2DC	427
Courses for the R.A.E.	428
The Month with The Clubs— <i>From Reports</i>	430
New QTH's	437

Managing Editor: AUSTIN FORSYTH, O.B.E. (G6FO/G3SWM)

Advertising: Maria 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 42s. (\$6.00 U.S.) post paid

Editorial Address: Short Wave Magazine, BUCKINGHAM, England

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.

© Short Wave Magazine Ltd.

LAFAYETTE 10-80 Metre SSB/AM/CW Amateur Receiver



75 gns.

EXTRAS :
100 Kc/s. xtal 35/-
Speaker Mate 55/-

5 HAM BANDS PLUS WWV
3.5-4.0 Mc. 14.0-14.5 Mc. 28.0-29.7 Mc.
7.0-7.5 Mc. 21.0-21.5 Mc. WWV at 15 Mc.
● Mechanical Filter for Exception Selectivity.
● 12 Valves Dual Conversion ● Automatic Noise Limiter.
● Product Detector for Selectable Upper and Lower Sideband Reception.
● Complete with Crystals for 80, 40, 20, 15 and 10 Metres.
● 100 Kc. Crystal Calibrator and Crystal BFO.
● "S" Meter-Calibrated in "S" Units 1-9 and to +40 dB.

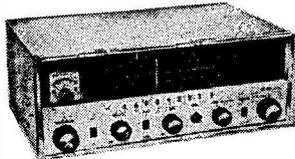
MODEL HA.350 Lafayette's newest and most advanced communications receiver. Dual conversion circuitry features an image and IF rejection of more than 40 dB. A product detector, providing selectable upper or lower sideband, solves the problems in SSB reception. Tunable preselector circuit gives sensitivity of less than 1 microvolt for 10 dB signal-to-noise ratio. Selectivity: Bandwidth of 2 Kc.; 6 dB down at 6 Kc. at 60 dB using mechanical filter. Front panel 100 Kc. crystal calibrator reset control used in conjunction with the 15 Mc. WWV station assures accurate calibration. CHECK THESE SPECIFICATIONS! Audio output: 1-watt maximum. Speaker impedance: 8; 500 ohms (speaker not supplied). Front panel controls: Preselector; Cal—On/off; Band Selector; Receive/Send; Tuning Cal Reset; Function—OH/AM/SSB1—CW/SSB2; RF gain; AF gain; ANL; Power jack. Valves: 6BZ6—RF amp.; 6BL8—Xtal controlled 1st mixer; 6BE6—2nd mixer; 6BA6—VFO; 6BA6—1st amp.; 6BA6—2nd amp.; 6AL5—AVC rectifier and AM noise limiter; 6AQ5—product detector and crystal calibrator; 6AV6—1st audio amplifier; 6AQ5 audio output; 6BA6—BFO; OB2—regulator. Silicon Full Wave Rectifier. Size: 15" W. x 7 1/2" H x 10" D. For 230v. 50/60 cps. AC. Wt., 25 lbs. Less Calibrator Crystal.

IMMEDIATE DELIVERY . PART EXCHANGES

LAFAYETTE KT-340 COMMUNICATION RECEIVER SEMI-KIT



Build this wonderful receiver and save pounds. Supplied semi-completed, main components ready mounted, RF section already wired and aligned. Full and precise instructions supplied. Specifications—8 valves plus rectifier, 4 bands covering 550 Kc/s.—30 Mc/s. Incorporates 1 R.F. and 2 I.F. stages, 'Q' multiplier, B.F.O., A.N.L., 'S' meter, bandspread, aerial trimmer, etc. Operation 115/230v. A.C. Price 25 gns, carr. 10/-.



HAM-I. 4 BAND COMMUNICATION RECEIVER

Four wavebands covering 535 kc/s.—30 Mc/s. Five valve superhet circuit. Incorporates S meter, B.F.O. BANDSPREAD TUNING BUILT-IN 4" SPEAKER, FERRITE AERIAL AND EXTERNAL TELESCOPIC AERIAL. Operation 220/240v. AC. Supplied brand new with handbook, £16/16/-, carr. 10/-.

CLEAR PLASTIC PANEL METERS

First grade quality, Moving Coil panel meters, available ex-stock. S.A.E. for illustrated leaflet. Discounts for quantity. Available as follows. Type MR. 38P. 1 21/32" square fronts.



50µA	32/6	1mA	22/6	200mA	22/6	10v	DC	22/6	750v	DC	22/6	
100µA	29/6	2mA	22/6	300mA	22/6	20v	DC	22/6	15v	AC	22/6	
200µA	27/6	5mA	22/6	500mA	22/6	50v	DC	22/6	50v	AC	22/6	
500µA	25/-	10mA	22/6	750mA	22/6	100v	DC	22/6	150v	AC	22/6	
50-0-50µA	29/6	20mA	22/6	1A	DC	22/6	100v	DC	22/6	150v	AC	22/6
100-0-100µA	27/6	50mA	22/6	2A	DC	22/6	300v	DC	22/6	500v	AC	22/6
500-0-500µA	22/6	100mA	22/6	5A	DC	22/6	300v	DC	22/6	500v	AC	22/6
1-0-1mA	22/6	150mA	22/6	3v	DC	22/6	500v	DC	22/6	'S' Meter	29/6	

Larger sizes available — send for lists

Bug Keys ...	£ s. d.	CR.70 Receiver	£ s. d.
Mechanical Keys ...	16 10 0	CR.45 Receiver Kit	19 10 0
Mechanical Filters as used in HA-350 RX ...	9 19 6	CR.45 Ready Built	11 4 0
Navistar Grid Dip Meters. 1-7-180 Mc/s. ...	12 10 0	PR.30 Preselector	5 10 0
Kyoritsu Grid Dip Meters. 360 Kc/s.—220 Mc/s. ...	12 10 0	PR.30X Self Powered	7 4 0
Transistorised Grid Dip Meters. 440 Kc/s.—280 Mc/s. ...	11 11 0	RQ.10 Q Multiplier	6 15 0
Lafayette De-Luxe V.F.O. 10-80 metres ...	13 19 6	RO.10 Self Powered	8 8 0
Partridge Joystick Aerials in stock.		A.T.5 Amateur TX	16 10 0
Field Strength Meters. 1-250 Mc/s. ...	3 12 6	A.T.5 Mains P.S.U.	8 0 0
Transistorised Field Strength Meters. 2-5-55 Mc/s. ...	4 19 6	A.T.5 12-volt P.S.U.	11 5 0
Coaxial Aerial Change Over Relays ... 2 for	1 19 6	A.T.5 Remote Control and Aerial Switching Unit ...	2 7 6
H.R.O. Dials ...	1 7 6	T.C.2-Band Receiver	15 10 0
H.R.O. Coils. Full set of 9 G/C Coils ...	10 10 0	CC.40 Station Control Unit	6 10 0
I Amp. R.F. Meters ...	10 6	Mobile Package Deal	39 0 0
PCR Receivers. As new. LW—MW—SW ...	8 19 6		
PCR 12 VDC P.S.U. ...	19 6		
PCR Mains P.S.U. ...	1 15 0		
AR 8BD Receivers ...	45 0 0		
AR 8BL Receivers from stock.	30 0 0		
R.209 Mk. II Receiver. 6 VDC. 1-20 Mc/s. ...	22 10 0		
Lafayette Aircraft Receivers. 108-136 Mc/s. ...	19 7 6		
Lafayette F.M. Receivers. 154-172 Mc/s. ...	20 0 0		
Nombrex Transistorised Test Equipment in stock.			
KW SWR Bridge ...	8 10 0		
KW Low Pass Filter ...	4 4 0		
KW High Pass Filter ...	18 6		
K.W. Balun ...	1 15 0		
KW Multiband Trap Dipoles ...	97/ 8 10 0		
Denco Components in stock.			

CODAR EQUIPMENT

CR.70 Receiver	£ s. d.
CR.45 Receiver Kit	19 10 0
CR.45 Ready Built	11 4 0
PR.30 Preselector	5 10 0
PR.30X Self Powered	7 4 0
RQ.10 Q Multiplier	6 15 0
RO.10 Self Powered	8 8 0
A.T.5 Amateur TX	16 10 0
A.T.5 Mains P.S.U.	8 0 0
A.T.5 12-volt P.S.U.	11 5 0
A.T.5 Remote Control and Aerial Switching Unit ...	2 7 6
T.C.2-Band Receiver	15 10 0
CC.40 Station Control Unit	6 10 0
Mobile Package Deal	39 0 0

GREEN EQUIPMENT

TMRS Receiver	35 0 0
Speaker and D.C. Unit	6 0 0
A.C. P.S.U.	5 0 0
MK5 Converter 4M	10 0 0
MK5 Converter 2M	12 0 0
MK5 Converter, 70 cm.	18 0 0

T. WITHERS EQUIPMENT

TW-2 10W 2M TX	29 0 0
TW-2 Mobile P.S.U.	15 0 0
TW-2 Mains P.S.U.	15 0 0
TW Two Mobile 2M Receiver	34 0 0
TW Top Mobile Receiver	23 0 0
TW Communicator 2	75 0 0
TW Communicator 4	75 0 0
TW Communicator Mains P.S.U.	12 0 0
Navistar 2 or 4M Converter	13 13 0
Or with Mains P.S.U.	18 0 0
70CM Converter	18 0 0
TW Transistor Converter for 2 or 4 Metres.	9 9 0

SILICON RECTIFIERS

200 P.I.V. 200 mA	2 6
200 P.I.V. 6 amp.	5 6
400 P.I.V. 3 amp. (S.G.R.)	10 0
400 P.I.V. 3 amp.	7 6
1,000v. P.I.V. 650 mA	7 6
800v. P.I.V. 500 mA	5 6
400v. P.I.V. 500 mA	3 6
800v. P.I.V. 5 amp.	7 6
70v. P.I.V. 1 amp.	3 6
150v. P.I.V. 165 mA	1 0
700v. P.I.V. 100 amp.	2 9 6

Discount for quantities. Post extra

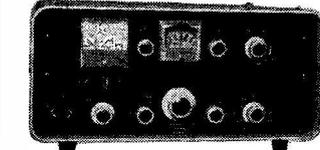
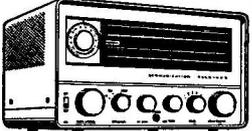
SWAN-350 10-80 METRE TRANSCEIVER

400 watts P.E.P. Complete with AC power supply consul, £250 ex-stock. S.A.E. for details.

HAMMARLUND SP-600JX RECEIVERS

Dual conversion 540 Kc/s.—54 Mc/s. Few left only. In excellent condition at £100

HA.63 GENERAL COVERAGE RECEIVER
7 valves — Rectifier, 4 Bands 550 kc/s. —31 Mc/s. "S" Meter—B.F.O.—A.N.L.—Bandspread Tuning 200/250v. AC. Brand New, 24 gns., carr. paid.



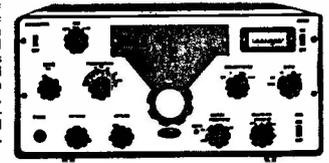
K.W. EQUIPMENT VESPA TRANSMITTER
10-160 metres SSB, CW and AM, £110. Power supply, £25.

IMMEDIATE DELIVERY

ALSO AVAILABLE: KW 2000, £173. PSU, £32. KW 2000A, £195. PSU, £40 KW 600 Linear Amp., £115

STAR SR.600 AMATEUR COMMUNICATION RECEIVER

New crystal controlled triple conversion de luxe 80-10 metre band receiver. Extremely high sensitivity, selectivity and stability. Special features include 3 I.F. stages, crystal controlled oscillator, 4 section L/C filter, "S" meter, B.F.O., A.N.L., 100 kc/s. crystal calibrator, etc. Supplied brand new and guaranteed. 95 gns. S.A.E. for full details.



OPEN 9 a.m.—6 p.m. EVERY DAY MON. to SAT.

G. W. SMITH & CO. (RADIO) LTD.

3-34 LISLE STREET, LONDON, W.C.2

Phone: GERRARD 8204/9155

Cables: SMITHEX LESQUARE

PART EXCHANGES WELCOME

The SHORT-WAVE Magazine

EDITORIAL

Mistake? *It is always a little disappointing when what seemed to be the purity of a Good Idea is sullied by an unexpected change of circumstances or the march of international events. In this space in the August issue the thought was thrown out that Amateur Radio could benefit enormously by being positively identified with UNESCO—the United Nations organisation most appropriate (for reasons explained last month) to the field in which readers of this piece would be most interested.*

Within two days of that Editorial appearing in print, one of the more intelligent and better-informed Sunday newspapers was able to show that the Communist bloc intends, at the half-yearly meeting of UNESCO to be held in Paris this month, to make a play for the ultimate control, on three broad fronts, of the United Nations Educational, Scientific and Cultural Organisation.

Of course, it is now quite unacceptable that, if this ploy were to succeed, Amateur Radio should come under even the indirect control of a politically slanted international body. At the moment of writing (as when last month's Editorial was composed) UNESCO is a strictly non-political "educational, scientific and cultural organisation." It could well be that by the end of October this might no longer be true.

And if this were not enough, we are informed by the IARU secretariat that a body known as "The Radio Sports Federation of the USSR"—one can only wonder about what sort of games they play!—is now a member-society of the Region I Division of the IARU. While membership of the IARU by countries like Russia, Poland, Czechoslovakia and Yugoslavia can only be a good thing within the meaning of last month's comment in this space, it could be a very bad thing if the Communist bloc does succeed in gaining control of UNESCO—with which, of course, within the terms of its charter Amateur Radio ought to be identified.

It could be another six months before the facts and the position become clear. In the meantime, remember that the I.T.U. (the United Nations International Telecommunications Union, which lays down the rules) can only be swayed by intelligent discussion and hard argument. It is more than doubtful whether Amateur Radio is well enough represented to make a strong case.

*Austin Forster,
G6FO.*

GENERAL PURPOSE TEST AND MONITOR UNIT

VERSATILE INSTRUMENT
GIVING CW/AM MONITORING
AND COMBINING FUNCTIONS
AS ABSORPTION WAVEMETER
AND FIELD STRENGTH
METER

D. A. HOLLINGSBEE (G3TDT)

While many experienced operators *can* use a Morse key without a monitor, there are hundreds more who can not (the writer included). Furthermore most of the inexpensive receivers at present available, including surplus models, have no means of reducing the gain to a level that permits monitoring. Of course, modification is possible, but this always lowers the resale value of equipment and is not a task to be undertaken lightly by an unskilled owner. A disadvantage of the instrument to be described is that it gives no indication of the actual quality of CW transmission. Even so, the only reliable test of quality is to ask for a critical report from another amateur—a two-letter G call sign is the first choice from the station of G3TDT.

While working on this idea, sensitive field strength and absorption wavemeters were needed to trace an intermittent TVI problem on 20 metres. So, the separate instruments were amalgamated. This instrument is very sensitive, being able to detect a re-radiated signal several feet from the offending source—in one instance, off the coax from a domestic FM/VHF receiver aerial.

It is expected that this article will be most useful to those who, like the author, have late call signs. Who knows, it may help eliminate that poor sending and those bad notes to be found on Top Band and Eighty—so that the compiler of the Miscellany column has to find something new to comment rudely upon!

* * * * *

The requirement at G3TDT was for a CW monitor with speaker output, self-powered and independent of other station equipment. This was developed first and the other facilities added. There is nothing original in these circuits and they can be omitted or modified to suit individual taste.

The heart of the instrument is the transistor switch/amplifier TR1. A signal across the RF choke is rectified by the silicon diode D1 and in part smoothed by C1, then fed at negative potential into the base TR1. This causes the transistor to

conduct and switch in either the audio oscillator or the meter, depending on the position of the selector switch S1. The variable resistor RV1 serves to hold the transistor down under no signal condition and to attenuate large signals.

For all-band working an aerial should be plugged directly into SK1. This could be a short rod (telescopic perhaps) or a random length of wire. Much will depend on the frequency and the amount of RF in the shack. For use as an absorption wavemeter, or when frequency discrimination is required, the simple tuned circuit L1, VC1, is plugged into the aerial socket. It will be found that less aerial can be used with this set-up, a short probe being all that is required under many conditions. As a wavemeter, it is usual to couple direct to the coil but as a field strength meter an aerial is essential.

For AM monitoring the transistor is taken out of circuit and the rectified signal fed to a pair of high resistance headphones *via* the jack socket, J1, the phones acting as a bleed resistance for C1 and C2. It would be a simple matter to alter the circuit so that the built-in speaker could be used, but it is very difficult to judge the quality of transmission when you can hear your own voice direct—and phones make excellent ear muffs. Furthermore, there is less risk of feed-back howl, so, as monitoring is usually a short-term need, the inconvenience of phones is offset by the simplicity of the circuit.

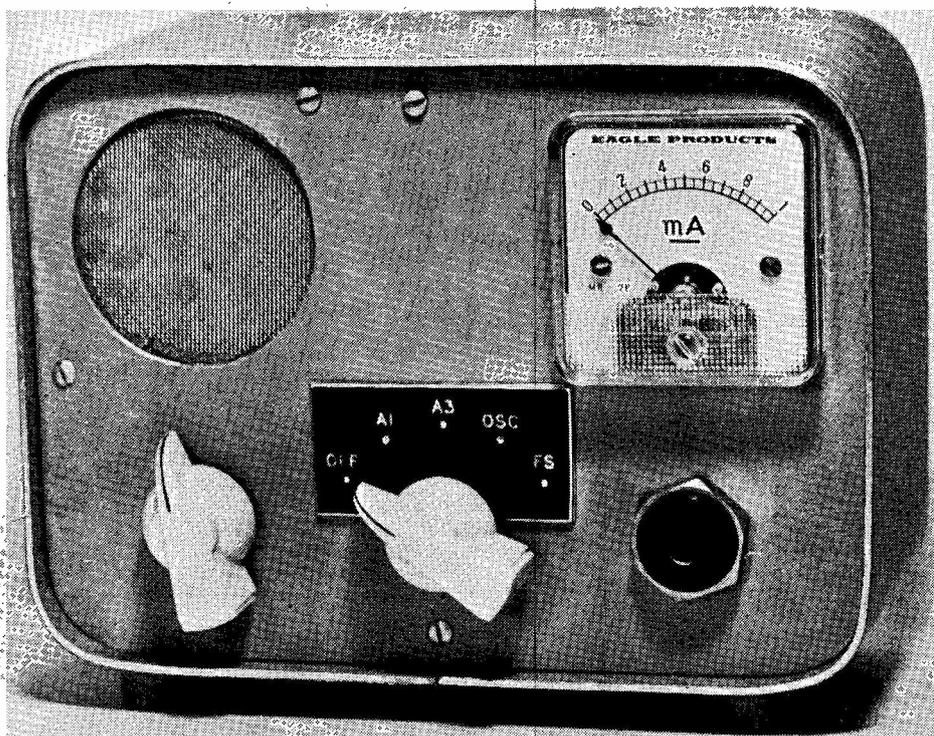
The same jack socket is used to accept a Morse key or switch when the instrument is used as a practice or test oscillator.

The Audio Oscillator

This is a conventional ladder or phase-shift oscillator, the frequency being determined by the capacitors C4, C5, C6 and the resistors R6, R7 and R8. The setting of both RV1 and RV2 will influence the final note as will the battery voltage. Although the output from the oscillator can be a near perfect sine wave, that obtained from the very simple output stage is far from it. A more sophisticated output circuit could be used if a T9 note is required for monitoring.

Components

A feature of the instrument is the very wide component tolerance and even the most humble junk box will produce many items. The diode D1 should for preference be a silicon type but it would be worth trying an OA73 or OA70 if they were to hand. The switching transistor needs to be a high gain type and, other than the industrial ACY19 used, OC84, OC83 or OC75 from the *Mullard* range would prove satisfactory. It is possible that a good OC72 will work and is worth trying. Almost any p.n.p. transistor will do for TR2 as long as it has a gain of at least 30—the low end of an OC71. RV2 can be carbon or wire wound and is set to give the most acceptable note with the key held down. A fixed resistor value could be found by trial and error and it could be beneficial to include a low-value resistor—say 47 ohms—between the emitter of TR2 and



The instrument complete as described by G3TDT. A multi-purpose test and monitor unit, it functions as a sidetone check on CW or AM transmission; as an absorption wavemeter; an audio oscillator; and as a field-strength sensor, with either headphone output or meter indication — what more could you want out of one box?

VC1 in the tuning head, with $50 \mu\text{F}$ as the suggested minimum. The number of turns on the coils can be adjusted to give the required coverage. The smaller the capacitor, the more accurate the calibration but more coils will be needed for complete coverage and perhaps a fixed padding capacity across the tuned winding. The prototype uses plug-in coils made by glueing tube to old octal valve bases but as an alternative, switched commercial coils are neater and would appeal to those who do not wish to roll their own. Standard RF coils with a low impedance aerial winding, such as the *Electroniques* LZ range, would do. But remember that the input winding becomes the output link.

Calibration is best done by coupling to a signal generator or a grid dip meter, but in the absence of these instruments it is quite practical to use a general coverage receiver. The scheme is to short circuit the link coupling and to put a few turns of insulated wire over the centre of the tuned winding. Connect one end to the aerial socket of the receiver and the other end to a suitable aerial. In this case, a random length of wire is probably

better than a three-element beam! Tune into a strong carrier on the band to be calibrated and adjust the variable condenser VC1 of the tuning head until you see a dip in the S-meter reading. Repeat until you cover the band. Any gaps can be "guestimated" with surprising accuracy. The process is easier than it sounds, but a word of warning: With many simple receivers it is not easy to discriminate between a genuine signal and the image (second channel) at frequencies above 10 mc.

The selector switch, S1, need only be a 4-way 3-pole as the oscillator will key in the "AM monitor" position. Finally C2, the $.01 \mu\text{F}$ capacitor across the jack socket can be adjusted (or omitted) to provide suitable click suppression—but don't make it too large or AM monitoring will suffer.

Construction

The case used measures $5\frac{1}{2} \times 3 \times 4$ inches high and this seems about optimum but there is nothing fussy about size or layout. If you want to copy the case, cut a strip of aluminium (about 18g.) $18\frac{1}{2} \times 3$ inches wide and form it round a broom handle

to make a wrap-round cover that butts together at the bottom centre. Now make up four angle brackets $\frac{1}{2} \times \frac{1}{2} \times 1\frac{1}{2}$ inches long. Rivet or screw one across the butt joint $\frac{1}{4}$ inch or so from the front of the case and another about $\frac{1}{8}$ inch from the back edge, with the bent up flange facing out in both positions. The other two brackets are fitted directly opposite in the top of the cover. Using the wrap as a template, cut out the back and front plates and mark which way they fit. It is most unlikely that they will be interchangeable. Secure the plates to the angle brackets with small self-tapping screws. After drilling (a fret saw will cut the meter hole) cover the wrap with a strip of wood-grained *Fablon* and paint all bare metal to match the shack curtains. Fit four rubber or p.v.c. feet (*Radiospares*) and the mechanics are complete. The construction of the tuning head will depend on the size of the variable condenser and coil socket. One neat scheme is to use two 2 oz. tobacco tins, less lids. Assemble in one tin then tack solder the other to it and, after painting, cover the joint with p.v.c. tape. The connection to the main unit must be made with screened cable.

There is nothing critical in the electrical layout and as good plan as any is to mount all the com-

ponents on a piece of *Veroboard* or paxolin about three inches square and connect to the switch, meter, etc. by flexible leads. With a current consumption of about 6 mA a small battery will do, a PP3 lasting weeks.

Concluding Notes

There would seem to be no limit to the uses of this instrument. Like so many simple tools—it is not a gimcrack—you wonder how you managed without it. Extension is possible to make it even more versatile, and a VHF and a GDO head are being developed. Also an extra socket is being fitted to permit the oscillator output to be used for MCW transmission and testing.

A final word of warning: This instrument is very sensitive and even a low power driver stage could overload and burn out the first transistor. So keep the gain control well down until you are sure of setting.

Few things are the work of one man, so the writer extends his thanks to Reg Searle for developing the case; to G3IKO for testing the suggested alternative components; and to Tony Boxall for the photograph.

FULL CW BREAK-IN

ANOTHER INTERESTING CIRCUIT

R. E. BONA, Grad.I.E.R.E. (G3SGX)

IT may interest those seeking to convert their stations to full break-in on CW that this can be done very easily by means of the change-over pressurised reed relays now readily obtainable in this country. A circuit described in detail in the July 1964 issue of *QST*, and devised by VE3AU, has been constructed by the writer and has been in use now for over six months, giving excellent break-in with a Heathkit DX-40U transmitter. The circuit is easy to build and has given no sign of trouble since it was installed.

The reed relay employed is a *Hamlin* type DRG-DTH, obtainable in this country from *Flight Refuelling (Industrial Electronics Division)*, Wimborne, Dorset, who are agents for Hamlin. Cost of the relay plus actuating coil was approximately 25s. Drive required for the coil is about 30 mA at 12 volts—at G3SGX this is obtained from an old battery charger which also supplies a muting relay in the station HRO.

The complete circuit for cathode-keyed transmitters is shown in Fig. 1. The DC keying circuit of the Tx is completed through the transmitter relay contacts, with RF blocked by chokes. Hence the key is not closed, so far as the Tx is concerned, until the relay has connected the aerial to the Tx. The transmitter's keying shape on "make" prevents the RF output from rising rapidly during the short contact bounce period (quoted contact bounce period for the type DRG-DTH reed is in the region

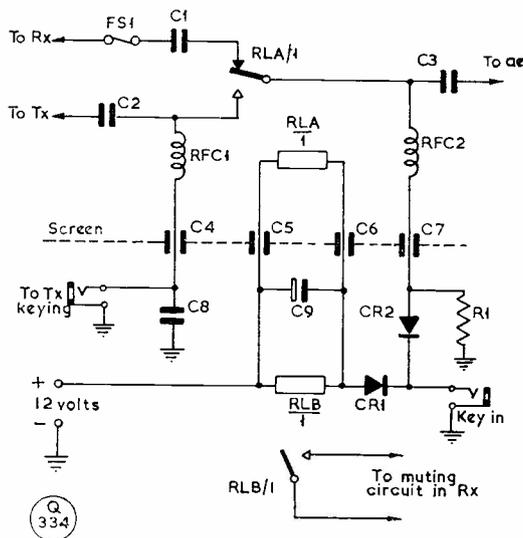


Fig. 1. Circuit of the device. Values can be: C1, .03 μ F disc ceramic; C2, C3, each two .03 μ F disc ceramics in parallel; C4, C5, C6, C7, .001 μ F ceramic feed-through; C8, .001 μ F; C9, 250 μ F, 12v.; R1, 270K; CR1, CR2, silicon diodes rated 400 p.i.v., such as Hughes HS-1020; RFC's, 2.5 mH RF chokes; RLA, Hamlin DRG-DTH reed relay with actuating coil, 100 AT minimum; RLB, miniature relay with 400-ohm coil. Condensers C1, C2, C3 should be rated 1000v.

of 2mS). The purpose of R1 is to discharge C7 during the time that the reed is swinging back to "receive" from the "transmit" position, thus preventing a click in the Rx. The 250 mA fuse protects the Rx in the event of reed failure.

The VE3AU circuit shows a 2 μ F condenser in the C9 position, but this is with no other coil in shunt with the reed coil. At G3SGX the 400-ohm coil of the Rx muting relay shunts the reed coil, and a 250 μ F capacitor is used. This just keeps the reed held in between letters at a speed of about 16 w.p.m. Unslugged, the reed will easily follow every single dot at 40 w.p.m.

The DRG-DTH reed has a contact rating of 10 watts DC, and is thus slightly "over-wattted" when used with the DX-40 (Tx power input of 75 watts.) However, no sign of trouble has so far been experienced, and VE3AU states in his article that he used this type of relay successfully with Tx power inputs of up to 700 watts! For those interested in QRO operation with a greater margin of safety, he describes (in a later issue of *QST*) a unit using several reeds in parallel.

The circuit shown in Fig. 1 can easily be adapted for use with a blocked-grid Tx by reversing the polarity of the DC supply, the polarity of C9, and the polarity of the diodes CR1 and CR2.

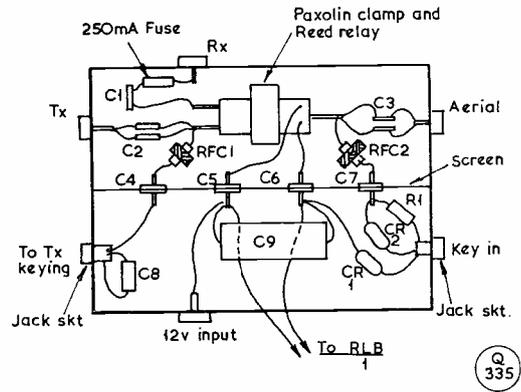


Fig. 2. A suitable layout arrangement, using an Eddystone die-cast box—see text.

Layout of the unit is not critical, except that those components carrying RF should be screened from the rest. The writer used an Eddystone diecast box of dimensions approximately 7½in. x 5in. x 3in. and layout as shown in Fig. 2, but the components could all be housed in a much smaller box.

VARIABLE HT SUPPLY

D. J. BEAN (G3TJQ)

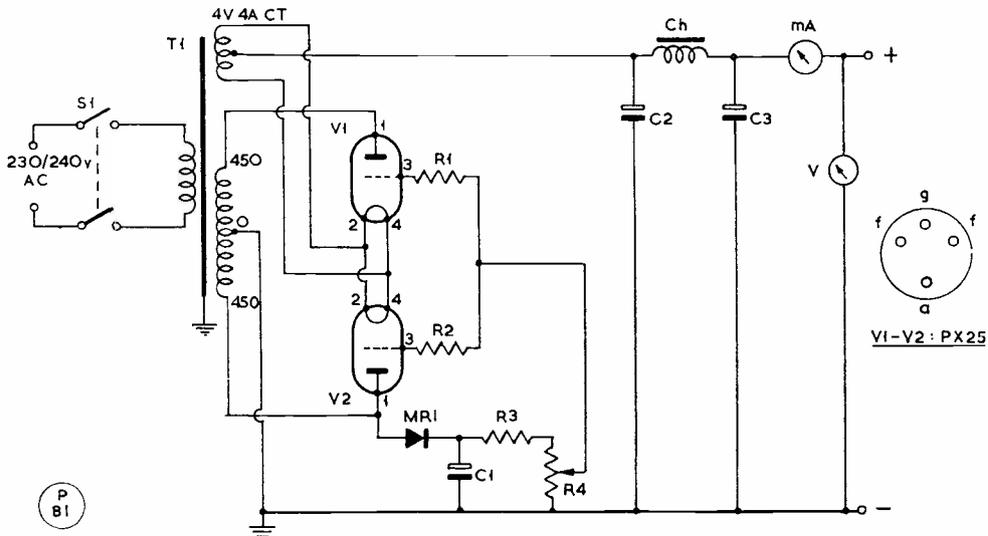


Fig. 1. Values for the circuit discussed in the text can be C1, 4 μ F, 500v, electrolytic; C2, C3, 16 μ F, 450v, electrolytic; R1, R2, 10K, half-watt; R3, 100K, half-watt; R4, 500K linear potentiometer; T1, any mains xformer giving 450v, 150 mA, with 4v, 4A heater windings; Ch., 10 Hy 100 mA smoothing choke; MR, 1000 p.i.v. 1 mA rectifier; voltmeter and milliammeter to suit, 500v. and 100 mA; and valves V1, V2, can be old power triode types such as PX25, PF5/400, DO24, P27/500, PX5 or LP25, all capable of rectifying in the 50-watt range.

PRACTICAL CIRCUIT FOR
USEFUL OUTPUT RANGE

HAVING need of a variable HT power supply at this QTH, various ideas were thought over and discarded, before the circuit shown here was built.

The basic form is that of the cathode follower, but with AC applied to the anode instead of DC. From the circuit it will be seen that current will only flow on the positive half cycles and furthermore, if a steady, positive, DC voltage is applied to the grid the current flow and subsequently the output voltage can be controlled by varying this DC voltage on the grid.

The circuit on p.400 is self explanatory and the layout and component values are not too critical, but C1 should not be less than 500 volts working. If this value is not readily obtainable two 8 μ F 450 volts working in series could be used.

If required, additional low voltage transformers may be provided for heaters and LV circuits. The whole circuit should be kept floating, about earth, so that the PSU can be used where a negative supply is required. If a centre-tapped heater transformer is not available an artificial centre tap can be made with two resistors in the heater leads (see Fig. 2).

The unit as shown has been used at this QTH and found to have fairly good regulation. The voltage drop when put on load can easily be corrected by

P
82

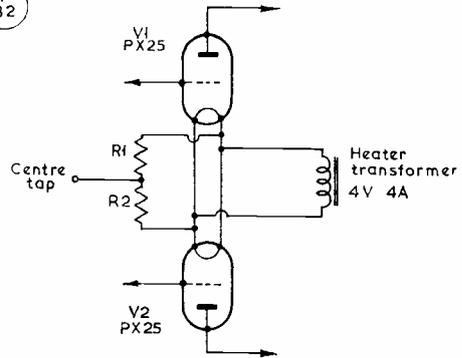


Fig. 2. Balancing the heater supply if the LT winding on the mains transformer is not centre-tapped. R1, R2 can be of 10 ohms each, rated a watt or so.

adjustment of R4. The no-load minimum volts are 30v. dropping to 15v. with 100 mA load. The maximum no-load volts are 450v. dropping to 400v. with 100 mA load.

To facilitate fine adjustment of R4 a 6 : 1 reduction drive has been incorporated. The transformer T1, a junk sale purchase of unknown origin and of unknown current rating, has 4v. CT at 2 amps. four times and would appear to have an HT rating well in excess of 100 mA. The rectifier MR is the readily obtainable half-wave pencil type.

SOLDERING SIMPLIFIED

For as many years as we can conveniently remember, the firm of Multicore Solders, Ltd., have not only been producing cored solders in a variety of weights, gauges and mixes, but have been finding new ways in which solder can be used. Always with the handyman and home constructor in mind, they have now produced a new pamphlet called *Hints on Soldering*. It is short and easy to read, and can be obtained through any local dealer stocking Multicore Solder.

SMALL ADVERTISEMENT SECTION

This month's spread does not quite "beat all records". We have not had time to tally the total cash value of the for-sale items, but whatever the figure may be, what is certain is that our Readers' Small Advertisement section is now the market-place for the world of Amateur Radio, whether you are out to buy, sell or exchange. While it is true that to get in with the bargains you should have your copy of the *Magazine* right on time, it is interesting to note that this month we have heard from two readers saying that they have only just sold items offered in the April and May

issues respectively—and wanting to know "Is this a record?" Well, we wouldn't know—but what it does prove is that the Small Adv. section is carefully scanned by those on the look-out for what they want at the right price.



"... Yes, we do print our own QSL's, etc., here ..."

• • • The Mobile Scene • • •

Since our last appearance, four Rally events have occurred, with varying weather conditions. But as yet no reports have been received covering them, and only two (Derby and Yelverton) took place on dates that could possibly have caught this issue.

What we have got is the story from *South Shields* where, on July 10, they had weather even worse than it was last year! It rained all day, instead of only for some of the time. However, *South Shields* had what they consider to be "a remarkable turnout, in spite of the conditions." They welcomed more than 200 people, in 75 cars, of which 30 were fitted mobile. Once again, Bill Thompson, G3MQT, made his marathon drive from Hastings. G3GEJ was another long-distance traveller, up from Letchworth, Herts. The driving competition—made even more difficult by the Wx—was won jointly by G3SZP/M and SWL Ealgh. Another contest, involving questions on safety under mobile conditions, was won by G3LEA/M with 84 out of 100 points. Other interesting competitions were a radio quiz, won by G3TDV, and judging the frequency of varying audio tones; the winner of this one was G3OGV. The talk-in stations were G3DDI on 160m., with 20 mobiles logged in spite of a high local noise level; the two-metre station, G3FSL, heard only three /M's. The day was rounded off with

the usual raffle, and the prize presentations. The general feeling was that the affair had been a success, in spite of the appalling Wx, for which the *South Shields* boys (who always work hard to put on a good show) had the sympathy of their visitors.

Weather was again the factor for the *Worcester* Mobile Picnic on July 17—it rained for most of the day, which is thought to have "deterred some potential visitors." Nevertheless, the event drew about 160 people, in 61 vehicles, the DX man being G3JTK/M (on 160m.) who came up the 132 miles from Portsmouth. The prizes for best distance worked /M with the talk-in stations went to G3OOQ/M, 21 miles on 160m., and to G3PXZ/M, 30 miles on two metres. The junk stall did a good trade, and particularly appreciated were the refreshments, which were provided by the wives of Worcester Club members.

For the *Cornish* Mobile Rally on July 24, the dominant factor was again the Wx. But the final count showed that nearly 100 callsigns had registered, which meant that about 250 people must have been present. The /M rigs on the Rally site on Pentire Headland, near Newquay, ranged from small transistorised transceivers to elaborate installations filling the boot of a

[cont'd p.405]



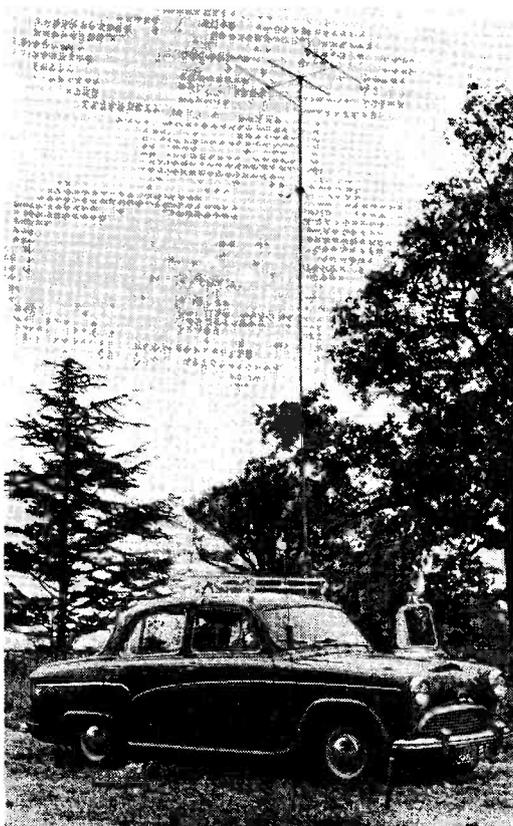
In spite of rather indifferent weather for most of the day, the sun did come out at times for the *Cornish* Mobile Rally at Pentire Head on July 24. The attendance, of about 150, was somewhat affected by the Wx — nevertheless, there were 25 vehicles fitted mobile, and the talk-in stations worked them on 160/80/2m. A party of 12 from Yeovil — who have now made the trip to Newquay for the Rally three years running — got a special prize. Other prize winners were G3OCC/M (Chislehurst), G3RUK/M (Birmingham) and G3TFN/M (Manchester).



Seen at the Worcester Amateur Radio Club mobile gathering on July 17, at Upton-on-Severn — left to right: G3SWT, G3NUE, G8JC and G3PXZ/M, who took the prize for the best VHF mobile contact.



The lady is Edna Cooper, G3UGO, in charge of the two-metre talk-in station for the Cornish Mobile Rally on July 24. Further down the operating table are G3TTG (Top Band) and at the far end, G8AW on 80 metres.



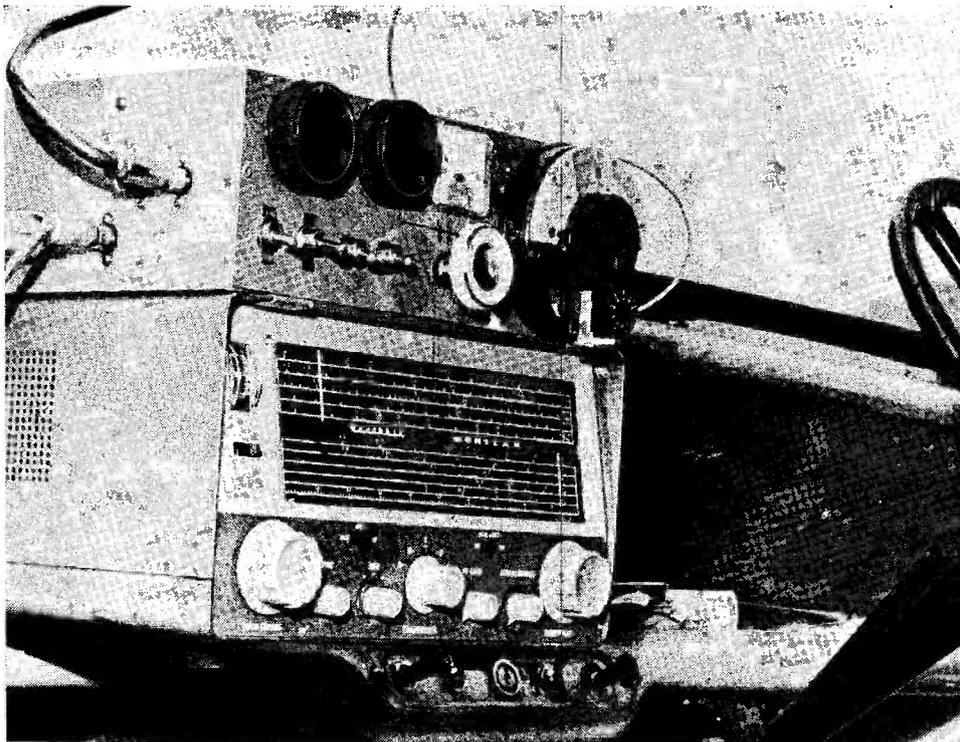
A very good example of portable/mobile — the two-metre talk-in station for the N.A.R.M.S. Mobile Rally at Harewood, near Leeds. The 3-ele beam, and the mast sections with guys and pickets, knock down to a tidy bundle that can be carried on the roof rack. This, in fact, is the way to go /P on VHF.



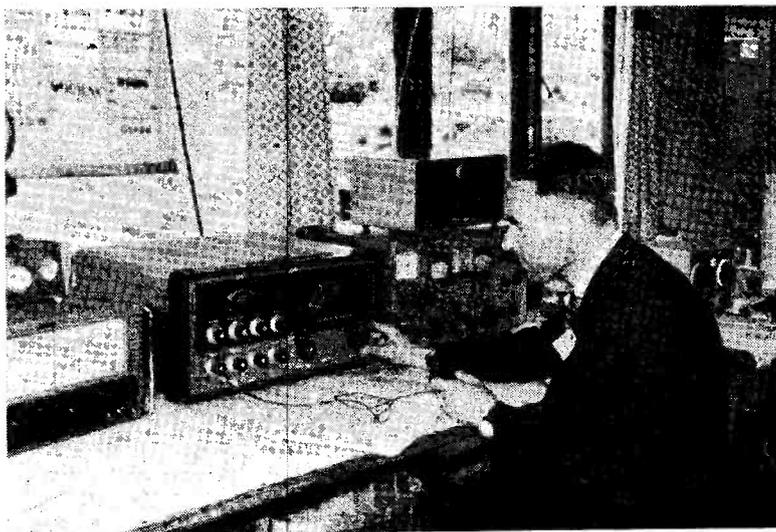
Some of the visitors, and the gear on offer, at the junk sale held for the Worcester Mobile Picnic.

CALLSIGN PLAQUES

The firm of F. W. Harris & Co., Ltd., Town Hall Chambers, Lydney, Glos. offer neat individual call-sign plaques, in various styles, at very competitive prices. If you want something to show in your wind-screen, or stand beside the gear, it is worth making an enquiry.



G3PGJ/M of Plymouth was at the Longleat Mobile Rally, with a rig consisting of a Heathkit Mohican GC-1U receiver and a 160-metre transmitter running PCF80 osc. into EL84 buffer, with another EL84 in the PA.



G3SN is president of the Saltash & D.A.R.C. and did his stint of operating GB3SAL during the Rally.

large car—and, says the report, some of the aerial systems had to be seen to be believed. (Having been to many a Rally, we can!). A much neater installation was that of a radio car shown by the local police, with the officer i/c only too pleased to demonstrate his rig and talk about police mobile radio. This is the sort of thing that should be a more regular feature of Mobile Rallies.

Here is the next list of fixtures, the last we shall publish this year:

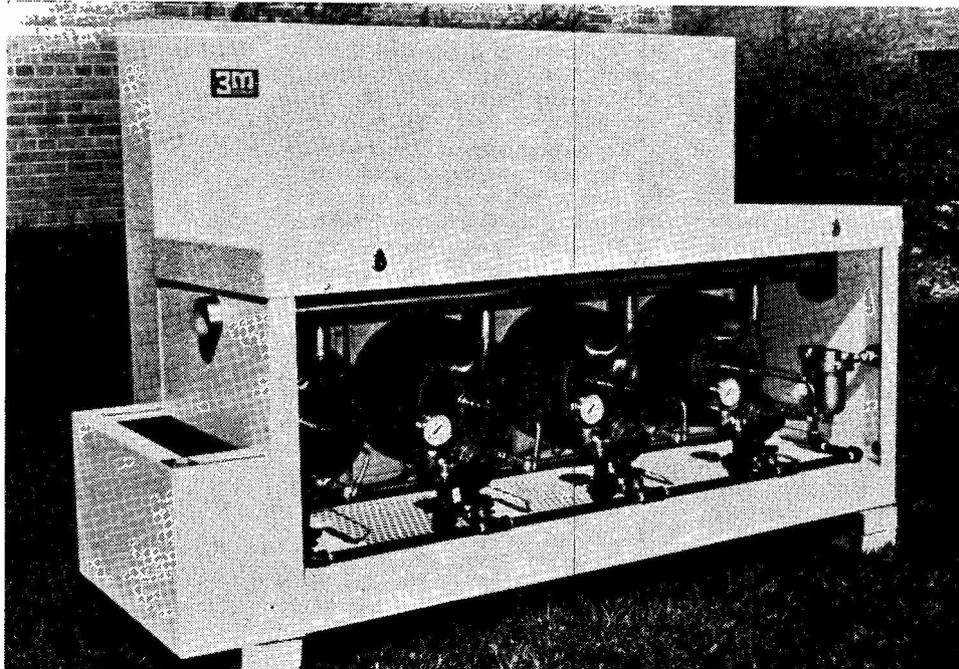
September 4: Swindon & District Amateur Radio Club Mobile Picnic at Lydiard Park, about two miles west of Swindon, just off the A.420 to Chippenham, map reference 157/100842, and sign-posted. Lydiard House, ancestral home of the Bolingbroke family, is a show place and will be open. Talk-in by G3LLZ/P on 1920 kc, and by G3JOT/P on 70.2 mc, both on the air from 12 noon. Events will include a raffle and a bring-and-buy sale. A picnic meal should be brought if required, though light refreshments will be available on site. An advance notification of attendance would be appreciated, to: I. S. Partridge, G3PRR, 104 Grange Drive, Stratton St. Margaret, Swindon, Wilts.

September 11: RSGB Mobile Rally, at Woburn Abbey, near Luton, Beds., the well-known show place, grounds and zoo park maintained by the Duke of Bedford—where you can roam over

3,000 acres inhabited by 2,000 animals, and see the state apartments of the Abbey. The Rally will be in a reserved area, with talk-in by stations GB2VHF and GB3RS on the following channels: 1940 kc, 3750 kc (SSB), 70.26 mc and 144.86 mc. There are restaurants and snack bars in the grounds, and events for Rally visitors will include a pedestrian D/F hunt (that's what it says!), a junk sale, a trade exhibition, and a grand raffle. This is always one of the big Rally events of the year and, given a sunny afternoon, it should be as well supported as ever. There is an admission charge to the Park, which can come to quite a lot for a carful.

September 16-18: Second International Amateur Convention and Mobile Rally at Knocke-le-Zoute, near Ostend, Belgium, to be attended by radio amateurs and (X)YL's from several countries. A three-day, Friday-Sunday, programme has been arranged, at an inclusive charge of £10 a head, covering meals and accommodation and including the special convention lunch on Saturday, 17th. As explained here last month, bookings should have been effected by now. Some last-minute information could probably be obtained from: J. C. Foster, G2JF, Wye College, Ashford, Kent.

September 25: Harlow Mobile Rally (*no details provided*).



Nothing to do with mobile, though much used in remote locations as a source of low-voltage power—the new 3M thermo-electric generators operating off propane, butane or natural gas and giving either 100 watts (Model 530M) or 200 watts (Model 540) at 6, 12 or 24 volts DC. Designed for continuous unattended operation under all possible climatic conditions—from desert heat to arctic cold—the only attention required is the periodical replenishment of the gas supply, which can come in high-pressure cylinders. Some practical applications of such generators are for providing cathodic protection for underground pipe-lines and powering unattended relay stations, marine buoys and similar installations.

VHF BANDS

A. J. DEVON

IT was not until towards the end of the period covered by this report that a real uplift in conditions began to develop, with a large anti-cyclonic area becoming stabilised in a general south-westerly direction, towards the Azores. This took in most of the southerly part of the British Isles but, as has so often happened in the past under similar met. conditions, the GM's were out of it. In fact, in round terms VHF propagation in the DX sense followed the pattern of the weather. And this period of better conditions only lasted about a week. Indeed, so far this year we have not had much of a break with the EDX—but there is time yet. At the moment of writing, it is too early to know much of individual results during the late-August opening.

However, as so often happens when VHF seems otherwise quiet, there is much to discuss. On the meteor-scatter front, there has been a good deal of activity, some of it abortive, but much else very productive. During the *Perseids* shower, August 10-14, G3LTF (Chelmsford) had a two-metre sked with SV1AB, which Peter reports as having been "fully negative"! But he heard HB1ADT/P on the 11th. On the other hand, EI2A/OK2WCG had a MS contact on the 12th, 0001-0230z, with good signals both ways; Ivo of OK2WCG also heard OE5XXL in QSO with an SM, and

others heard or known to be on for this *Perseids* session were DM2BEL, ON4TQ and UR2CQ.

In an interesting report about MS working, EA4AO (Madrid) records sked contacts with F8DO (Drace, Rhone Vy.) on August 10 and 14, with very strong signals, up to S8 and S9+, in bursts of more than a minute. A schedule with UB5KDO over the same period failed but on the 13th and 14th EA4AO had an exciting experience with the new EDX station PA6MB (note the c/s) formed by a consortium of PAØ's for E-M-E and MS operations, specially licensed for 1 kW, and at present using an 8-over-8 system on two metres. Martin in Madrid was copying PA6MB at up to S9+ with bursts of *three* minutes, 0600-0900z—just like a local station, as EA4AO puts it. So the *Perseids* gave rather well on this occasion—congratulations to all concerned on being able to make full use of the opportunity. Earlier, the *Aquarids* gave EA4AO a good QSO with OE5XXL in Linz, another station specially licensed for advanced VHF experimental work—they run a kilowatt input, with a 15-ele long-Yagi, producing S7 signals in Madrid. And this was a two-metre "First" for EA/OE.

The next meteoric appearances of interest are the *Giacobinids*, October 9, but forecast as not very intense; the *Orionids*, October 18-23, often very useful; the *Leonids*, November 14-15; and the *Geminids*, December 10-13, which have given very good results in the past. It is certain that the exponents of EDX by MS will be looking for further opportunities, which involves the making of tight schedules, with very accurate frequency setting at both ends. Some frequencies reliably known are: EA4AO, 144-100 mc; OE5XXL, 144-298 mc; F8DO, 144-002 mc; EA3KS, 144-001 mc; and PA6MB, 145-008 mc. EA4AO also has an alternative frequency at 144-900 mc. This list is by courtesy of Martin, EA4AO, now one of the leading European operators in the MS mode, and always there when the meteor showers are about. Other stations mentioned in this context are LZ1AB, SP2RO and YO7US—which also reminds us to

say that Peter, G3LTF, would be glad to fix MS skeds with suitable co-operators in areas like II, CT1, YO, UC and UQ.

* * *

Turning now to other DX and EDX results, G3LTF had some

SEVENTY CENTIMETRES

ALL-TIME COUNTIES WORKED

Starting Figure, 4

Worked	Station
49	G2XV
42	G2CIW
38	G3BNL
36	G3JMA
35	G3KPT, G6NF
33	G3JHM/A, G3LTF, G8ADC
32	G3LHA, G3LQR, GW3ATM
31	G3JWQ, G5YV
30	G3EDD, G3KEQ
28	G3HAZ, G3HBW, G3NNG
27	G3PTM
26	G3KQF, GW2ADZ
24	G3AHB, G8ACB
23	G3BKQ, G6NB, G5UM (169)
22	G3HRH, G3OBD
21	G3AYC, G3FIJ, G3IOO, G5FK
20	G4AC
19	G3OWA
18	G2OI
17	EI2W, G3BA, G3MPS, G5QA, G8ADS, G8AKI
16	G2DDD, G3BYY, G3MED
15	G4RO
14	G2BDX, G2HDZ, G3FAN, G3HWR, G5DS
13	G6XA
12	G3NJO/T, G5BD
11	G2AXI, G3EKP
10	G3IRW, G3LZN, G8ACK
7	G2HDY, G3JHM, G6AX/P
6	G3KHA, G3WW
5	G3FUL, G3IRA, G3IUD, G3LTN, G5ML, GC2FZC
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.

interesting experiences on 70 cm. and 23 centimetres during the mid-August opening (which for us, of course, was "late in the period, near the deadline"). The best of these was hearing OZ7SP on 23 cm., S3-4 on August 17, when he was also worked on 70 cm. This being the second time Peter had heard OZ7SP on 1296 mc, it was a disappointment that the OZ could not find him; during this same spell, all 70/23 cm. signals heard around East Anglia were very strong, G3LQR at 60 miles blocking the G3LTF Rx on 23 cm. By the 18th, conditions had changed somewhat, and though G3LTF worked OZ5AH and OZ7SP on 70 cm. and heard OZ6OV, all at 59+, the 1296 mc band had gone dead again. Peter also mentions F3KT/P and G3OBD/P, but it is not quite clear on which band these were heard or worked.

Writing from Canterbury, G8AJC describes what was a very effective, though probably rather localised, 70 cm. opening to PAØ and ON4 on August 12, during which he worked eight PAØ's and two ON4's, all with very strong signals; in terms of distance, his best DX was PAØHMS at 250 miles. This opening was from early evening until after midnight, when a couple of F's were still coming in—but the general activity was low; in fact, G8AJC worked all the stations he heard. His Tx consists of a QQV03-20A as a tripler-amplifier taking 32w.; the Rx is AF139 pre-amp. into two 6CW4's with a CR-100 as main receiver; and the beam assembly is a pair of 6/6's at 30 feet.

In sending in some claims for the Tables, and discussing VHF results up there generally, GM3FYB (Dunfermline) remarks that though he has been on 70 cm. since 1948, in that 18 years he has only worked 46 different stations in 12 countries; most of these have been accounted for in the last four years, the average distance being about 230 miles, with SM6ANR at 580 miles as best DX. As Harry says, the GM's have to get out a long way for their VHF contacts; this in turn means that there are very few stations in Scotland on the 430 mc

band—only GM3EGW, GM5VG and himself GM3FYB being ready-to-go at a moment's notice, *i.e.*, can switch on, warm up and be on the air as soon as a QSO is asked for or an opportunity occurs. Such gave possibly the GM/GD "First" on 70 centimetres, when GM3FYB encountered GD8AGY/P up Snaefell on August 5. Harry's totals listing brings out the interesting fact that though he has worked 22 different G's on 70 cm., his GM tally is only twelve stations (in 18 years!)

More News Items

That teleprinter mechanism we talked about last time reached Sark safely—and we might have mentioned that G3TEY is a touch-typist—one immediate result being an RTTY "first" for G/GC on both four and two metres; these QSO's were made by G5ZT (Plymouth) on August 18, on Two, with GC3OUF at the other end, and on the 19th on Four, signing GC3OHH from Sark. It was "landline copy" with RS-59 signals both ways. Before joining the party, G3OHH (Macclesfield) was able to get a straight CW contact on four metres with GC3OUF, on August 15—but it was rather a difficult QSO, the distance being a good 260 miles and conditions not too helpful. By August 20, using 15w. and a 4/4, the 4-metre score from GC3OHH (Sark) was 24 stations worked all over England, with the Manchester boys G3PMJ/G3SMU and G3RIK/P in Rochdale as the best DX.

The Sark two-metre station signed GC3OUF, and ran 60w. to a 10/10. By August 20, about 80 stations had been worked, G2WS and G3BA in the Midlands being the most distant.

Another sort of expedition, on 4 metres during the latter part of September, is being undertaken by G3UZW/G8ARH of the Dorking Club group, who will be journeying into the fastnesses of Wales with /P gear. Being new boys themselves, they hope to be able to give some of the others new to the VHF air a chance with a few of the rarer Welsh counties.

Still in Wales, we are asked to announce that the first meeting of

TWO METRES

COUNTRIES WORKED

Starting Figure, 8

- | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 | G5YV (DL, EA, EI, F, G, GC, GD, GI, GM, GW, HB, HG, I, LA, LX, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UP, UQ, UR, YU) |
| 27 | ON4FG (DL, EA, EI, F, G, GC, GI, GM, GW, HB, HG, LA, LX, LZ, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UC, UP, UR, YU) |
| 27 | G3LTF (DL, EA, EI, F, G, GC, GD, GI, GM, GW, HB, HG, LA, LX, LZ, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UP, UR, YU) |
| 26 | UA1DZ (DL, DM, G, HB, HG, LA, LX, LZ, OE, OH, OHØ, OK, ON, OZ, PA, SM, SP, UA, UB, UC, UO, UP, UQ, UR, YO, YU) |
| 24 | G2JF, OK2WCG, UP2ON |
| 23 | G3CCH |
| 22 | G3LAS |
| 21 | F8DO, G3HBW, OKIDE |
| 20 | G3BLP, OK1VR |
| 19 | G3EDD, G6RH, PAØFB |
| 18 | G2CIW, G5MA, G6NB, ON4BZ |
| 17 | G2XV, G3BNL, G3HRH, G3RST |
| 16 | G3AYC, G3BA, G3CO, G3GHO, G3KEQ, G3PTM, G6XM |
| 15 | G3DKF, G3FIJ, G3FZL, G3KOF, G3OBD, G3RMB, G4MW, GM3EGW, UR2CQ |
| 14 | G2AXI, G2FJR, G2HDZ, G3AOS, G3AOX, G3FAN, G3HAZ, G3IOO, G3JAM, G3JWQ, G3KPT, G3NUE, G3PBV, G3SAR, G3TLB, G3WS, G4LU, G5BD, G5DS, G6LI, G8OU, G8VZ |
| 13 | EI2W, G2CDX, G2HIF, G2HOP, G3DMU, G3DVK, G3EHY, G3GPT, G3GWL, G3IIT, G3LHA, G3NNG, G3OHD, G3PSL, G6XX, GC2FZC |
| 12 | EI2A, F8MX, G2BJY, G3AHB, G3BNC, G3BOC, G3FNM, G3GFD, G3GHI, G3GSO, G3JLA, G3JXN, G3QWA, G3WW, G5CP, G5JU, G5ML, G8DR, GW2HIY, GW3MFY |
| 11 | G2AJ, G2CZS, G3ABA, G3BDQ, G3IUD, G3JHM/A, G3JYP, G3JZN, G3KUH, G4RO, G4SA, G5UD, G5UM, G6XA, PAØVDZ |
| 10 | G2AHP, G2DHY, G2FQP, G3BK, G3DLU, G3GSE, G3LAR, G3LRP, G3LTN, G3MED, G3OSA, G3RTF, G3UFA, G3XD/A, G5MR, G5TN, G8IC, GW3ATM, GW5MQ |
| 9 | G2BHN, G2DVD, G2FCL, G3BYY, G3FUR, G3OJY, G3SXX, G4LX, G8GP, GC3EBK, G13ONF, GM3DIQ, GM3LDU |
| 8 | G2BDX, G2DDD, G2XC, G3AEP, G3AGS, G3CCA, G3EKX, G3GBO, G3HCU, G3HWJ, G3KHA, G3PKT, G3MPS, G3UFQ, G3VM, G5BM, G5BY, G8SB, GM3JFG |

the South Wales VHF Group will be held on Tuesday, September 27, at the QTH of GW4CG, 20 Austin Avenue, Porthcawl. May it succeed and prosper—and mount some DX-peditions round its own country.

By courtesy of G3LAS (Berkhamstead), we now have a list of VHF beacons and their frequencies. He shows no less than 15 on the two-metre band—fortunately, as John says, we are never likely to hear them all at once!—and three on 70 mc. As there are even now a few more to come, we are holding his list for the time being, for appearance in due course. A particularly interesting one he gives is 9H1MB, Malta, on 70.100 mc, which ought to be audible under the right conditions (as on the evening of August 19). To this, G3JHM adds ZB2VHF, on 70.26 mc, to operate continuously from the top of the Rock of Gibraltar, starting up about the end of September. The Tx gives 15-20w. output, into a 4-ele J-Beam. As G3JHM says, this new beacon should be very useful for checking on MS and spor-E effects.

The Tabular Matter

Since the year-end scores to August 31 cannot yet be in, and the new annual runs do not start till about the day this should be in your hands, we are taking the space and the opportunity to give some of the All-Time tables an airing. It is interesting to note that Gerry, G2XV, is still firmly in front in the 70 cm., and Louis, G3EHY, on 4 metres. Both are specialists on their respective bands, and for years have kept steadily at it. And it is also interesting to see how 4m. has overtaken Seventycems in terms of counties-available-to-work. There is no question that as things are now, the 70 mc band is more populated and active than the 70cm., though not so long ago the very reverse was the case. All movements claimed to date, about 20 altogether, have been taken into Two-Metre Countries, the main changes being around the mid-part of that Table.

Don't forget that w.e.f. September 1 we kick off again with a new

series of Annuals—the Three-Band VHF, the Two-Metre and the 70-Centimetre, this latter being an addition to the Annuals, which run from September 1 to August 31. So get to work, and let us have your scores to start the Tables as soon as possible. Remember, also, that in the Annuals, even those new to VHF have a good chance of coming out well at the end of the year's work—it is simply a matter of regular activity and watching for the openings.

Some Quick Comments

EI2W is on 432.6 mc nightly, 1900-2300z; has been keeping a very successful sked with

GM3FYB (220m.), and made the EI/GD "first" for 70 cm. with GD8AGY/P on July 30 . . . G4AC (Woodbridge) runs but 3w. to a 4/4 on 70 cm. and has a nice Rx using transistors in a G3BKQ-type cavity mixer . . . G8APR (Rochdale) took the R.A.E. 15 years ago, has been an active VHF listener for 20 years, and is now on 433.56 mc . . . G8AKQ operates from Barnsley and also from the BBC Club station G3PPG at Evesham, on 434.06 mc, running 100 watts or so, from a good QTH; skeds are invited (G3PPG, QTHR) . . . G6SDB/T (Dudley, QTHR), on 432.56 mc, likewise asks for skeds and would also like

TWO-METRE BAND PLAN—U.K.

Effective August 1st, 1966

Zone 1	144.0–144.1 mc	<i>CW only</i> , for any district.
Zone 2	144.1–144.25 mc	Cornwall, Devon, Somerset, Berkshire, Dorset, Hampshire, Wiltshire, Channel Islands.
Zone 3	144.25–144.5 mc	Brecon, Cardigan, Carmarthen, Glamorgan, Gloucester, Hereford, Monmouth, Pembroke, Radnor, Worcester.
Zone 4	144.5–144.7 mc	Kent, Surrey, Sussex.
Zone 5	144.7–145.1 mc	Bedford, Buckingham, Essex, Hertford, London GLC, Middlesex.
Zone 6	145.1–145.3 mc	Cambridge, Huntingdon, Leicester, Norfolk, Northampton, Oxford, Rutland, Suffolk, Warwick.
	145.41 mc	<i>SSB Spot Frequency</i> , any district.
Zone 7	145.3–145.5 mc	Anglesey, Carnarvon, Cheshire, Denbigh, Flint, Merioneth, Montgomery, Shropshire, Stafford.
Zone 8	145.5–145.8 mc	Derby, Lancashire, Lincoln, Nottingham, Yorkshire.
Zone 9	145.8–146.0 mc	All Scotland, Northern Ireland, Isle of Man, Cumberland, Co. Durham, Northumberland, Westmorland.

Notes: Zone 1 area is for CW exclusively, all districts, but A1 can also be used in own Zone. The SSB allocation is in accordance with Continental practice and thus becomes the international SSB channel. Stations using VFO can net outside their Zone when answering CQ calls—but should always call their CQ's in the correct Zone and then listen first on their own frequency. Beacon stations and guard channels must be avoided when changing frequency.

FOUR METRES

ALL-TIME COUNTIES WORKED LIST

Starting Figure, 8

From Home QTH Only

Worked	Station
60	G3EHY
57	G3SKR
56	G3OHH
52	G3IUD
50	EI2W
42	G3MOT
41	G3OWA (444)
40	G2OI
39	G3PJK
38	G3JHM/A
36	G3FDW
35	G3BOC, G3PMJ, G5FK (346)
34	G3LAS, G3TCT (253)
33	G2BJY, G5JU
32	G3NUE
31	G3PPG
30	G3BNL, GM3EGW
29	G3AYT
28	G3OJE, G3UYB (200), GC3OBM
27	G3RDQ
26	G3LQR, G3LZN, G13HXV
25	G3FIJ, G3HRH
24	G2AXI
23	G3HWR (281), G5UM (238)
20	G3EKP
17	G5CP
16	G3BJR, G3TOT (100)
14	G3OKJ
13	G3UUT
12	G3TKQ, G5DS
11	G3LHA, G3PRQ, G3SNA
10	G2BDX, G3ICO
9	G2DHV, GM3FYB
8	G3NNO, G3TLB, G3UOR, G8VN

This table records Counties Worked on Four Metres, on an all-time basis. Claims can be made as for the other Tables, e.g. a list of counties with the stations worked for them, added to from time to time as more counties accrue. QSL cards or other confirmations are not required. Totals in excess of 100 different stations worked can be claimed and will be shown in brackets after the call.



The GM5UM/P set-up for two-metre operation during his recent safari. The aerial mast is a tight fit through a hole in a flat dural plate clamped to the roof-rack by wing nuts, and the butt end of the mast goes through the central hole of one of those large wooden reels on which wire is wound; this makes a firm base, and the beam is easily turned. During the trip, May 29 to June 9, 23 contacts were made on 145.8 mc, from Argyll and Wigtown shires, running 9w. on CW and 7 watts on telephony.

to hear from anyone with the appropriate vision receiving facility . . . New on the 4-metre band is GM3ULP (Wishaw), running 40w. with a home-built Tx, a T.W. converter, and a 4-ele Yagi; CW-only at the moment and always on the look-out . . . GC3OBM (Guernsey) runs a 4-metre sked with G3JHM (Worthing), 1800z daily; he would also like to hear from a GM willing to try a 4m. sked (QTHR); GC3OBM has other schedules, with EI6AS, G13HCG and G3OHH, all long-haul on four metres . . . Newer comers to VHF making good progress include G3UUT (York) and G3UYB (Bromley), both battling steadily on 4m. . . G3FDW has moved to a new QTH in Retford, Notts., and has not only got going for the Three-Band Annual, but also puts in a useful claim of 36C for the 4m. All-Time; he keeps around

70-14-70-16 mc, and uses all modes AM/FM/SSB/MCW/CW, which suggests that he must have a pretty comprehensive Tx/Rx set-up under his gamma-matched 6-ele Yagi . . . G3TLB (Tunbridge Wells) writes: "You (meaning A.J.D.) say call CQ if the band sounds dead; try two or three times again if you don't get a reply to your first call—and what happens? You don't get a reply to your third call!" Oh well, for years it has been a proven fact that your A.J.D. can never win!

Till Next Time

When once again we shall try to get it right. All the gen., pse, by Monday, September 26, latest, to: A.J.D., SHORT WAVE MAGAZINE, BUCKINGHAM—a sufficient QTH from anywhere in the world if you just add "England." Assuming all goes well, CUAGN on October 7. *Urs as ever, A.J.D.*

COMMUNICATION and DX NEWS

At the time of writing this piece, your scribe has just realised that through most of the period under review he has, for one reason or another, been either minus transmitter, or, worse, minus both transmitter and receiver—and has, as a result, relied entirely upon reports sent in, except for one excursion on Forty (when things looked rather better than expected) and four very brief sessions on Twenty in the late evening, when, as always happens, the band was positively crawling with DX, and, oddly enough, with very little European QRM.

Being thus reduced to “watching the Box” it was irritating in the extreme when the picture disappeared under a shower of white flashes every few minutes as one or other of the local folk switched on an electric drill, or a thermostat failed to make up its mind as to which way it wanted to go on a heating system. The last straw was to look at a paper which revealed details of the prosecution of an unlicensed (but nevertheless

genuine) ex-amateur U.K. licence holder for causing TVI by operating on Twenty under what had been his own callsign.

Leaving out the ethics of the case, there is no doubt whatever that any amateur *should* be able to operate one band or another free of TVI if he applies the lesson given in the R.A.E. course—and all bands if he adds to that a bit of plain commonsense in the application of that lesson. It is a plain fact that the advent of TVI and SSB have caused a more or less general tendency to go to commercial equipment; thus the user of the home-brew transmitter almost expects TVI, and accepts fatalistically the first complaint from the neighbour: he then either goes QRT or carries on regardless, and if the latter course is chosen then the stock of Amateur Radio in that area will slump to zero, and that *does* matter. Your neighbour may be a local magistrate, an M.P., or a Minister of the Crown, and then the area of conflict will widen. Your conductor once found him-

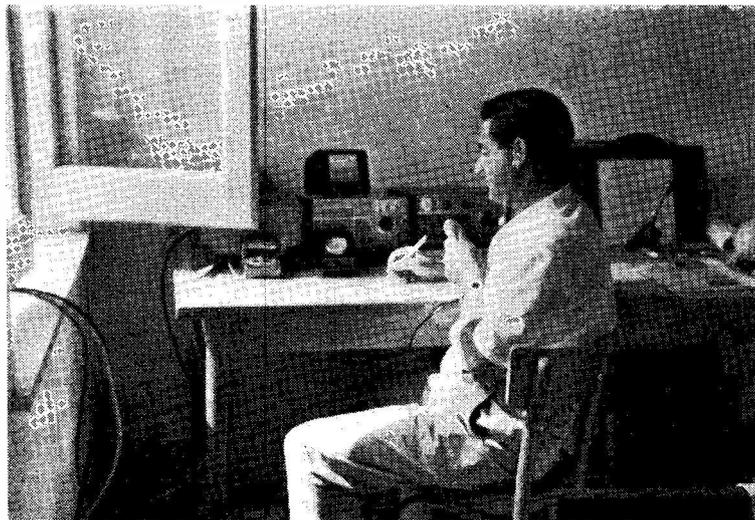
self in digs. where his neighbour at that time, well within TVI range, later in fact did become a Minister; if the gear used in those days had been let loose in the digs., then Amateur Radio would have obtained an opponent indeed.

Tackling TVI

Much is done at national level, in the interference context, to keep the “image polished”; however, it seems there is room for more work at a more humble level. Would it not be a good thing if local Club organisations were to set up a committee of those best suited, by experience and qualification, to give practical help and advice; more amateurs would be able to come on the air in TV hours, and probably the level of interference to TV by amateurs would reduce to an even lower level than it now is.

Having done this, would it not then be pertinent to enquire about the non-amateur pests that invade our so-called “exclusive” bands, the failure to enforce reasonable modulation and signal quality upon the other services who operate in our shared bands, and, who knows, the idea might catch

An impression of the IP1AA set-up at Pantelleria, with IT1GAI on the rig. Whoever of the party did the operating used his own call letters with the IP1 prefix—hence the confusion about callsigns heard and reported. When G5BZ took over the CW stint, he signed IP1AA/G5BZ—and had a very nice time at it, too. All by chance encounter on a holiday!



on with the authorities, in such a way that T2 operators are *made* to be T9 operators all over the world?

Having thus looked into Utopia, let us now seek out life with the warts on, and survey the bands in order, from Top Band through to Ten, as revealed by your letters.

Top Band—and DX

G3TRO (Spalding), G3TMA and G4OO joined forces to have a weekend in Rutland, and seem to have had a whale of a time. As a balloon aerial was to be put into use, the operation commenced by the seeking of permission to use this from the Ministry of Aviation; they eventually found the right phone number to call (*Hayes 6171*), and discovered that permission was only needed if a height in excess of 200 feet was to be used. They eventually set off with no less than a mile of wire, the balloon, a brace of hydrogen cylinders, all the gear, and of course the tents, sleeping bags and grubstake.

G2NJ has been getting in among the GM stations from Peterborough, and has brought his Phone score up to 71 with their aid. He mentions GM3RIM/P, GM3TQD/P, GB2NI, GW3TB/P, G3UQD/A, and an interesting one in GM3IJ/M in Ross-shire, this last being on CW.

W1BB writes that he is going to be away from October 1 until February 1 next year, and specially asks that no correspondence is directed at him during the period of his absence. After February 1, 1967, however, it will be a case of "business as usual." He has a lot of news of interest to the addicts of DX-the-Hard-Way; CX3BH worked on June 26 for an all-time "first" on 160m., JA back on the band, now with an allocation from 1907.5 to 1912.5 kc rather than a spot frequency; and we gather that W8DGP will be going to Alaska, and proposes to operate on Top Band from Shemyo Is., not far from the Loran station on Attu. Between September 1 and October 15, VK5KO will be on daily during 2000-2100z, listening for calls in the *even* five-minute periods of the hour, between 1800 and 1860 kc.

On a more local note, we have another nice long letter in from Fred, GM3SVK (Unst), who has now got steam raised well and truly on this band, to the tune of 44 counties in five weeks, in spite of erratic conditions and the usual summer static that frustrated several promising contacts with the South of England.

GM3SVK mentions also hearing W1BB/1 on a few occasions at 579, but laments that Stew has not been hooked as yet. He also says that he is willing to arrange skeds with anyone wanting a QSO: just drop him a line at RAF Saxa Vord, Haroldswick, Unst, Shetland.

G3TKN is another to write in and mention resumed activity, in his case due to examinations. During July, he had two good Phone contacts, the first with EI4BF/M in Dublin, at 59 each way, this one occurring at midday, which only goes to show the effect a few gallons of water can have

on the path! The other was again with a /M station, this time in Devon, at 599 both ways. Contacts such as these from Wallasey just go to show what a good signal can be radiated by a mobile whip, given that it is truly on-the-nose and has a coil with a good Q-factor.

A most interesting first report from G3UJS (Snettisham, Norfolk), who has discarded a 625ft. long-wire in favour of a V-aerial, a full wavelength in each leg, fed at the eastern end and around 40ft. up in the air. A first trial on the night of August 6/7, when the far ends were still not erected, brought in reports of 589, 599, and similar, from eight successive contacts with OK stations around Brno and Gottwaldov. Dave voices a gripe about the "big boys" who have not QSL'd, and says his return is only about 20 per cent.

Incidentally there seems to be a mite of confusion about the Top

FIVE-BAND DX TABLE

(*New Cycle*)

Starting date: January 1, 1966

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc
G3IGW	100	1	48	55	44	42
GM3KLA	80	11	62	22	37	38
G3IAR	108	28	64	67	39	32
G3UML	169	55	69	145	26	29
G3UBI	49	2	10	26	5	25
G3RJB	51	—	—	49	—	24
G3PQF	69	20	6	18	56	24
9V1LP	35	14	22	24	21	21
G3UDR	76	5	20	46	2	18
G3LZQ	141	6	52	120	29	18
G3VDL	76	8	26	59	28	10
G3VDW	87	13	57	52	24	9
G13GTR	22	1	6	14	10	9
GM3RFR	101	7	56	67	44	6
GM3SVK	110	17	101	31	43	4
VP8HJ	67	3	8	65	5	1
G3NMH	187	48	93	177	—	—

Note: Placings for this month are based on "3.5 mc" column.

TOP BAND COUNTRIES LADDER

Station	Confirmed	Worked
<i>Phone and CW</i>		
G2CUZ	98	98
G2NJ	98	98
GM3KLA	98	98
GM3IKD	98	98
G3LWQ	98	98
G3PLQ	92	95
G3SED	82	92
G3NTI	80	81
G3SWH	70	80
G3PPE	68	83
GW3PMR	67	76
G3UBW	65	83
G3SVW	57	75
G3IDG	55	59
GW3TLW	55	70
G3SHY	53	71
G3TSS	43	53
G3UVR	42	63
G3KPT	41	70
G3SQX	34	64
<i>Phone only</i>		
G2NJ	65	71
G3PLQ	55	58
G3MDW	44	64
G3RTU	35	37
GW3PMR	20	42

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

Band Ladders. For the G3T/G3U Ladder, all that is needed is a statement of your Countries and Countries Worked score, with a list, followed up by a regular "topping-up" as you raise the score. For Top Band Counties, a list of those worked and those confirmed, and a claimed score in each case, again followed up by the topping-up routine. In this case it is required that a report be sent at least every three months if you are to remain in the Table, but it should be noted that a nil report is acceptable if activity is low but interest is not lost. Thus we can delete from the Tables the stations that lose interest.

G3UBW has lost interest to some extent, and it is clear in which direction *his* mind is turning

... "DX conditions poor on August 7—W2IU only 229!"

Eighty Metres

G2VV (Sunbury-on-Thames) has been having daily skeds at the unearthly hour of 0600 GMT with G3TFS/A, who has been enjoying a holiday in Cornwall. G3TFS/A is using 8 watts to a 68ft. end fed aerial. As Jim says, "A change from 21 mc DX!"

G3PEU says he is drowning in a sea of waste QSL cards. It seems that some character has been signing ZD7BW on this band, since December last year, and dishing out 59 for U.K. SSB contacts. Gerry points out that though he was ZD7BW, it was from August to November of 1963 *only*, anything outside that period being NG. The surprising thing about this is that there are optimists about who are prepared to accept a 59 from such a call on Eighty without any odour of stinking fish.

GM3SVK has plans to put up a Vee for this band, and in the same sentence makes oblique mention of a 90ft. lattice mast, from which we deduce that he Means Business. He reports hearing PY1BTX on 80m. at 0410.

Forty Metres

Not a great deal in the way of reports, although there is DX on this band and there are takers for it. GM3SVK mentions that he worked MP4BBA early in the period under review, and in addition, 9Q5CZ, HBØSJ, CN8AW, VE2LI/2 and DK1CU, all on the key.

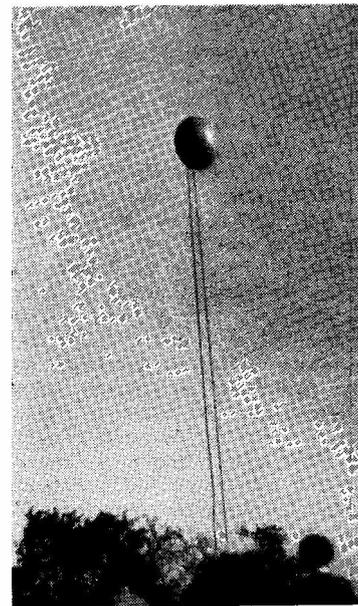
Your scribe has been *sans* transmitter during the period under review, and only checked over the band once (to show an SWL visitor that the receiver worked in spite of its aged look), and was rewarded by hearing lots of the stuff, and only one layer down under the EU/QRM at that. There is a growing suspicion in his mind that not only is there good DX going begging on Forty, but that it is there a lot more consistently than most people are ready to admit. And, of course, there is the added incentive of freedom from TVI if you are in a Channel I TV fringe area

where the only other band that can be worked in safety is Top Band.

The only other mention of 7 mc is one from G3LAR, who hooked W0GTA/8F4, both on 40 metres and Fifteen.

The HF Bands

There is so much meat in the pie that it is hard to know where to start; perhaps we should kick off with the interesting card about Ten metres, from G3PHS, which may serve to remind us older-timers what the band *can* do, the while whetting the appetite of those readers (and there are many) who have never known what Ten can be like at its best. G3PHS, from his new QTH at Coulsdon, heard SM4DXL on his 100ft. wire and CR100; nothing in that, you say, but here comes the punch-line . . . the wire was uncoupled from the CR100, and hooked to a transistor walky-talky, straight on to the whip, no ATU, and the SM



When the Spalding group (G3TMA, G3TRO and G4OO) went to Pickworth in Rutland in July, they put up a 160m. vertical aerial, carried aloft by a met. balloon using hydrogen for lift. The second line in the picture is a nylon tether. Fortunately, they had fine Wx, with no-wind conditions. G3TRO, who sent the photograph, mentions (very usefully) that official permission is not required to fly a balloon below 200ft., but that if you want to go higher, the phone number of the authority to apply to for permission is Hayes 6171.

The IPIAA group at Pantelleria, encountered by chance by G5BZ (extreme right) when he was there on holiday with his family. The men in the picture are the ops., standing, left to right: IJ1T and IIAA; sitting, left to right, IIGMP and IT1GAI. It was George, G5BZ, who gave the expedition its CW flavour — using an old pump-handle key borrowed from the local post office; the I1 boys had come without one! G5BZ is, of course, a confirmed CW/DX man.



was called. He came back to the first call, and reported RS-56. This sort of thing can just as easily happen on real DX when the sunspots are doing their stuff, and the old saying about the world on 50 watts and a bit of wet string is awfully near the truth.

G2DC (Ringwood) makes no mention of real DX on the band, although Jack says that weekends often produce the odd African contact or W, and there has been no shortage of the shortskip openings when the band is filled with S9 signals from DL.

G3PQF (Cove) reports 9J2's in quantity, 9H1AB, plus Europeans, in spite of the aerial farm referred to elsewhere in this piece. Over in Basingstoke, G3IDG reports hearing 27 countries on ten metres, including CR6EI, ZC4GB, ZD7IP, 4X4HK, 7Q7RM, 9H1AI and 9Q5LJ.

GM3SVK tried CW on Ten Metres, and reports contacts with

CR7IZ, ZC4GB, 9J2BC, 9Q5LJ and PY5ASN. Most of the time, though, it was a case of Europeans or nothing.

Fifteen Metres

A gripe from G2VV appears on the top of the clip; Jim was in QSO with ZD7IP, who was 459 to him, and when he went over he was annoyed to have first an OK and then a UA swooshing down on the frequency, tuning up, and announcing they were "QRX on the frequency"—at S9 plus, of course. As a result Jim lost 85 per cent of his contact with ZD7IP, who is an old personal friend and is G8IP. He wonders whether some of these "radio amateurs" should not take some time out to learn how to be amateur gentlemen. Reverting to the matter of the general behaviour of 15 metres, G2VV remarks on the erratic conditions, but noted that the band was nearly always

apparently dead in the early morning. One morning he got up early and tried to wake the band up as well; after 45 minutes of fruitless CQ, SU1AR came back to him, and then the SU was called by a JA. After all this excitement the band subsided into its trance again and 20 minutes later Jim gave up and crawled back into bed!

G3VDW has been bumping up his 21 mc CW score to no mean effect. ZD7, FP8, HV1AA, KH6AFS, CX1, VR2, XE1AX and others appear in his log, along with shoals of W's and such. Another user of the key was G3VDL, who was not very active but managed HBØUP and ZE1AS, both new ones to him.

Henry, G3GIQ, has been breaking his vow to give up chasing the stuff when he made the target figure of 200 countries. The cause of his weakening appears to be the new rig and new aerial, and if the list he sends is anything to go by he has well and truly fallen. On SSB, FL8, ZD8's, FH8, KR6, KH6CH/KW6, KG4, VP2, all appear in the first line, and there are several lines of similar quality. 9U5 and TN8AA were, regrettably, able to slip off

Reporting the HF Bands

the hook and escape.

The report from G2DC is of great interest, as it always is, and gives a general picture of the bands. Jack found Fifteen a bit erratic but much more activity was to be noted; from about 0700z until long after dark on occasions the band has been "giving," and around 2230 VK and ZL have been worked over the long path, when the W stations had lost some of their punch. During the day, the band was dominated to some extent by the JA signals, but VU, 9M and 9V1 were all on and not too hard to raise. Early evenings produced ZD7, ZD8, together with all the W's and a smattering of South Americans.

No arm-length list this month from GM3SVK; Europeans were to be had on most days, with occasional openings to the East, South America and South Africa. PY2GDB, 7Z3AB, HK3AHA, 5N2AAF and ZE1AA all yielded to him on the key, while a nice AM QSO was enjoyed with HP1AC (Panama City) at 2310z.

Twenty Metres

A regular correspondent to the old "DX Commentary" was G5BZ (Caterham), who remarks that for him Amateur Radio has had to take a back seat of late years due to other commitments. It is not, however, to say that he has lost either in interest or, indeed, in the basic skills of the game. George accidentally put his holiday to good use when he found himself on Pantelleria at the same time as the IP1 DX-pedition which consisted of four fine SSB operators with nary a sign of a key between them. When persuaded by G5BZ, the local Post Office came across with an elderly key which was wielded by G5BZ to no mean effect in the few hours that G5BZ could spare.

G3VDL offers HI8XAL, KH6WU, MP4BEU, TF2WJW, VS9ADF, 5A3TT, and comments that each of these represents, to him, another new country. He also mentions RAEM as being around on 14 mc; as he says, hardly DX but interesting nevertheless.

Bill, G3UOL, describes his list as a "bit of news" to add to the general pile. A closer look at its contents reveals a list as long as any seen, all choice specimens, together with a list of the "usuals," most of the latter being places your scribe would be only too pleased to see as entries in his log. The machinery to produce this interesting result was a Viceroy Mk. IIIA, a Geloso G209R, and a KW trap dipole. A small selection from Bill's offering includes HC8JG, HK0AI, M1, PJ's, PX1IE, VP2KX, and many other items of interest.

Over to G3GIQ (Ealing), who worked VU2TS, HV1CN, and UJ8AR on CW, and added to that the following on SSB: I1ARI/M1, HR1KS, K3SWW/KG6, KR6LL.

G3NWT (Risley) notices that when the filming was going on at Castle Combe, the 20th Century Fox people had all the locals take down their TV aerials, the substitute offered being a piped TV system. He wonders what would have happened if there had been a local amateur equipped with an 80ft. tower and, at its top, a Quad for the HF bands and a Yagi for 7 mc, all of course rotatable, covered by planning permissions to secure the position, and that amateur had refused to remove the thing so that his DX could be piped to his shack from the middle of a wood out of sight. Who would have won? Would the film people have abandoned their new multi-million dollar soporific epic, or would the amateur have let them get away with it?

When G2DC got his beam put back up he naturally lost no time in looking at things, and he remarks how much the bands can change in a fortnight. However, by August 5, things had begun to settle down again; August 10 was a very good morning for VK2 over the long path, and Jack worked seven on the run, and followed up with VK3, VK4, VK5, ZL, OA, LU, and PY to round off. One tends to gain the impression the band was at least trying!

GM3SVK has now got an aerial up for 20 metres, from which he expects great things, but by the time of writing Fred had not had a chance to try it out properly.

FIVE-BAND DX TABLE

(All Time)

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc
G2DC	330	170	291	318	170	112
G13IVJ	325	181	263	319	103	83
G3IGW	195	123	133	157	119	74
G3KMQ	237	10	99	212	101	55
G3PQF	99	25	25	46	74	46
G8DI	163	68	104	143	74	43
GM3KLA	96	11	62	29	73	40
G3NOF	288	132	194	272	34	39
G3UDR	152	29	76	122	4	38
G3UML	220	59	107	205	50	33
G3LZQ	202	58	122	170	57	29
G3RJB	123	11	26	116	50	24
G3UBI	103	10	26	113	50	22
G3IDG	104	61	73	54	27	18
GM3RFR	136	11	73	109	53	15
VP8HJ	178	8	57	174	26	11

Note: Placings this month are based on "3.5 mc" column.

Station of Madame Amy Jenk, HB9YL, wife of the well-known DX man HB9TT, but running a rig in her own right, and on 160 metres, too — and she has worked WIBB/1 across the Atlantic! So has her OM, but as W1BB says, there are not many XYL's working CW/DX on Top Band. He quotes the only other one known as ZS2KZ, but surely we have a G/YL on 160-metre CW? Forward, pse.



G3IAR has been on holiday, and wrote a brief line from Sevenoaks just to beat the deadline. Mike offers XU2HB as his prize catch of the month. G3TTG is another holiday-maker, who has been to ZB2 and has much to tell; however, in the context of the "business in hand" we note LA1EE/P (Spitzbergen), HV1CN, VP2, ZD7 and ZD8, and a couple of PX1's.

ZB2AJ has things to say about the "Wilson Effect" which, as mentioned elsewhere, is having disastrous results on the Amateur Radio population of the Rock. He

mentions the problem of the QSL bureau, and says that although the R.A.F. Club has acted as the bureau, and will be effectively non-existent in the fairly near future, arrangements are in hand to maintain the flow of cards; in the meantime apologies are offered for some small slowing down in the traffic.

Here and There

We hear from G5PM that the policy adopted in dealing with the allocation of call-signs in Germany has been altered. In July 1965, it was agreed by British Forces Hq. in Germany that the DL2 series call signs would be released from exclusive B.A.O.R. use for issue to German nationals. Service applicants for calls in Germany are therefore being issued with DL4 and DL5 series call-signs. As an instance, G5PM quotes his own case; he previously held DL2ER, but on re-applying to have his old call re-activated was given DL5XR. It is understood that the release procedure is one of wastage rather than re-allocation, and in fact the R.A.F. Club station is still DL2ZN, for which DL5XR is the licenced holder.

booming, to judge by the current issue of the *FRA Newsletter*, which comes to us by courtesy of Martin, OY7ML. The list of members includes no less than 34 OY calls, including two YL's, out of a total of 73 in the Faroese Society.

G3TKN wants us to organise a Top Band Daylight Test, similar to the one laid on some time back, as he has been quite surprised to find what can be worked in daylight of late. As far as we are concerned, Vincent, if there is any sign of interest from others in this idea, we should be only too pleased to do the necessary.

Aerial Matters

The remark by G3PQF last month about an invisible aerial and your scribe's attempt to be helpful, were a little out of phase; what Dave really wants is an invisible ten-metre beam. He already has in his garden a couple of 7 mc dipoles, a 21 mc one, a Joy-mast, and a Mosley vertical, plus a ZL Special up in the loft. All this seems to prove the truth of the Confucian proverb "The more light shut out of the garden by the aerial system, the better the DX."

The recent absence of G2DC

TOP BAND LADDER

(G3T-- and G3U-- stations only)

Starting Date, January 1, 1966

Station	Counties	Countries
G3UTS	79	11
G3UAN	72	13
G3UBW	69	17
G3TXZ	55	11
G3TTK	43	12
G3USE	40	8
G3UMK	39	7
G3UCS	36	?

Amateur Radio in the Faroes is

from these pages is explained by the fact that Jack's Quad had been taken down for an overhaul after two years— see p.427 for a picture of it. It is now in good shape for another couple of years of good work, after a few coats of varnish and a general tidy-up. Jack specially mentions the invaluable help of the members of the Lymington Club who helped in the labour of getting it up and down.

When a beam and rotation system are not available for one reason or another, it is a good thing to cultivate appropriate attitudes of mind towards operating. As Bill, G3UQL, puts it so neatly "... the delight of having HC8JG come back to my CQ makes it so worth while, only using a wire antenna and modest power!"

Gibraltar Situation

A hurried note comes in from ZB2AM, to give us information of the impact of the present Government policy on Amateur Radio in Gibraltar. It seems that many of the ZB2 calls will be QRT by the end of the year; the Club station of ZB2A will remain in existence, but it is not known whether there will be relief operators for the present crowd in the future. ZB2AM himself expects in due course to be QRT from Gibraltar.

Contest Activity

The CQ "World-wide DX Contest" is coming up fairly soon, the dates being October 22-23 for the Phone sessions and November 26-27 the CW half. The rules are the same as for last year and appear in the current issue of CQ. It is interesting to note that for the European contestant there is the additional bait of a couple of new trophies, given respectively by W3MSK and W4BVV. It is to be hoped that these will stimulate more European activity, in particular from the U.K. contingent who have been rather thin on ground in the past.

We understand that ARRL are allowing Jerusalem to have Country status apart from the rest of 4X4, due to its being in a Neutral Zone.

George, ZD7IP, has a V-beam aimed at the U.K., with which he



When G2HKU (Isle of Sheppey) went over to Holland to spend a holiday with his old friend PA0PN (Middelburg), he found rather an interesting station set-up. Shown here is PA0PN's remote operating position, controlling all the Tx gear (in another part of the house) through coax line. Active on 160m., his Rx is ex-German Army, all the rest of the gear being home-built. At one time, PA0PN specialised on VHF, and is the holder of several "Firsts" with U.K. stations. G2HKU on the right in this picture.

has a pretty potent signal here on the HF bands. Both ZD7IP and 9V1NV are giving serious thought to the question of working Eighty this coming winter.

DX-Peditions

By the time this reaches print W9WNV will have arrived on St. Peter and St. Paul Rocks signing PY0XA, but at the moment of writing this there would seem to be some element of doubt as to the date, and rumours of technical hitches. After the PY0XA operation, it is understood that Don would be going to the KS4 area.

Lloyd and Iris duly arrived at ZB2, and operated as planned but less the big linear, because its main transformer went sick. In the absence of favourable replies to their letters applying for permits in some of the rarer parts of Europe, Africa will be on the list next.

ZL4CH is on the lookout for U.K. contacts around 14025 kc,

between 0600 and 0700z. On the other hand VU2DIA prefers W QSO's on 14040 kc and can be heard most afternoons around tea-time. It is possible to get a contact, but one has to have a pretty big signal to do so.

Only one Top Band effort to report this time, by G3UZW and G8ARH, who hope to activate several Welsh counties for the benefit of the newer stations who want them for the ladders. Incidentally it is believed they will be also doing their stuff on Eighty. No exact dates are given, but we understand from the wording that the last two weeks in September are the ones to watch.

And that, sad though it is, is the lot. Thanks for all the letters, from the old-timers to the newest calls, and keep in touch. Deadline for the next one is **Monday, September 19**, addressed as usual to "Communication and DX News," SHORT WAVE MAGAZINE, BUCKINGHAM, England. 73, es gd DX.

E.P.E.

DISCUSSING SINGLE SIDEBAND

ANCILLARY CIRCUITS — VOX AND ALC—IDEAS FOR SLICK SIDEBAND OPERATING — COMPRESSION — TRANSVERTERS AND CONVERTERS

Part IX

B. A. WATLING (G3RNL)

THE effectiveness and ease of operation of any SSB transmitter can be quite easily improved by the addition of various ancillaries. The most common accessory is a VOX unit, short for "voice operated switch." This is useful for fast break-in, nets or rag chews where constructional work can be carried out while in QSO because both hands are free. There are a lot of people who do not like VOX operation; the reason being that they can hear the change-over relay drop out between phrases. But this is the idea of it. Going are the days where each station in a QSO makes a speech, each unrelated, and by the time it gets round to you everything that everyone has said has been forgotten. It takes far longer to exchange information using long-over QSO's, therefore the quicker one can complete these rubber-stamp QSO's the more room there is on the band for more

useful ones. On the other hand, with technical-discussion QSO's, and there are still some going on (!), much more information can be transferred by working fast break-in. It's no good, when using VOX, holding the relay in with *Aaahs* and *Ers* coupled with coughs and splutters. The chap you are working, who is attempting to get in some remarks, is going frantic. The same applies to PTT ("press-to-talk") operation. Many a time the writer, and many other stations he has heard, have doubled with another station in the QSO because he has asked a question yet still keeps his finger on the button.

* * * *

Let us consider some VOX circuits. The object is to operate a relay when you talk into the microphone and to allow it to release when you stop talking. Some delay must be introduced into the release time to prevent the relay dropping out between syllables. The operating time must be very fast to prevent the beginning of the first word from being clipped. A relay connected in series with a valve is generally used. With the valve biased to cut-off the relay will be de-energised. A positive voltage applied to the grid of the valve will cause it to conduct and hence operate the relay. The positive voltage may be derived by rectifying the amplified audio signal. To increase the usefulness of a VOX circuit it is advisable to add "anti-trip." This allows loudspeaker operation with voice controlled break-in without the sounds emitting from the loudspeaker operating the relay. This is achieved by rectifying the output from the receiver and feeding into the circuit a voltage of opposite polarity to the rectified speech signal. This means that any signal

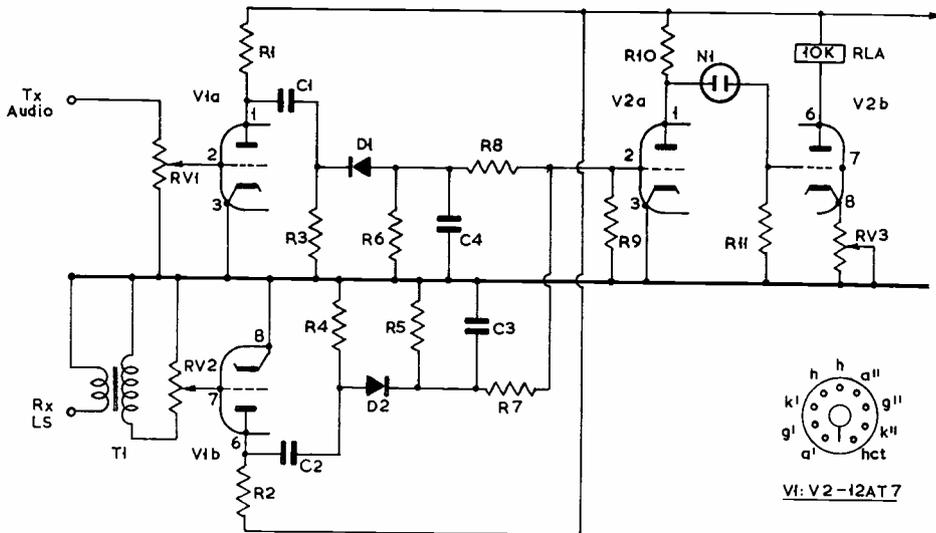


Fig. 1. A typical Vox circuit, for which values could be : C1, C2, C3, 0.1 μ F ; C4, 0.5 μ F ; R1, R2, R3, R4, R10, 100K ; R5, R6, 47K ; R7, R8, 10K ; R9, 2 megohms ; RV1, RV2, 1 meg. potentiometers ; RV3, 5K potentiometer ; N1, 90v. neon ; D1, D2, 0A79 ; and V1, V2, 12A7. RV1 is the Vox sensitivity control (see text), and T1 a low-to-high impedance transformer.

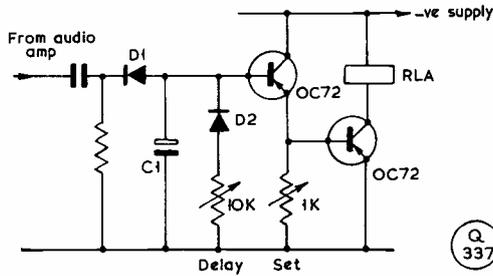


Fig. 2. Delay and relay drive circuit for a transistored VOX unit — see text.

which appears simultaneously from both the receiver and the microphone will cancel and therefore will not operate the relay. Fig. 1 shows a circuit of a typical VOX circuit with anti-trip. V1A amplifies the microphone signal and also acts as an isolating stage so that the non-linear rectifying action of D1 does not introduce distortion in the Tx audio chain. A convenient point to tap off the audio from the Tx is at the audio gain control—not off the wiper but from the top of the track, so that the Tx audio gain adjustments do not affect the VOX circuit. RV1 acts as the VOX sensitivity control.

V1B is the Rx signal audio amplifier and again acts as an isolating stage. T1 effects impedance transformation from the low impedance of the speaker to the high impedance input of the valve. This transformer may be dispensed with if the Rx audio is tapped off at a high-impedance point. Then, however, it must be after the volume control.

D1 rectifies the audio to produce a negative DC to apply to the grid of V2a via R8. As the grid is driven negative the valve will conduct less so that the anode potential will rise until the voltage across the neon N1 will be sufficient to cause it to strike. When this occurs the grid of V2b will be taken positive causing that valve to conduct, hence operating the relay. Delaying the release of the relay is achieved by R6 and C4. The time constant may be varied by changing the value of C4 or alternatively making R6 variable.

Anti-trip is effected by rectifying the amplified Rx audio with D2 and applying this via R7 to the grid of V2A, where it will oppose any signals from the microphone circuit. Setting up this circuit is achieved by first adjusting RV3 until the relay operates, then backing it off until the relay just releases. Adjust RV1 so that when speaking into the microphone at your normal level the relay operates. Tune in a signal on the receiver and turn up the audio gain to a fairly high level. Adjust RV2 so that the receiver signal does not trip-in the relay.

Suitable Transistor Circuit

Transistors can be used to make a very compact VOX circuit. The delay network used at G3RNL is slightly different from the valve circuit. It was found that the drop-out time varied, depending how long

one spoke into the microphone. This is due to the capacitor charging to a greater voltage the longer the DC appears on it. This is overcome by using a limiter D2 and 10K variable following the diode rectifier D1, thereby fixing the voltage level to which the capacitor C1 can charge. Fig. 2 shows how this is achieved, together with the relay drive transistors.

For those of you who still operate CW full break-in operation can be achieved using a VOX circuit by keying a tone into the microphone socket. To add this facility to an existing Tx or to build it into a new one the first audio stage can be switched to form a phase shift oscillator. Keying is probably best achieved on the VOX amplifier, as shown in Fig. 3 below.

Automatic Level Control

VOX and full break-in keying eases the operation of the rig but how about improving its effectiveness? This can be achieved simply by means of circuitry to control the level of signal appearing at the input of the PA. This will raise the average level of signal without overdriving the PA. Automatic Level Control or ALC this is generally termed. Its effect can be an apparent increase in signal strength of about one S-point. You can get more than that but it doesn't sound too good, thereby reducing readability instead of improving it. A simple but very effective circuit (Fig. 4) which requires no adjustment and one used very successfully by the writer uses only two diodes, two capacitors and one resistor. It can, in its simplest form, only be used with Class-AB1 PA's. The AB1 PA will be driven to maximum output without distortion just to the point where grid current occurs.

If one were to sense the onset of grid current and reduce the gain of previous stages when this starts, then a form of compression results. This circuit has a delayed action because nothing happens until grid current occurs. All signals which are lower

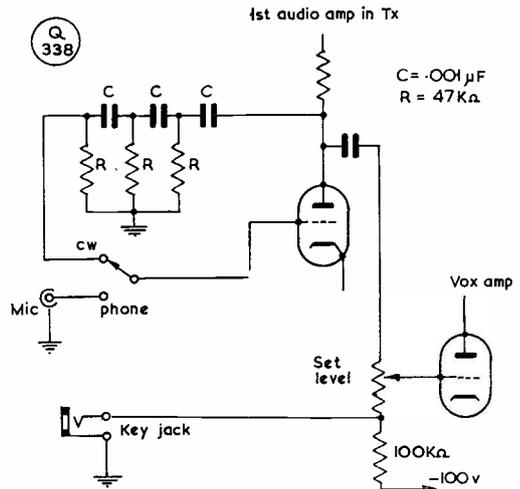


Fig. 3. Method of tone-keying an SSB Tx for full break-in CW working — see text.

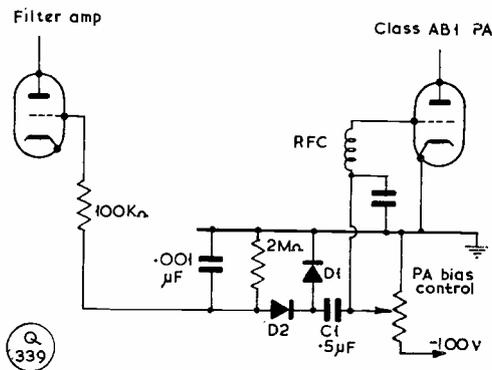


Fig. 4. Showing an ALC (" automatic level control ") circuit for use with a PA in Class-AB1. The diodes D1, D2, should have a p.i.v. rating of about 150v.

than the level required to drive the PA into grid current are unaffected. Only when a signal appears that would overdrive the PA will the Tx gain be reduced. The onset of grid current is detected by "looking" at the grid of the PA. As soon as this goes from negative to positive then grid current flows. If the positive voltage peaks that occur on the grid are processed by reversing their polarity and voltage doubling, the resultant negative voltage can be used to control the gain of an early stage (or stages) of the Tx. Fig. 4 is the basis of the ALC circuit, so described. D1 and D2, with C1, form a conventional voltage doubler circuit connected for negative voltage output. The point where C1 is connected to sample the grid voltage must be at a point where no RF appears. If not then as the RF appears on the grid of the PA the ALC voltage will increase proportionally. Also the negative bias on the grid of the PA must be smooth. Any ripple will be voltage doubled by C1, D1 and D2, and appear as a standing negative voltage on the ALC rail. The most convenient point to pick off this grid voltage is on the wiper of the potentiometer used for setting the negative bias for the PA grid.

As previously mentioned, the circuit of Fig. 4 may only be used with PA's operating in Class-AB1. It is a handy arrangement and can be expanded upon so that it may be used with any PA. In this case a diode must be provided which does the same as the diode formed by the grid and cathode in an AB1 PA. By providing an adjustable bias to the diode, the p.e.p. output can be set and will not be exceeded (unless you try to push it really hard). Fig. 5 details the circuitry for this type of ALC circuit.

Driver Control

The effectiveness of these circuits can be improved upon by applying the ALC voltage to the driver as well as the filter amplifier. (Collins and one or two other companies do this with varying time constants for the two stages.) Some even go to the extreme of amplifying the ALC to provide greater control. However, experience at G3RNL has been that only

the filter amplifier being controlled gives more than adequate results. One point here is that the Tx must have gain in hand before this circuit can be usefully incorporated. If gain is lacking then the filter amplifier, if it is either an EF89, EF85 or similar relatively low slope variable-*mu* valve, could be changed for an EF183 which has a very high slope.

Compression—RF or Audio

One word of warning when using any form of compression whether it be RF compression as previously described or audio compression which may be used to advantage but requires more circuitry than the RF version: Be careful not to exceed the PA ratings. With the higher average input to the PA substantial decrease in valve life can result if the valve is not designed to take it. The final word on compression is that the writer prefers this RF arrangement because one does not need to switch it in and out. Just turn up the audio gain to make it operate. Back off the audio gain to make it inoperative. When checking these circuits out you'll find, if it's working correctly, that when turning up the audio gain control while monitoring grid current (in an AB1 PA) the meter will not kick up more than 100 μ A to 200 μ A. If, when at this level, you short circuit the ALC line to earth the grid current meter will slam against the FSD stop. It will be obvious then that not only does this form of compression improve the effectiveness of the Tx but also it prevents overdriving the PA, hence reducing the possibility of non-linearity which would cause distortion and the dreaded TVI!

So much for easing operation and improving the effectiveness of a rig, now let's see how to increase the versatility.

Other Ideas

Quite a few stations have either home-brew or commercial rigs which do not cover all bands. The owners of the commercial rigs are loath to get inside the gear to make mods. because the resale value of the rig might decrease. The home-brew owners have similar views because while the mods. are being carried out they are off the air. Both types do not view the prospect of building a complete new Tx for these other bands with much enthusiasm. Some form

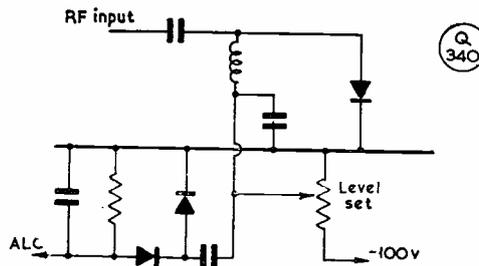


Fig. 5. Circuit of Fig. 4 modified for use with a Class-AB2 or Class-B RF power amplifier stage.

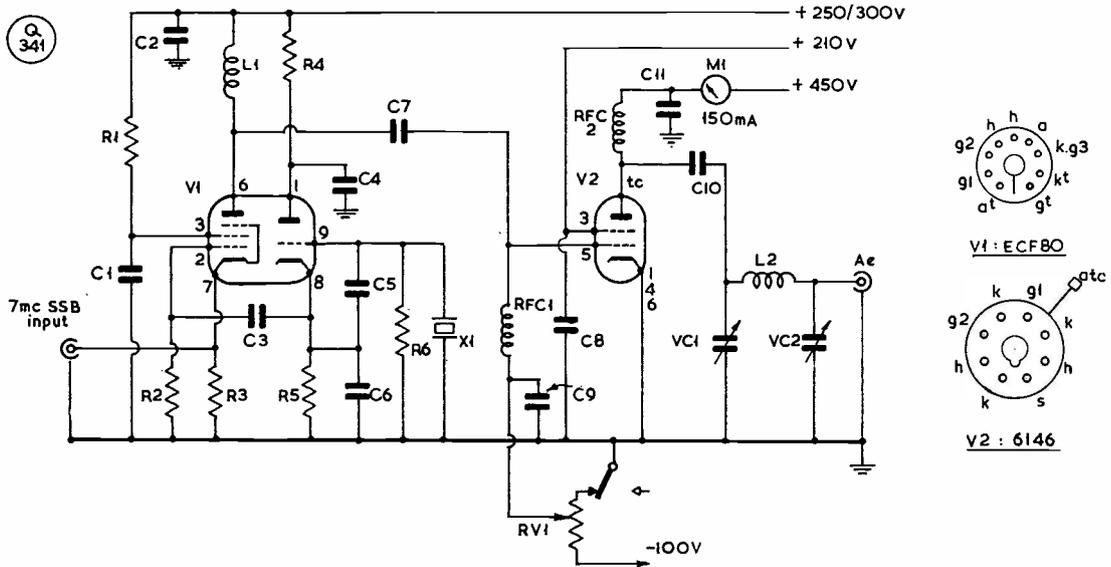


Fig. 6. Circuit arrangement for a converter suitable for getting on to 160 metres with a 7 mc Sideband input — see text. Values can be taken as : C1, C2, C4, C8, C9, C11, .01 μ F ; C3, C7, 100 μ F ; C5, 22 μ F ; C6, 250 μ F ; C10, .001 μ F ; R1, R6, 27K ; R2, 100K ; R3, 50- or 75-ohm, minimum rating 5w., to suit output impedance of Tx ; R4, 10K ; R5, 1K ; RV1, 10K ; VC1, 365 μ F ; VC2, 3/500 μ F ; xtal, 5.2 mc ; V1, ECF80 ; V2, 6146 ; RFC's, 2.5 mH.

of high level conversion then is the answer. An SSB signal from one of the bands covered can be heterodyned to the required band. Care must be taken though in choosing the band to use and the heterodyning frequency so that unwanted spurious signals do not occur and that the final output is on the correct sideband.

Let's consider the owner of a Tx covering 80

metres to 10 metres. If 160m. is required then the best arrangement is to use the 7 mc to 7.2 mc LSB output of the Tx and subtract from this an oscillator signal at 5.2 mc, giving 1.8 mc to 2 mc LSB.

Some amateurs, in order to get a low level 7 mc output from the Tx, tap off the output from the driver and disable the PA for 160m. operation. But for those who really are against getting inside the

The station shown here (GB3LST, Scunthorpe, on a special occasion), was using modern SSB equipment of British manufacture—a KW-2000A, left and under the hand of G3TMC, and the matching KW-600 linear amplifier (right). At centre is the PSU, with speaker incorporated, for the KW-2000A all-band transceiver. The KW-600 has its own built-in PSU and does not cover 160 metres.



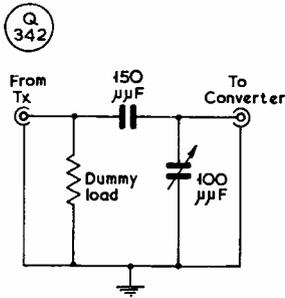


Fig. 7: Method of reducing the signal applied to a converter.

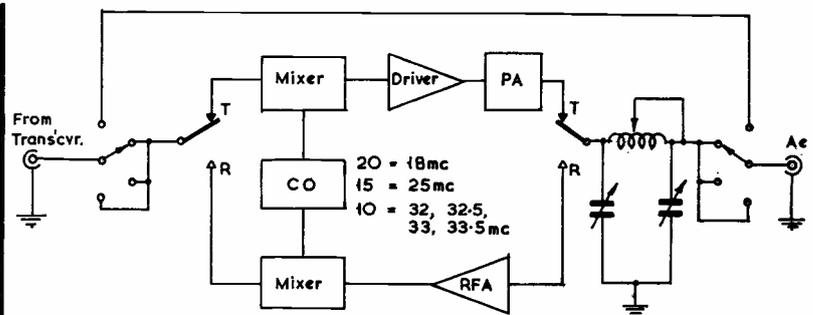


Fig. 8: Block diagram of Transverter for 20, 15 and 10 metres from 80 metre input. Ten metres is covered in four 500kc steps.

rig this is not absolutely necessary. You can use the high level output from the aerial socket to drive the converter. This can mean, however, that the Tx PA is running more input than the 160m. PA in use! This need only be so if it is awkward to reduce the output of the main transmitter by use of a drive control. Fig. 6 is the circuit for a 160-metre converter. For those who cannot reduce the output of the exciter by the required amount, use the method shown in Fig. 7.

How about transceivers, though? This can also be extended in band coverage with the use of an outboard converter. For those who own something like an NCX3 or even one of the single-band transceivers from *Heathkit*, a transmitter-receiver converter (let's call it a transverter from now on) can be constructed to maintain the full facilities and advantages of the basic transceiver. Fig. 8 is a block diagram of a transverter to convert an 80-metre signal to 20m., 15m. and 10m., and act as a crystal-controlled front end using 80m. on the receiver side as a tunable IF.

The frequency conversions shown in Fig. 8 are OK for 80-metre output, but if you have, say, a rig without 80m. included, then using either the 20m. or 40m. output two conversions are required. Table I at left details the frequencies for the conversion oscillators for either a 40m. or 20m. input. The first conversion from 7 mc produces an IF at the neutral frequency 5 mc to 5.5 mc. This is then converted, by mixing with the signal from the second crystal oscillator, to the required amateur bands. For a 20m. input mixing to 5 mc to 5.5 mc is undesirable, therefore the first conversion is to 80m. Other bands are as per the 80m. input converter.

TABLE 1

Input	1st Conversion Oscillator	IF	2nd Conversion Oscillator								
			160	80	40	20	15	10	10	10	
7 mc to 7.5 mc	2 mc	5 mc to 5.5 mc USB	7 mc	9 mc	—	9 mc	16 mc	23 mc	23.5 mc	24 mc	24.5 mc
14 mc to 14.5 mc	18 mc	3.5 to 4 mc LSB	—	none	3.3 mc	—	25 mc	32 mc	32.5 mc	33 mc	33.5 mc



"... It reminds me to give my callsign every fifteen minutes ..."



SHORT WAVE LISTENER FEATURE

POINTS ON RECEIVER EVALUATION—THE HPX RULES—NEWS FROM READERS—NEXT SLP—COMMENTS OF INTEREST FROM ALL QUARTERS—SUCCESSSES IN THE R.A.E.

ONE of the interesting facets of the SWL game is the variation in the receiving equipment in use, as shown by the different stations who report to this feature, and the various approaches to the problem of making the station more efficient.

There does seem, however, to be some confusion in the minds of readers as to the factors that affect the choice of equipment, technically speaking. These can be summed up as Price, Sensitivity, Selectivity, Stability, Resetting Accuracy, and, of course, Bandspread.

Bandspread and *Selectivity* are often confused; the latter can be regarded as the ability to separate signals on adjacent frequencies, while *Bandspread* is the measure of the rate at which the receiver tuning moves across the band per degree of tuning dial rotation. The thing that matters here is that the best bandspread in the world will not improve the ability to separate stations given by the selectivity of the receiver, but will make it a lot easier to settle quickly and easily on to a signal. Often lack of bandspread is made up for by a sensitive touch, but lack of selectivity may well mean a wanted signal being "swamped" under other stuff, no matter how carefully one tunes.

Sensitivity is a measure of the absolute limit of the receiver ability to resolve a signal on a clear channel. This limit is set when the wanted signal drops into the noise; on the LF bands much of the noise is external, but on the HF and VHF bands the limit is set by the noise generated in the receiver. As the mixer is the noisiest stage in the receiver, a quiet RF stage is used to amplify the incoming signal to a point where it is large enough to override the mixer noise completely. However, it is essential that there should be an absolute minimum of gain in front of the mixer if cross-modulation is to be kept to an acceptable level. Practically speaking, there is not a scrap of justification for having more than one RF stage if modern valves are in use—and a lot to say against it.

As for *Stability*, all that needs to be said is that if reception of SSB is to be a pleasure and not a chore on the worst band it should be better than 100 c/s in any hour of operation after a warm-up period of about 30 minutes at the most. This is quite a tall order for a receiver using a VFO-type local oscillator, and few can meet it much over 10 mc, which is the reason for the trend to crystal-controlled front-ends in the last few years. Hand-in-hand with *Stability* goes *Resetting Accuracy*, and this is a quality few

indeed possess in the shack. An ideal to aim for is ability to reset to the same accuracy in cycles as the bandwidth of the IF to the 6 dB points; this will ensure that you can in fact reset close enough to guarantee that the wanted signal will be somewhere in the receiver passband. Remember that to be fair you must change the bandswitch position before resetting, if you try this test.

As to price, they are all too darned expensive! And, of course, any commercial receiver is designed to please the maximum number of buyers, and hence is a compromise which never meets the exact requirements of an individual purchaser.

Aerials and Things

Trevor Lucas (Leeds) has returned to the fold after 15 years of absence, using an Eagle SR-550, which he finds very good; however, he has the old problem of a tiny plot of garden in which to erect effective aerials for the HF bands. If all else fails, Trevor, put up the best piece of wire you can, as high as possible, use a good earth (most important, this), and make up an ATU to resonate the wire to the desired bands. If you can run to it, a better system is the coax fed ground-plane arrangement, which can be cut for the favoured band, while using the ground-plane support as mast to hold up the random wire also; thus on the favoured band you have two aerials from which to choose.

Anthony Legg (Sutton, Surrey) is a newcomer to the fold who is having a lot of troubles with aerials falling down and getting him the blame for all the local TV interference. He is rather surprised that no-one in this country makes a rotary beam for SWL use, and comments that they are easily obtained in the States. True enough, but don't forget the W's have a very much larger home market than we have here, which makes a lot of difference to the economics of the thing. Anyway, Anthony, why not spend the cash on getting a decent support that stays up, and homebrew the actual aerial . . . maybe it would get rid of some of the TVI complaints, too.

Other Modes

From *R. E. Oxley (Maidstone)* we hear that he uses an Eddystone 840C receiver; he enquires as to why we do not cater for the BC listeners. All we can say here is that we cater for all aspects of the hobby of Amateur Radio (meaning amateur telecommunications), but have to draw a line which will tend to exclude the "grey areas" which still come

under the broad heading of electronics — and BC/SWL is on the wrong side of the line.

Over to *Leighton Davies (Bridgend)* who spotted the RTTY picture in the July "SWL" feature, and writes to point out that in BARTG there are about 60 SWL members. Leighton has a very well equipped RTTY station and is waiting for the R.A.E. pass to come about so that he can hook up his gear to the aerial farm belonging to his father, who is GW3FSP.

Another variation on the theme is TV/DX, and on this subject we have letters from *Dennis Boniface (Ripon)* and *D. H. Foster (Rainham)*. Dennis reports reception of TV on Band I, Band III and Band V. On the UHF side, he mentions reception of Lille, Crystal Palace and Belmont, the latter being an all-time new one to bring the total to 24 countries and 101 stations. An oddity was a signal on R1 and R2 channels, showing a clock face at 11.40, when the time here was 1800 BST. Dennis thinks that this one may have originated in Central Russia and awaits identification. D. H. Foster is holidaying in Wales at the time of writing and says he has received considerable help in the field from Dennis, by way of information on the modification of the Bush TV63 receiver, which they both use. Incidentally, it will be noticed that SWL Foster is an all-rounder; he has entries in both the HPX Tables as well as the TV activity.

Radio Amateurs' Examination

David Rollitt (Lincoln) mentions that there is a possibility of running an R.A.E. class in his area, but they are a wee bit short on numbers. The thing here, David, is to make sure you get the class into the prospectus of the local College, and to see if you can get the local paper to mention it as well; anyone interested in that area should contact G3BCA for details. Incidentally, your scribe is in the same boat this year in Harlow, so anyone within the Harlow area who wants to have a go at the R.A.E. should make a point of getting the College prospectus and enrolling.

Here and There

D. J. Mortimer (Gloucester) wonders about the next SLP, along with several other correspondents, and we are pleased to set his mind at rest. The date has been selected to give time for making up logs before the deadline whilst leaving adequate time after publication date for all to be ready. Incidentally, SWL Mortimer suggests that an SLP arranged for the early morning period would be interesting and your scribe heartily agrees. Perhaps enough indications of support would be forthcoming to make it worth laying something like this on a future SLP.

A brief note from *A. G. Scott (Liverpool)* who remarks that he has heard his first-ever JA stations due to a change in listening times. He uses a modified HE-80 and a Joystick in the roof space.

John Butler (Bargoed) has been bending the laws of nature . . . 25 hours a day, 8 days a week, studying for the R.A.E. and the Morse test.

G. Taylor (Wolverhampton) questions the crop of new ID1, IP1, IR1, IC1 prefixes—all quite sound,

OM, they are rather on the lines of our GB calls, usually, or for off-shore islands. The XP1 call, in the absence of more detail, would seem to be a misreading, but what of, is not easy to define.

W. Felton (Lincoln) is a natural for the proposed Lincoln R.A.E. class mentioned elsewhere. Bill is a devotee of the vertical aerial, although he has a dipole for 20m. as well, and a lot of his letter is taken up with an interesting discussion of the relative behaviour of the two devices.

David Fitzgerald (Dublin) has been lured forth by an erroneous statement that summer was here. However, he must have nipped back again fairly smartly, because the rest of his letter deals with TV/DX and HPX in some detail.

Over in the West Country, *Trevor Pinch (Plymouth)* is very upset at the note from J. Baxter in the last piece about the Tottenham net changing over to Ten Metres. Trevor holds to the view that the natter nets should be on VHF, and appeals for common sense. Fair enough, OM, but on the other hand Ten is not often open at the time of day in question, apart from short-skip openings, even at the peak of the sunspot cycle, and anything which has the effect of increasing the band occupancy in the "dead" times is to be encouraged, lest we lose some more of the band to the commercials.

H. M. Graham is yet another one who uses a Joystick indoors to some effect, as his loggings show. The secret with all of the shortened aerials is the correct use of the ATU or other matching devices, because the "Q" of the aerial is so high and hence bandwidth is so low. Retuning the ATU for almost every change of frequency seems to be necessary, certainly on the LF bands.

R. Glaister writes in with his first HPX claim, and various queries, which we solve by referring to the HPX rules, which are being reprinted in this issue (see p.425).

According to *L. Case (Widnes)* there would seem to be a shortage of SWL's in his locality. He would welcome any letters or personal calls (115 Stewards Ave., Widnes).

Pete Cayless (Exeter) has been transferring his affections to the CW ends of the bands, as his HPX entry shows. The interesting thing about this is that

SET LISTENING PERIOD

Sunday, September 18, 1966
14 mc Band, CW or Telephony
1500-1800 GMT

Listen to everything you can hear on either Phone or CW, during this period, and send in your list of stations heard with your next letter to "SWL." Do not log Europe, and include Time GMT, Station Heard, RS or RST report, and Station being called (or CQ). Send separate lists for CW and Phone, and write all call signs clearly. Mark the log plainly "Third SLP" and address it to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM, to arrive by Friday, September 30, latest.

Over in *Hull*, we have the next episode in the SWL affairs of *John Singleton* and *Pat Longbone*. After your scribe's little side-swipe at them last time, they reply by congratulating him on his promotion from semi-conductor! In more serious vein, John has changed his job and now works in Goole, so he has been scanning the bands in the early morning periods (0500-0630), with a consequent rise in his total, while Pat has only been able to get a few hours on the air in the evenings. The receiver is a modified Eddystone S.640, with an Eddystone dipole aerial on 135ft. of feeder, with a Z-match ATU. As

the result of a letter in the May issue of *SHORT WAVE MAGAZINE*, from *Iain Paterson* in Carstairs Hospital, Pat and John are now in regular correspondence with Iain, and helping him to prepare his HPX score, so that we can expect a letter from Carstairs in the near future.

Popular "Joystick"

Another Joystick user is *R. Coates (Lancaster)*, who has built a Q-Multiplier and sends in curves to show the improvement in IF selectivity thus gained. SWL Coates is another of the RTTY gang and is at the moment seeing what makes the innards of a Creed 3X 'printer tick. He also mentions the opening on Ten on July 15, when all EU was represented.

Phil Ashton (Stowmarket) has hard words to offer the transmitting brigade. As he hopes soon to get his own ticket, he has been watching the procedures used on the band, so that he will know what to do when he himself comes on. Phil is particularly hard on these characters who give an R5 report and then follow up with a request for repeat of name or QTH. Perhaps next time you write, chaps, you would care to offer your contribution to the "comic of the year" collection.

A first letter from a long-time follower of this piece is *John Miller (Cheltenham)*, who plans to take the R.A.E. this autumn (best of luck from us all, John) and in the meantime is chasing prefixes. Receiver at present is an AR88, after working through Eddystone 840, BC-348, HE-30 and HRO since starting. John works shifts and hence can come on at odd hours, as his log shows up very clearly.

G3IGW has a younger brother, whom he has thoroughly infected with the Amateur Radio bug, as the letter from *Dave Whittaker (Harrogate)* shows. Dave has been looking closely into the statistics of Ten since the turn of the year; he finds reports of 105 countries being worked on the band during this period, of which he has heard 44. However, as Dave points out, often the skip is such that stations down south are working stuff which is completely inaudible up there.

J. Dixon (Barrow-in-Furness) has a short entry, a short letter, and a short comment on your scribe's efforts . . . no complaints, so far!

Les Allwood (Horsham) finds being an SWL is a bit hard on the ears owing to the presence of three active amateurs within a couple of hundred yards. At the time of writing Les was awaiting the result of the R.A.E., and one would imagine that he will be on the air by the time this appears in print if all goes well, as his HPX list is all CW. Anyway, best of luck, Les.

T. R. Popham writes in from *Exeter* with a list to keep him at or near the top of the list, and denies the ownership of crystal-filter ears. In that case, there must be something in the *Exeter* air that does it.

Congratulations to *Allan Carr* on leaving us and becoming G3VKA; for the past year he has been in Bahrein and held the calls MP4BFL and VS9AAD. Allan also points out that the detail of the Morse Test procedure given by G3UXA in the March 1966 *Magazine* is now slightly altered, in that the test

HPX RULES

(1) The object of the exercise is to hear and log as many prefixes as possible; a prefix can only count once for any list, whatever band it is heard on.

(2) The /M and /MM suffixes create a new series, thus G3SWM, G3SWM/M and G3SWM/MM all count as prefixes and, where it is known to be legal, /AM also.

(3) Where a suffix determines location, the suffix shall be the deciding factor, thus W1ZZZ/W4 counts as W4.

(4) When a prefix is changed, both the old and the new may be counted; thus, VQ4 and 5Z4 both count.

(5) The object is to hear prefixes, not countries, thus there is no discrimination between, say, MP48 -- and MP4K --, which count as one prefix.

(6) Only calls issued for Amateur Radio operation may be counted. Undercover and pirate call signs will not be credited.

(7) G2, G3, G4, etc., all count, as do GW2, GW3, GW4, etc., and in the same way, K2, W2, WA2, WB2, WN2, all count even though they may be in the same street.

(8) Send your HPX list, in alphabetical and numerical order, with a total claimed score clearly marked; with subsequent lists it is sufficient to quote the last claimed score, the new lists of prefixes, and the new claimed score, with your name and address in all cases, to "SWL," *SHORT WAVE MAGAZINE*, BUCKINGHAM, to arrive before the SWL deadline for that particular month.

(9) Failure to report for two consecutive listings will result in deletion from the Table, although there is no objection to a "Nil" report—in order to hold your place.

(10) Starting score 200. Phone Table is mixed AM/SSB but AM-only claims will be shown as such if requested. No mixed Phone/CW Table; CW-only Table will be run given enough support.

(11) Lists will be based on those shown in the current issue of the *Callbook Magazine* for Countries/Prefixes.

uses different equipment and is held in a different room.

Back on the R.A.E. theme, this time from *Martin Goldman (Leeds)*, who would like anyone interested in the exam or Morse practice in the Leeds area to get in touch with him with a view to getting something started. Martin uses the R.107 receiver, and wonders about ways and means of improving the performance of elderly receivers, by way of add-on units, converters and the like. Too late for this month, but we will try and cover this one in the next offering, although all we can do is to generalise.

Richard Allisett is the son of GC3NDX, and seems to be following in father's footsteps. He is rather stuck on Forty AM insofar as the receiver is a BC set but there are hopes of a TCS ere long and no doubt then we shall see the score expanding significantly.

In the excitement of preparing to go on holiday, *Peter Smith (Linby, Notts.)* forgot to sign his letter, and had to write a second one to identify the first. Not to worry Peter, if that is all you forget before going on holiday you are doing all right. (Last time your scribe went away for a fortnight he forgot to turn off the heat, and forgot to take various things regarded as essential, including the speaker for the /M gear). Peter has three calls on the query list, all of which would seem to the writer to be either phonies or, more likely, a misread letter in a genuine call.

Nicholas Bradley writes from *Stevenage* to bring his HPX score up-to-date, and mentions that he has been lent a CR-100 receiver, which, in conjunction with a ground-plane aerial, has boosted things somewhat. It is nice to see the entries for the CW Table coming in.

One of the surprising things is the number of correspondents who are using, building, or thinking about the G3HTA receiver described in the December 1964 issue of *SHORT WAVE MAGAZINE*. One such is *Tony Bailey*, who had more than his fair share of teething troubles, and would be glad therefore to offer his help to any constructor of the receiver who cares to write to 5 Erin Way, Burgess Hill, Sussex.

Richard de Buis (Felixstowe) has a 100% return on QSLs . . . he has sent out two in the last two years! The policy is only to send a report to a station if that station is either getting no response whatever, or no reply from the area they are calling. While this does reduce the output, as Richard says, the cards that are sent are known to be of use to the operator to whom they are addressed.

Passes in The R.A.E.

Congratulations are due to *Steve Wilson (Ossett)* who adds a PS to his letter to say he has just had a *pass* in the R.A.E. and a *pass* in the Morse; the rest of us can imagine that behind those italics there is a strong feeling of triumph and pleasure . . . and so there should be. Steve has the biggest aerial for Top Band that has ever come to notice in this piece, with 70ft. of vertical, counterpoises, capacity

hat, and quarter-wave radials; the pole also props up the middle of a centre-fed system.

C. P. Martin (Chertsey) is about to leave us, for the best of all reasons. His new call is G3VLW, but he still has an entry in the HPX Table which we have been pleased to take in.

Still another to be congratulated is *Andrew Niblock (Ilkeston)* who adds a PS to his letter to say he, too, clicked with the R.A.E. In the waiting time we rather gather that Andrew has been making sure all is ready to receive the transmitting licence, painting the shack and so on, rather than just listening.

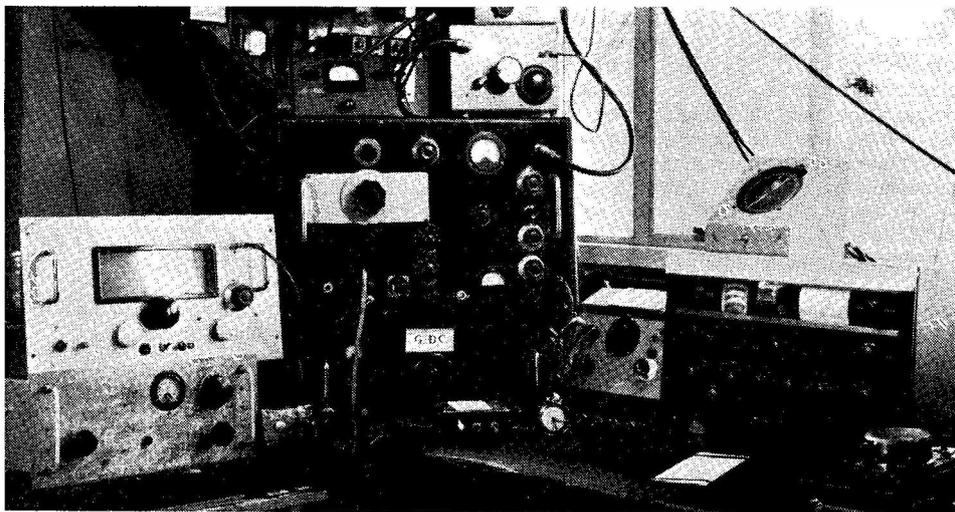
E. K. Law has been listening to the SSB nets on Twenty with considerable success, as his Table placing clearly shows, the QTH being *Brownhills, Staffs*. Another Midland station is that of *Colin Morris (Tenbury Wells)* who prefers to hear his DX by certificate-hunting and Contest listening; Colin is another of the G3HTA builders, and says the old rig is due for "demolition" when the beast is finally complete.

A long letter and a long list from *Geoff Bowden (Crawley)*, who remarks that the HPX Table entry last time round has aroused much enthusiasm for SWL in his son Philip. It is tough going finding prefixes with a PCR-3. One of the queries in Geoff's list is an odd one, VK9AB calling CN8VB, at 1855 GMT, 26 July, and claiming to be in Tasmania. VK7 is the usual prefix for Tasmania but on the other hand it may be a misreading, as the time is about right.

Geoff has lots of queries about the souping-up of his PCR-3. Adjacent-channel selectivity is the first requirement, and is obtained by means of a "Q-5'er" which is another name for the BC-453, a surplus receiver having 85 kc IF and an input frequency of 190-550 kc. In use, it is coupled through a couple of μF to one of the main receiver IF stages, tuned to the main receiver IF, and there you are! Other ways of improving the adjacent-channel selectivity in a receiver are the use of a Q-Multiplier, or controllable reaction of one of the IF stages, the latter being only acceptable as a last resort. A pre-amplifier or pre-selector serves to increase the sensitivity and image rejection of an insensitive main receiver, while a "converter" is a device which enables the frequency coverage of the main receiver to be extended. Incidentally, the BC-453 was dealt with at some length in the *Magazine* (November 1956), and another way of achieving the same end is described in *SHORT WAVE MAGAZINE* of February this year as part of G3KFE's article on the HRO.

Sign-Off

And that about wraps up the mail for this issue; we hope you have enjoyed writing and reading as much as we have enjoyed putting it together. Deadline for the next "SWL" is September 30, and in the meantime, don't forget the SLP, look after yourselves, see you next time round. Don't forget the address is "SWL", *SHORT WAVE MAGAZINE*, BUCKINGHAM. And mark that deadline again—September 30.



THE OTHER MAN'S STATION

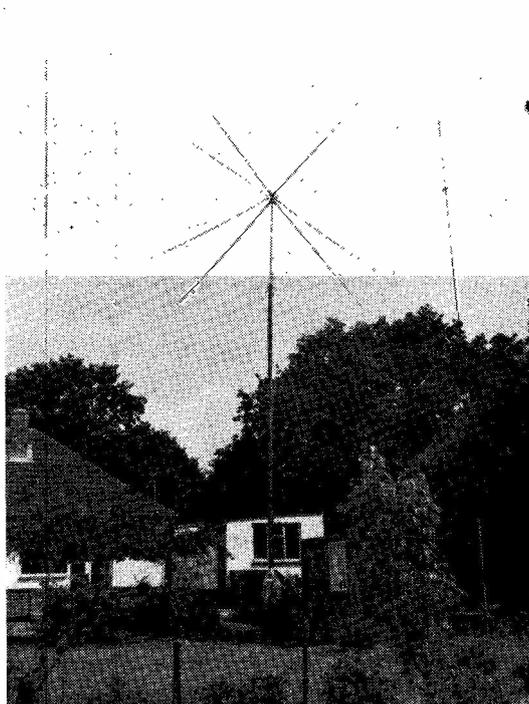
G 2 D C

THIS time we feature the station of a very well-known DX operator, who has been on the air many years and from those parts of the world where the British Army could be found in the mid-war period—Major Jack Drudge-Coates, G2DC, of Morserden, Hightown Hill, Ringwood, Hants., who is ex-Royal Signals.

He first became interested in radio in 1920 and in Amateur Radio in 1923, when stationed in India. The first short-wave receiver was built in Razmak, up in the North-West Frontier, on the borders of Afghanistan. Although in R. Signals at the time, copper wire was not available (even the telegraph route was galvanised iron wire), so the tuning coil for the Hartley Rx circuit had to be wound with a thinnish binding wire normally used for baling *bhoosa*—a straw feed for mules. The first circuit, the conventional O-V-1 using a V24 as the detector and an R-valve as the LF, with dry battery HT, worked very well. The first amateur signal heard was SMTN, later to become a very well known SM DX'er. On returning to civilisation (Rawalpindi in this case) no time was lost in making up a Tx, a simple TPTG; this used an AT50 valve which, for the times, gave reasonable results and using the callsign Y-DCR many excellent QSO's were made with all parts of the world on wavelengths between 30 and 100 metres. In 1926, the prefix for Indian radio amateurs became AI and Y-DCR

changed to A12KX. The amateur wavebands were officially allotted, 20 and 40 metres being the DX channels.

Home to the U.K. from India in 1928 but not for long, as in 1929 came a posting to British Somaliland to join a Boundary Commission, which was to carry out the demarcation of the Somaliland boundary. Some bits and pieces were of course taken and on arrival at Berbera, the PMG in person was



found to be available. However, the answer was that not even a permit for a receiver was permissible "on security grounds." At the time, apart from a small marine valve transmitter at Berbera, all the other radio communication was carried out using $1\frac{1}{2}$ kW rotary spark transmitters and anyone with a knowledge of Morse could sit a hundred yards away from one of the transmitters and read aurally all the transmissions made! Some of the traffic was intercepted by this method and the PMG confronted with the evidence—at first he was a little icy but gradually warmed up and when it was pointed out to him that for the first time ever, it would be possible to monitor his internal communication system from all the remote corners of the country and let him have reception reports, he thawed out. A single TPTG transmitter was knocked up and initial test QSO's were made with the R.A.F. at Aden. The call 2DCR was at first used, and then VQ6DCR. The hinterland of British Somaliland is one vast plateau with heights varying from 3000 to 5000ft. so reception was excellent and at nights during winter, the G's used to come in on a simple O-V-1 receiver. Unfortunately, the only PSU available was a small petrol driven generator, and as all supplies had to come by camel convoy, taking several weeks to get up from the coast, only very limited transmission was possible on the amateur bands.

Back to the U.K. in 1930 and the first G ticket taken out, with G2DC established at Farnborough, Hants. A move to Liverpool came in 1935 where apart from the normal DX bands, a lot of 56 mc work was carried out and in 1937 what was then a record 5-metre QSO was made from near Buxton to the Isle of Man, with GW6AA at the Snaefell end.

Early 1939 saw G2DC back East once again, this time in Central India, at Jubbulpore, where no time was lost in setting up as VU2FO, with much activity on the DX bands up until the outbreak of Hitler's War. February 1944 till April 1945 was spent in Rangoon Jail as a p.o.w. of the Japanese. In 1946 came a posting to Japan with the Occupation Forces, and once again a new call was allotted—this time it was J4AAC, the DX bands being activated until return

to the U.K. in August 1947. Then from Bulford Camp in Wiltshire, G2DC was once again to be heard as usual mainly on the DX bands, and the station remained quite active until yet again a move was made, this time to Germany where in Hamburg, DL2RO was put on the air and kept busy until returning once more to the U.K. in 1955, and again back to Bulford and G2DC. Retiring from the Army in 1957, after much searching the present location was found and once the station (and the garden) had been set up, a real look round on all the LF and HF bands could be made at leisure.

The main interests at G2DC are DX chasing and competition work but a ragchew with old friends is always enjoyed and a number of schedules are maintained. All the transmitting gear is home built, the main transmitter covering 3.5 to 28 mc and consisting of a Tesla VFO/xtal mixer on 3.5 mc, wide band coupled doublers, BA and *pi*-tuned PA, input to the latter being 130 watts; a separate Tx, again Tesla VFO and *pi*-tuned PA, is used for Top Band. The main receiver is a hotted up AR88D with a preamp. tuner using the *Magazine* circuit. On the antenna side, extensive systems have been employed over the past few years, for all-band operation. Especially in contest work it is very essential to have as perfect an aerial set-up as possible. After a lot of trials the systems now in use include a two-element Quad for 28-21-14 mc, at a boom height of 40 feet, and for 7 mc a ground-plane is used. For 3.5 and 1.8 mc an end-fed wire 265 feet in length at an average height of 38 feet is available. Up to date, 330 "Countries" have been worked, with fair success in most of the major CW operating contests.

* * * * *

We feel sure that this brief account of G2DC's long experience on the amateur bands will have been of great interest to many readers. Now retired after years of service in distant places, he is able to settle down to his Amateur Radio, enjoying it and making the most of his opportunities—which, when you come to read his story, is just what he has been doing for about the last 45 years!

COURSES FOR THE R.A.E.

Second List of Tuition Centres

Carrying on from p.372 of the August issue of the *Magazine*, we now have a further list of centres at which a course of instruction is offered for the Radio Amateurs' Examination, which is set by the City & Guilds of London Institute, and is known as "Subject No. 55" in their examination syllabus, under the heading of Electrical Engineering, Section G.

Copies of the last three years' question papers are available as one set, price 2s. A copy of the syllabus for Subject No. 55 can also be obtained for 1s. 6d. Prices are post free, and orders, with remittance by

P.O., should be sent to: Sales Section, City & Guilds of London Institute, 76 Portland Place, London, W.1, quoting (and this is important) "Subject No. 55." City & Guilds run literally hundreds of technical and professional examinations, and their Sales Section is not organised to deal with vague enquiries from people who do not make their requirements absolutely clear.

For the information of instructors who might feel that their class would do better if they studied the syllabus and looked over the previous year's question papers—a discount is offered for bulk orders. Apply

to the Sales Section (address as already given) for the appropriate order form.

Following are the tuition centres notified since the August list was prepared :

Aldridge, Staffs : At the Evening Institute, Tynings Lane, commencing on Monday, September 12, at 7.30 p.m. Morse instruction will also be given and the course will be conducted by N. H. Hyde, G3PJM.

Brighton : At the Technical College, Richmond Terrace, in the Engineering Dept., under F. R. Canning, G6YJ, and including a course in Morse. Apply immediately to the Head of the Dept. of Engineering.

Brooklands (Weybridge, Surrey) : At the County Technical College, Heath Road, on Mondays 6.30-9.0 p.m., starting on September 19, enrolment at the College September 12/13. The lecturer will be G3GLB, and further information can be obtained on application to the College or by ringing *Byfleet 46485*.

Cannock, Staffs : At the Cannock Chase Mining and Technical College, on Tuesday and Friday evenings, commencing shortly. Full details from : C. J. Morris, G3ABG, School House, 24 Walhouse Street, Cannock, Staffs.

Corbridge, Northumberland : At the Evening Institute starting mid-September. Write : V. Allison, G3TNX, 14 Silverdale Drive, Winlaton, Blaydon-on-Tyne, Co. Durham, for further information.

Croydon, Surrey : At the Technical College, Fairfield, with enrolment during September. Apply to the Director of Electrical Engineering, at the College, or to the instructor : S. W. Law, G3PAZ, 11 Chisholm Road, Croydon.

Derby : At the College of Technology, Kedleston Road, commencing September 26, Tuesdays 7.0-9.0 p.m. for R.A.E. Theory, and Fridays same time for Practical work. Enrolment September 15 and 19, 6.0-8.0 p.m., at the College. Course fee for one evening a week, £3; for both evenings, £4. Lecturer F. C. Ward, G2CVV.

Glasgow : At Allan Glens School, Cathedral Street, on Tuesdays, 7.0-9.30 p.m. (Theory) and Thursdays same time (Practical and Morse), course fee 20s. Enrolment at the School, September 5-8, 7.30 p.m. Course instructors A. M. Fraser, GM3AXX, D. Rossi and A. H. Mason, GM6MS.

Leicester : At the Regional College of Technology, The Newarke, on Wednesdays 6.30-9.15 p.m., in two sessions for R.A.E. Theory and Morse practice. An amateur station signing G3SDC is available for practical work. Apply to the Registrar's Office for entry form. R.A.E. course lecturer, N. Booth, G2DSF.

Liverpool : At the Riversdale Technical College, in R.A.E. Theory and Morse, starting in September. For details apply : A. G. Brown, Head of Radio Department, Riversdale Technical College, Riversdale Road, Aigburth, Liverpool, 19. A number of

other part-time and full-time courses in radio and radar are also offered.

London (Chingford) : At the Community Centre, Friday Hill House, Simmons Lane, on Monday evenings, 7.30 to 9.30 p.m. Application for enrolment should be made to the Centre during week commencing September 19. Lecturer in charge : J. Johnson, G2HR.

London (Islington) : Booster course at Debeauvoir Evening Institute, Tottenham Road, Balls Pond Road, Islington, N.1, evenings 7.30-9.30 p.m. Full details from F. Barns, G3AGP, 40 Park Ridings, Hornsey, London, N.8.

London (Wembley) : At the Evening Institute, Copland School, High Road, on Mondays 7.0 to 10.0 p.m., in two sessions, for Morse and Theory. Enrolment at the School, evenings September 12-15, 7.0 to 9.0 p.m. Classes start on Monday, September 19, and the course instructor will be A. J. Bayliss, B.Sc., G8PD—who has been taking this R.A.E. class for many years, with a high success ratio.

Peterborough : At the Technical College, Eastfield Road. Apply to D. Byrne, G3KPO, Jersey House, Eye, Peterborough, Northants, for full details.

Porthcawl, Glam : If a sufficient number of students come forward, an R.A.E. course could be arranged in this area. Apply : H. G. Hughes, GW4CG, 20 Austin Avenue, Porthcawl.

West Suffolk : At the College of Further Education, Out Risbygate, Bury St. Edmunds, enrolment commencing on September 5. Enquiries to the Principal, Electrical Engineering Dept., at the College.

Because in the main R.A.E. Courses will be well under way by the time the October issue of *SHORT WAVE MAGAZINE* appears, we shall not be publishing further lists of centres of instruction—unless specially requested for any late starters. Readers wishing to take an R.A.E. course, and not finding their locality mentioned either here or in the August listing (*see pp.372-373*) are advised to enquire at the office of their local Education Authority, quoting "Subject No. 55, City & Guilds."

NOT VERY EDIFYING

On the Midland BBC News one morning recently, there was one of those turgid question-and-answer interviews with a "ham," discussing some very ordinary DX. Apart from the generally fatuous nature of the piece (largely due, of course, to the complete ignorance of the BBC interviewer) some of the statements made were calculated to make Post Office eyebrows twitch. For years, we have been advising licensed amateurs to be very careful about discussing Amateur Radio with the press, which includes the BBC. If you must give an interview, first indoctrinate the interviewer and make sure he is going to ask the right sort of questions.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for October Issue: September 16)

(Please address all reports for this feature to "Club Secretary," Editorial Dept., SHORT WAVE MAGAZINE, Buckingham.)

THE remarks made by your scribe last month in this preamble to this piece caused a slight lift of the brow here and there and quite an interesting crop of letters. In general, as was more or less to be expected, they tended to cancel each other out, but one point that was made that seems to be very valid is that the Clubroom *must* be warm enough to be attractive, the landlord must be a complaisant sort of type, and if the Clubroom is on licensed premises there must be a separate way in for the Junior members; the implication here being that any members who wish to indulge in a spot of "elbow-lifting" must do so out of the Clubroom.

The only other point that seems to arise from all the letters is that the Hon. Sec. must be the sort of chap who is prepared to put in a lot of time in getting the programme organised, and not be put off by the seemingly impossible task of getting any sort of order out of the chaos. It is noticeable that in lots of cases Clubs that have thrived for years with one secretary seem to lose all their impetus when a new incumbent takes over—which just shows how important the job is.

One of the things that gets the regular flow of new faces going is the publicity angle. A point here is that the regular note in this *Magazine* will catch the eye of most of the licensed amateurs in the area; but it has to be realised that often it misses the raw beginners altogether. These chaps are best contacted by regular publicity of the right type in the local papers, and by way of a stand at the local Flower Show or similar event. One of the best patronised Clubs your conductor has ever belonged to seemed to have a knack of getting a front-page billing in the local press quite frequently, and every time this occurred the pay-off was in the list of new members. It is, however, not easy to see just how this particular trick is turned, as the publicity has to be of the right type, and it is fatally easy for a reporter to make a mess of reporting a Club activity unless he is well briefed. But there is no doubt at all that some most unlikely-looking type in the local group will turn out to have a flair for this sort of thing.

And, of course, the more raw beginners you can rope in, the better chance you have of getting enough members to justify the running of an R.A.E. class in the local evening Institute, a perfect subject for an interesting note in the local paper, and so the whole thing will grow and blossom. Your conductor would remark that in his view there is no more

rewarding activity than taking an R.A.E. class and seeing beginners blossom out into full-blown amateurs capable themselves of giving interesting lectures on their specialities at the Club.

MCC—November 12-13

And now to a change of subject, to a matter of moment for the Autumn programme of most Clubs; to the Magazine Club Contest (MCC) for this year, in fact. This will serve as a preliminary notice that the date will be the weekend of November 12-13. We will be publishing the rules in this column next month, but for the moment all you need to worry about is getting a Top Band rig set out somewhere, and some aerials organised, together with a posse of operators, and a good tea-boy.

ACTIVITY REPORTS

Now to the reports, and the first one on the clip comes from **Clifton ARS**, who have their being in London, S.E.14. The September business is firstly the AGM, on the 16th, and on the last day of the month that old standby for the meeting following the AGM, a Junk Sale. This seems to be quite a favourite way for the outgoing committee to ensure something is on the programme and yet give the new officers time to tee-up the rest of the programme for the year themselves. And after all, has anyone ever heard of a Junk Sale that was *not* a success?

At **Southgate**, an important commitment recently was the Club's participation in the Finchley Carnival, July 22-23, for which they had an all-band station set up—Top Band to two metres—signing their own call, G3SFG. An elaborate aerial system went with this, including a quarter-wave wire for 160m., a full and a half-size G5RV-type, and suitable antennae for the VHF bands. Contacts had to be effected through a background of very strong QRM, but they were made, and on the Saturday they had quite a good public response. And by the time this appears Southgate will have repeated the performance at Broomhill Park, Palmers Green.

Nice to hear again from the Radio Club of **Nottingham**, where they have their own call G3EKW, now active on 4 metres, with a base station on 70.26 mc and four members who can go /P, /M on the band. Their next meeting is on September 13, for a technical film show, by G3RDJ.

One of the very active and well organised London Club groups is **Harrow**, now with 110 members, of whom nearly 50 hold transmitting licences—which

York Amateur Radio Society ran G3HWW/A at the recent Hobbies and Industries fair locally. G3FTS (seated) and G3DTA kept the station on the air for a week, making a great many QSO's using a Panda Cub and an Eddystone S.640. Much interest was shown in G3HWW/A, it being the first time that most visitors had seen an amateur station in action.



makes a nice balance between transmitters and SWL's. Their meetings are weekly, Fridays at 8.0 p.m., in the Science Lab., Roxeth Manor School, Eastcote Lane, except that for September there is no meeting on the 9th.

Torbay get together monthly, on the last Saturday (94 Belgrave Road, Torquay) and some time in September they will be giving a farewell party for G3NCC, a valued member of the Club for a long time, who is off to America to take up a new job. G3NCC was their R.A.E. lecturer and has done a great deal for the SWL members.

Plymouth have plans for more local publicity, one of the projects being a public lecture in the Plymouth Central Library, with the Club's activities fully covered, together with a display of equipment. They hold their meetings weekly on Tuesdays, 7.30 p.m., at Virginia House, Palace Street (near the central bus station) and, needless to say, visitors and prospective members are always welcome.

One of the snags associated with the use of a

pub or hotel for Club meetings is the question of the younger members, and possible parental disapproval; **Bury & Rossendale RS** specially mention that although they get together at the Old Boars Head Hotel, the Rock, Bury, they have a private room, and all are therefore welcome, including interested youngsters. At the session on September 13, they have a lecture and demonstration by a commercial organisation, and in October, a Home Construction Competition.

At **Northern Heights**, on September 14, a visit is laid on to Process Units at Halifax; a D/F event on the 18th, on the 21st a discussion regarding the Scout Jamboree, with G8CB demonstrating and discussing Simple Two-Metre Gear to round off the month of the 28th.

Crawley will have had their "next meeting" by the time this reaches print, but on September 28, a talk is promised on an Audio subject, the speaker being Mr. D. Birt, of "Class-D Amplifier" fame.

Surrey Radio Contact Club send their *Newsletter*, from which we gather that the September event is a Sale of surplus gear; the date is not given, unfortunately, but no doubt a telephone call to the secretary (see panel) will obtain the information for anyone contemplating a visit.

Echelford ARS are quite definite about the date of their September lecture: the 28th it is, at the Links Hotel, Fordbridge Road, Ashford, Middlesex, and the topic "Soldering," by Mr. Thwaites of the Tin Research Institute. This one starts at 8 p.m. and should be of absorbing interest to all. In addition, there is the mid-monthly R.A.E. class, starting at

MCC, 1966

The 21st MCC, the annual Magazine Top Band Club Contest, will take place during the weekend November 12-13. It is a CW-only affair, open to all Clubs able to put a contest station on the 160-metre band. Rules, which will be much as last year, will appear in the next issue. In the meantime, start the planning and check up on last year's results—see January, 1966, issue.

7.30 on the 14th, the venue for which is The Grammar School, Ashford. Visitors will be welcomed at both meetings.

At **Stratford-upon-Avon** a new Hon. Sec. takes office, and writes in specially to ask all interested people in the area to write to him giving names and addresses, in order that a new mailing list may be made up. The Clubroom is adjacent to the Masons Arms, in Santus Road, and visitors are always welcomed, every Friday evening. For the summer, the meetings are informal, but a full programme of events is being organised for the autumn.

Another Friday evening session is the one held each week at **Peterborough**. Although they have ATV installed in their Clubroom at the Windmill behind the Peacock Inn on the London Road, the two-metre beam for the Club station is rotated by the "Handraulic" system, and brawny visitors are therefore at a premium. It has to be realised that the beam is rotated from three floors down, hence the need for muscle!

G3PZK is in the "hot seat" at **Acton, Brentford & Chiswick**, on Tuesday, September 20, when the

theme will be his new All-band Transmitter, and the venue, the Club Hq. at 66 High Road, Chiswick.

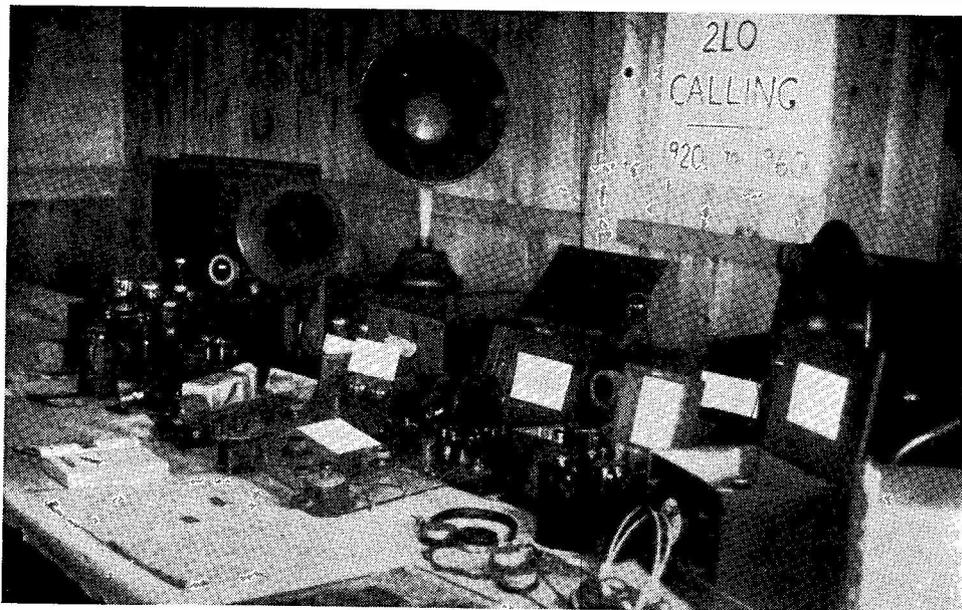
The three members of S.A.R.A., **Wimbledon, South London Mobile** and **Purley**, co-operate in several ways. Both Wimbledon and Purley meet on September 9, the former to hear G3LXN talk about his Mobile rig, and the latter for a lecture by G3RKK on receivers. North London Mobile will be attending the Woburn Rally on September 11, and meet for a ragchew on the 24th. However, the news from the three clubs shows up a discrepancy in the dates, so it may be as well to check with the secretary of the one of your choice before setting off, in case we have not got the discrepancy sorted out right!

North Kent meet on the second and fourth Thursday of each month, at the Congregational Church Hall adjacent to the Clock Tower, Bexleyheath, at 8 p.m., but we have no knowledge of the current programme. This statement also applies to **Cornish**, which is not really surprising since the *Cornish Link* at this time of year is filled with matter pertaining to their Mobile Rally and its load of work.

Names and Addresses of Club Secretaries reporting in this issue :

ACTON, BRENTWOOD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
 A.E.R.E. (HARWELL): J. Galpin, Building 347.3, AERE, Harwell, Didcot, Berks.
 BRIGHTON TECHNICAL COLLEGE: R. A. Bravery, G3SKI, 7 Copse Hill, Brighton, 5.
 BRISTOL: E. J. Davis, G3SXY, 72 North View, Westbury Park, Bristol, 6.
 BRITISH RAIL: H. A. J. Gray, Eleven Swanton Drive, East Dereham, Norfolk.
 BURY & ROSSENDALE: A. Cooper, 411 Holcombe Road, Greenmount, nr. Bury, Lancs.
 CAMBRIDGE: F. A. E. Porter, G2CDX, 37 Metcalfe Road, Cambridge.
 CHESHAM: D. Kind, 19 Hollybush Road, Chesham, Bucks.
 CLIFTON: A. J. Gould, 60 Merlin Road, Beckenham, Kent.
 COVENTRY: W. F. M. Hahn, G3UOL, 11 St. Patrick's Road, Coventry.
 CRAWLEY: R. G. B. Vaughan, G3FRV, 5 Filbert Crescent, Gossops Green, Crawley (23359), Sussex.
 CRAY VALLEY: C. W. A. Davis, 6 Braemar Gardens, Sidcup (FOOiscray 5077), Kent.
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23. (FORest Hill 6940).
 EAST WORCS.: J. Bazley, G3HCT, Brooklands, Ullenhall, Solihull, Warwickshire.
 ECHELFORD: A. G. Wheeler, G3RHF, 88 Village Way, Ashford (55265), Middx.
 EDGWARE: G. S. Fitton, G3RAA, 18 Beverley Drive, Edgware, Middx.
 GRAFTON: A. W. H. Wennell, G2CJN, 145 Uxendon Way, Wembley Park, Middx.
 GUILDFORD: M. A. Birch, G3KMO, Sorrento, White Lane, Ash Green, Aldershot, Hants.
 HARROW: R. C. Ray, G2TA, Wintons End, Springfield, Bushey Heath (1762), Herts.
 HULL: G. G. Wray, G3MVO, 93 Wolfraton Lane, Willerby, Hull.
 LICHFIELD: S. W. Williams, G3VIQ, 65 Wallfield Road, Alrewas (491), nr. Burton-on-Trent, Staffs.
 MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead, Berks.
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill, Sussex.
 MID-WARWICKSHIRE: K. J. Young, 189 Northumberland Court, Leamington Spa (26426), Warks.
 NEWARK: G. Francis, G3TWW, 93 Balderton Street, Newark, Notts.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (64329), Yorkshire.
 NORTH KENT: P. T. Baber, 64 Latham Road, Bexleyheath (8655), Kent.
 NOTTINGHAM: N. E. Down, G3SRX, 23 Lady Bay Road, West Bridgford, Nottingham.

PATHFINDER: A. Lex-Arnold, 13 Little Road, Hemel Hempstead, Herts.
 PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye, Peterborough.
 PLYMOUTH: E. Fallon, G3SGV, 8 Queens Road, Lipson, Plymouth.
 PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey.
 RADIO CLUB OF SCOTLAND: A. Barnes, GM3LTB, 7 South Park Terrace, Glasgow. (WESTern 4080, STD 041-339-4080).
 READING: N. W. Austin, G2FQR, 20 Worcester Close, Reading, Berks.
 REIGATE: D. Thom, G3NKS, 12 Willow Road, Redhill, Surrey. (Reigate 45033).
 RODING BOYS: R. T. Marchant, 154 Essex Road, Leyton, London, E.10.
 ST. HELENS: B. Hardy, 198 Knowsley Road, St. Helens, Lancs.
 SALTASH: D. Bowers, 95 Grenfell Avenue, Saltash, Cornwall.
 SHEFFORD: D. A. Pike, 32 Lawrence Avenue, Letchworth, Herts.
 SOUTH BIRMINGHAM: A. Bishop, 40 Cecil Road, Birmingham, 29.
 SOUTHGATE: R. Wilkinson, G3TXA, 23 Ashridge Gardens, Palmers Green (4592), London, N.13.
 SOUTH LONDON MOBILE: B. Negri, G3LXN, 17 Voltaire Road, Clapham, London, S.W.4.
 SOUTH MANCHESTER: M. Barnsley, G3HZM, Greenways, 11 Cemetery Road, Denton, Manchester.
 SOUTH SHIELDS: D. Forster, G3KZZ, 41 Marlborough Street, South Shields, Co. Durham.
 STOCKPORT: G. R. Phillips, G3FYE, 6 Ross Avenue, Davenport, Stockport, Cheshire.
 STRATFORD-UPON-AVON: I. A. Cobbold, G3RPJ, 5 Avenue Road, Stratford-on-Avon.
 SURREY: R. Morrison, G3KGA, 33 Sefton Road, Croydon, Surrey. (ADDiscombe 5982).
 THAMES VALLEY: K. A. H. Rogers, G3AIU, 21 Links Road, Epsom.
 TORBAY: D. T. Hind, G3VNG, 46 Thurlow Road, Upton, Torquay, Devon.
 VERULAM: G. Slaughter, G3PAO, 6 Leggats Wood Avenue, Watford, Herts.
 WAKEFIELD: E. Price, G3TQV, 23 Elm Road, Horbury, Wakefield, Yorks.
 WIMBLEDON: K. Alexander, 23 Pepys Road, West Wimbledon, London, S.W.20.
 WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebington, Wirral.
 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset.
 YORK: J. Rainbow, 14 Temple Road, Bishopthorpe, York.



Rather a fine collection of early BC receivers, dating from 1920, seen as part of the exhibit by the Peterborough Radio Society at the local Agricultural Show recently. As a somewhat similar picture appeared in the August issue, there would appear to be quite a lot of this historical equipment still about — it is of great interest for museum purposes, and should be looked after carefully.

Newark give no dates for their future programme, but we gather they have a D/F event, a talk on Computers, and a slide show on "The Canadian Rockies."

A crafty move on the part of the Cray Valley lads: If your copy of *QUA* is decorated with a large red cross on the front page, it tells you that you have not paid your annual sub, according to the records. This is an idea that could well be taken up by other groups as a means of saving the cost of postal reminders. The planned activity for September is the Dinner and Dance on the 17th, tickets for which should be obtained in advance from G3TCC, but there is doubtless another meeting which is not noted in the *Newsletter*.

The *Pathfinder* Radio Group organiser writes to advise us of their international affiliations, and that the title of their international organ will be *Hemel Hempstead Radio*. We understand this will be pub-

lished quarterly.

The **Radio Club of Scotland** does not make any mention of the September programme in the issue of their *GM Magazine* which we have at hand. However, on October 2 they have their first Convention at the Grand Hotel in Glasgow, and weekly meetings, on Fridays, at 336 North Woodside Road, Glasgow.

The **Roding Boys Society** have moved to new Hq. in the Waltham Forest area, which give them more room to spread their range of activities; young enthusiasts in the area should contact the Leader, R. T. Marchant, 154 Essex Road, Leyton, London, E.10. Your scribe can add his own comment that anyone who joins will find himself something really worth-while.

Shefford & District announce that they have recommenced their weekly meetings, each Thursday evening at the Church Hall. Incidentally, we notice the Club secretary is now sporting his very new call, G3VMI—congratulations!

The season of Annual General Meetings is now upon us as we realise when we read the letter from **Clifton ARS**. Theirs is slated for September 16, and on the 30th, a Junk Sale will be held.

A sad note from **Coventry** tells of the passing of their vice-president, G5GR, Leslie Gardner, who will be sadly missed indeed. After the "bomb scare" reported last month, they have now returned to their quarters in the Civil Defence Hq., Drapers Fields, Coventry, with meetings each Friday at 8.0 p.m. On the 2nd, a talk and demonstration of the Viceroy Transmitter by G3RIR; on the 9th, another talk, this time by G3UOL, on his EI6BB activities; a

IMPORTANT NOTICE

Club secretaries and others concerned are reminded that the address for this feature is: Editorial Department, Short Wave Magazine, Buckingham, England, with the letter marked "Club Secretary." Reports must reach us by the date given at the head of the article each month, and must also include the QTH of the hon. secretary for the address panel. Some reports are still being sent to our London office, causing delay, and others do not give an address for the hon. secretary.

Mullard film strip lecture by G3ROD on the 16th ; and on the 23rd, a lecture on "Making Electronics Think," again by G3ROD—making a pretty crowded September programme. And on top of that little lot is added the AGM, which is the matter in hand on September 30.

We have a short note from **Reading** which mentions the group activity in the 70 mc Contest on July 24, from which we gather that they had to drop the aerial in pouring rain to reconnect the feeder . . . and who says this hobby of ours is a sedentary one? The next get-together will be on September 13, to hear G3TOQ talk about SSB equipment.

Hull & District ARS are running a D/F event on September 11, to which both SWL and licensed amateurs are invited. Assemble at 1345 BST, at Church Hill, Holme-on-Spalding Moor, near Market Weighton, East Yorks. Full details can be obtained from Mike Ellis, G3PJR, at 351 Willerby Road, Hull.

Lichfield & District have written to say that the recently-issued Club call sign, G3VKP, has now been withdrawn; it is understood that another, more specific one, is to be issued shortly.

Well Organised!

As a result of the preamble to this piece last month, various comments were offered, as already discussed. One of the letters was from **Mid-Warwickshire**, who sent a copy of the printed information sheet which they put out in response to enquiries. They have, by courtesy of Leamington Town Council, two rooms at their disposal, one for lectures and general meetings, and one with workshop facilities. Into the latter they have built a shack, enclosed with fibre board, and fitted with a window in order that others may "look in" on the operators, but the noise of the rig is thus kept from being a nuisance to the workshop or meeting rooms or *vice versa*. As for meetings, these are every Monday, the "even" ones being set aside for nattering, while lectures are laid on for the "odd" weeks. Thus, on September 12 the tape lecture on Transmitters will be heard, and on the 26th, they will listen to G3BA telling them how to get going on VHF using HF gear and a Transverter.

Saltash are to listen to Steve Rance, G3WL, on the subject of "Top Band Aerials" when they foregather on September 9, and on the 23rd a visit to the BBC Television Studios in Plymouth has been arranged.

The finding of new meeting-places is a chore that Club committees have to deal with all too frequently, and we can all, therefore, feel sympathy for the **Maidenhead & District** group, who have lost the use of the East Berks College. However, we are pleased to be able to say that they have almost certainly got a replacement Hq. Anyone thinking of attending the meeting due on September 20, therefore, to hear the W1BB Tape and Slide lecture, should contact the secretary in order to confirm that the venue is indeed the Scout Hut, Furze Platt Road, Maidenhead.

Which is the excuse, were one needed, for heading northwards, and mentioning that we have word from the **Northern Heights ARS** to say that thanks to some fine work in reprinting the slides, the W1BB tape and slide lecture on "Top Band DX'ing" is once again available to Clubs. For further information on this subject, contact G3MDW, address as panel.

At the rear of 5 Bois Moor Road, Chesham, Bucks, is the Hq. of **Chesham & District**, each Friday evening being the meetings proper, while Wednesday evenings at the same venue is R.A.E. night; both kick off at 8.0 p.m. In addition to this, probably in the first week of September, it is proposed to have a field day, at Ottershaw, near Chertsey.

Cambridge & District ARC have their Hq. in Victoria Road, Cambridge, and say they have had visitors from all sorts of places to the informal meetings held during August; however, they add that the formal programme for the coming autumn and winter commences on September 16 with a quiz entitled "My Problem Is . . ." Looking forward, a "Grand Autumn Sale" is slated for October 14.

Once again this month is a full one for the members of **South Manchester**. September 7 sees them at the Altrincham Show, operating GB3ALT. September 9 at Hq. is the place to hear a lecture on Q-Multipliers by Mr. R. Smith; as for September 23, G3SMT expounds his ways of modifying the HA-350 and others at the same place. In addition to all this there is the Northern Radio Societies Convention at Belle Vue on September 3-4, and the normal "informal" and "activity" sessions on the remaining Fridays, all at Rackhouse, Daine Avenue, Northenden, Manchester. As if this were not enough there is a small matter of a National D/F contest Final to be organised on Sunday, September 18!

Over now to **Bristol**, who send a long and chatty letter from which one gathers that it is their belief that to be successful one should run a twice-weekly programme; in their case Monday and Thursday are favoured, and there is always Morse Practice and tuition available at these sessions. On September 22 comes the very important matter of the AGM, and in addition, during the month other activities may well occur out-of-doors. Incidentally, the regular meetings are convened at 43 Ducie Road, Barton Hill, Bristol.

"No Salesmanship" is the claim of the **East Worcestershire Radio Society**, and they go further and think any visitors who look in will be agreeably surprised at how nice a bunch they are. They may

MCC, 1966

The 21st MCC, the annual Magazine Top Band Club Contest, will take place during the weekend November 12-13. It is a CW-only affair, open to all Clubs able to put a contest station on the 160-metre band. Rules, which will be much as last year, will appear in the next issue. In the meantime, start the planning and check up on last year's results—see January, 1966, issue.

In the August issue we showed a picture of the transmitting members of the East Lancashire Radio Club. Here are some of their SWL members.



be found on the second Thursday of each month at the Old People's Home in Park Road, Redditch; the matter in hand for September being the Daystrom (Heathkit) lecture, and in October G3OOQ on the topic of the KW-2000A.

The season starts on September 9 for **Grafton RS**, in Montem School, Hornsey Road, Holloway, London, N.7, in Room 35. On the 23rd, it is enrolment night for the R.A.E. course, and the following Friday (30th), a Junk Sale is the main item. Incidentally, your conductor suspects Grafton have probably obtained more R.A.E. passes over the years than *any* other Club; one would think the majority of the calls in the North London area were obtained by attendance at the Grafton classes.

British Rail Amateur Radio Society are still in the process of getting on their feet, and they are glad to mention the help received from the joint secretary of the British Rail Staff Association. Will all those connected with British Rail, including Docks and Inland Waterways, the Joint Holding Companies associated with BRB, and of course Thomas Cook & Sons, all please pass their "vital statistics" to the hon. secretary in order that he may keep them posted as to how things are going. And it is hoped to organise a net, to get members together over the air.

The activity at **Yeovil** centres around a visit on September 14 to Yeovilton R.N. Air Station, which should be interesting, and later in the month the Club apparently has to "saw itself in half" so as to be at the Region 9 ORM and operate the Club call, G3CMH, at the Yeovil Youth Centre, on the same day. This occurrence will be on October 1.

A tale of woe from **Saltash** this month; the editor of the *Tamar Pegasus* has had to cut the size of his offering by half because of shortage of copy. From this he draws the conclusion that the licensed members are spending too much time on the air and not enough time writing for the *Newsletter*. The programme for September is reported elsewhere in this piece.

Another new group, to be known as the **Mid-Sussex ARS**, has recently been formed to serve the

area around Haywards Heath and Burgess Hill. Meetings occur on first and third Wednesdays of this, and each succeeding month, at the Primary School, Lindfield, Nr. Haywards Heath. It is to be hoped that this venture will receive all support from the locals; visitors are welcomed, or of course, one can address enquiries to G3RXJ. And from us the best of luck.

The Prince of Wales, Bridge Road, East Molesey, is the home of **Thames Valley**, and the next get-together will be on October 5, when Tony Taylor will give another instalment in his serial, "Nuclear Power." Further ahead, on November 2, a Constructional Trophy is to be fought for and won.

One of the Clubs with a regular newsletter is the **South Birmingham** group, who forgather at the Scout Hut on Pershore Road, Selly Park, Birmingham, 29, and from this we hear that Mark, G3GBS, has been bludgeoned into giving the Club a lecture, the subject being "Mobile" and the date September 21. As your scribe made his first real contact with Amateur Radio at the QTH of G3GBS years ago, his personal best wishes go out for the success of this one. Another event for South Birmingham will be the joint Mobile Rally, organised in conjunction with Sutton Coldfield, slated for September 25.

Fortnightly meetings are the rule at **St. Helens Electronics Society**, the next being an Open Night on Tuesday, September 6, at the I.V.S. Centre, 55 College Street, St. Helens. The subject for the evening of the 20th has yet to be finalised.

Not far away, **Wirral ARS** have as their subject on September 7, the Grid Dip Oscillator, the speaker on this occasion being Mr. R. Evans. G3PPE talks about a Transistor Transmitter on the 21st; both these should be of considerable interest.

The secretary of the **Wakefield & District** crowd informs us that they restart activities on September 13, at Ings Road City High School, Wakefield, with a Mullard Film Show. He also says he hopes to get a full programme sorted out, and indicates that the licensed members are going to be made to "do their stuff" in the way of giving lectures . . . and so they should.

Edgware & District offer a talk on Construction

Techniques by G3JPJ to kick off the autumn session, followed by a D/F event on the 25th, and a lecture on RTTY on the following evening.

On to **Brighton Technical College ARS**, who propose to notify members direct of their restart date; new intending members should therefore contact the secretary at the QTH given in the panel. **Guildford**, on the other hand, are in a position to be more informative, as they have a station on the air at the Guildford Model Engineers Exhibition, at Stoke Park, on September 17-18. In addition to this there is the normal activity, by way of a lecture on "Quality Electronic Components" by Mr. Childs, at the Club Hq., which is also in Stoke Park. For the future they have G2YL and G6ABA/T promised to lecture, and a Junk Sale is also on the card.

Issue No. 73 of the **Reigate Feedback** is in a nice shade of blue, which must be meant to mean something or other . . . however, they do not give detail on the September affairs other than to mention in the covering letter a talk with the intriguing title "Coils and Q's" on September 15, to be given by R. Wadie, G8AOD. Your scribe has been to Redhill at various times over the last twelve years but always manages to be out of phase with the meeting dates, and has never yet managed to get to one; maybe we will make it, in the fullness of time!

South Shields have to deal with the important business of the AGM on September 16; however, the regular meetings are every Friday, and the venue is at Trinity House Social Centre, Laygate, South Shields. It is pleasant to note that here again is a group that pays special attention to the SWL side with instruction, both in Morse and in theory, regularly available at meetings.

Crystal Palace have planned a big effort for the VHF field day weekend, with a two-metre station and another to take care of 4m. and 70 cm. It is said in their *Newsletter No. 129* that "the extensive aerial systems will require quite a lot of effort in erecting"! The next meeting is on September 17. The Palace now have their own call sign, G3VCP.

At **Stockport**, they have a surplus gear sale on September 7, and on the 21st a lecture on VHF Aerials, by G3AYT. Meetings here are fortnightly, so that the next following are on October 5 and 29.

Once a year, the **Verulam** (St. Albans) group run a special open meeting, to be something out of the ordinary. This year's will be on September 21, at the Cavalier Hall, when the lecturer is to be Dud Charman, G6CJ (except that he is described variously as "G3CJ" and "G6CL" in the *Verulam News Sheet* announcing this event!). He will be demonstrating his well-known model aerial farm, by which he is able to show what actually happens to the radiation off numerous different types of aerial. This is a most instructive and interesting lecture-demonstration, which should not be missed.

The latest issue of *QAV*, the newsletter of the **A.E.R.E., Harwell**, Amateur Radio Club, devotes a good deal of space to criticism of the "QRA Locator System," now adopted by the Region I VHF Committee as the European standard for the evaluation of distances in VHF contest working. We are entirely in agreement with the Harwell standpoint in this matter, and for the reasons they give, and some others as well, we have never thought it worth encouraging the adoption of the QRA Locator System; in fact, it has never caught on. Another interesting item in this issue of *QAV* is a penetrating comment by G5RP on the Harwell Group's recent NFD performance.

There you have it; it now remains for us to thank you for your letters and news-sheets, all of which are read from cover to cover, are thoroughly enjoyed, and also help us to spot any minor discrepancies about dates, times and places. Too many by far to acknowledge individually, but all appreciated, so please keep sending them.

The deadline for next month is September 16, so until then, may all your letters to prospective speakers prove exceedingly fruitful, and your programme better than ever.

SPECIALLY ON THE AIR

It is getting rather late in the year for specially organised outdoor events—nevertheless, we have a few more to notify.

G3PGU, September 3: On the air for a fête at Tiddington, near Stratford-on-Avon, organised by the Stratford-on-Avon group for the local branch of Toc H. Contacts welcomed with stations able to put in a strong AM or SSB signal. Hon. secretary: I. A. Cobbold, G3RPJ, 5 Avenue Road, Stratford-on-Avon, Warwickshire.

GB3ALT, September 7: At the Altrincham Show, put on by the South Manchester Radio Club, to operate all bands 10-160m., AM/SSB. Details from: W. M. Furness, G3SMM, 171 Woodhouse Lane East, Timperley, Altrincham, Cheshire.

G5PM, September 17: For the Royal Military Academy and Staff College Horse Show, operated by the R.M.A. Radio Club on all bands, with talk-in on 160/4/2m. Visitors welcome, for whom there will be sideshows, entertainment and refreshments. Details: M. Powell, Signals Wing, Royal Military Academy, Sandhurst, Camberley, Berks.

G3UNU, October 4: Nottingham University Radio Society will have a station on show at the Univ. Pre-Sessional Conference, operating on or near 3600 kc, 0900-1400z, with cards for all QSO's. Address for information, and about joining the Club: C. J. Doran, 89 Lennard Road, Penge, London, S.E.20.

"Short Wave Magazine" covers the whole field of Amateur Radio, has been established for nearly 30 years, is independent and unsubsidised, and circulates in 80 countries outside the U.K.

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.

E17BA, J. E. C. Tait, Glebe House, Inch, Whitegate, Co. Cork. (Tel. Cork 65322.)

G3USW, W. Clough, 32 Jackson Crescent, Rawmarsh, Rotherham, Yorkshire.

G3UXO, A. J. N. Eardley, c/o Medical Mess, Royal Naval Hospital, Plymouth, Devon.

G3UXP, R. K. While, 157 Lazy Hill, Kings Norton, Birmingham, 30.

GM3VCZ, A. McInnes, 39 Heathfield Road, Thurso, Caithness.

G3VFD, C. W. Westwood, 25 Knoll Road, Bexley, Kent. (Tel. Crayford 22803.)

G3VIN, R. Hewitt, 6 Kenmare Road, Wavertree, Liverpool, 15.

G3VKM, R. J. Basford, 74 Walcote Drive, West Bridgford, Nottingham. (Tel. Nottingham 232915.)

G3VKU, Mrs. D. Hollingsworth, 2 Thornsett Terrace, London, S.E.20.

G3VKV, G. H. S. Jones, 32 The Grove, Hales Road, Cheltenham, Glos.

G3VKX, S. F. Cummins, 18 Fitzalan Road, Harlescote Grange, Shrewsbury, Shropshire.

G3VLC, C. C. Hawkins, 14 Bishops Park Road, Norbury, London, S.W.16.

G3VLW, C. P. Martin, 27 Little Green Lane, Chertsey, Surrey.

G3VLX, D. Buckley, 234 Halfway Street, Sidcup, Kent.

G3VMC, T. L. Sadler, 17 Hoyland Close, Millhouse Green, Penistone, Sheffield, Yorkshire.

GM3VMG, J. Kirkwood, 31 Morton Road, Ayr, Ayrshire.

G3VMJ, J. Peters, 3 Lacey Street, Longhoughton, Alnwick, Northumberland.

G3VMO, G. E. Fenner, 80 Larkshall Crescent, Chingford, London, E.4. (Tel. SILverthorn 6613.)

G8APA, P. A. Simpson, 17 The Dene, Wylam, Northumberland. (Tel. Wylam 3302.)

G8APX, W. H. Jarvis, Valley Farm, Witnesham, Ipswich, Suffolk.

G8AQA, P. Nickalls, 174 Erith Road, Barnehurst, Bexleyheath, Kent. (Tel. Crayford 23344.)

G8AQL, C. E. Burr, 7 Wellburn Close, Ovingham, Northumberland. (Tel. Prudhoe 733.)

G8AQR, A. Crabb, 40 Darras Road, Ponteland, Newcastle-upon-Tyne. (Tel. Ponteland 2615.)

G8ARE, R. G. Powell, 8 Little Baldon Farm, Nuneham Courtenay, Oxford.

CHANGE OF ADDRESS

G2BSQ, R. Andrews, 76/78 Meadrow, Godalming, Surrey.

G2CPX, W. J. A. Carlton, 3 Vicarage Lane, Upper Hale, Farnham, Surrey.

G2FLC, L. A. Yaxley, Holmlea, High Common, Morley Lane, Wymondham, Norfolk.

G3ANJ, A. J. Wall, 13 Quineys Leys, Welford-on-Avon, Warks.

G3COV, G. B. Woffinden, 10 Mellstock Avenue, Dorchester, Dorset.

G3FPC, D. Stephenson, Crown Flats, Watling Street, Stretton, Staffs.

GW3IJU, E. Briggs (*ex-G3IJU*), 32 Dinam Road, Caergeiliog, Anglesey.

G3IUZ, H. R. Davis, 84 Tomswood Hill, Hainault, Ilford, Essex.

G3IZH, P. F. Hughes, 42 Gordon Road, Westwood, Margate, Kent.

G3IZU, D. Aveling, 9 Springcroft, Manor Drive, Hartley, Kent.

G3JCC, J. C. Cunningham, 41 Armthorpe Drive, Little Sutton, Wirral, Cheshire.

GM3JKC, C. Cooper, 28 Kippford Street, Glasgow, E.2.

G3JUZ, M. R. Dewar, (*ex-VS9AMD/DL2BH/SA1TP*), 16 Avon Road, R.A.F. Station, Abingdon, Berks.

G3KXT, R. I. Richardson, 50 Hayes Street, Hayes, Kent.

G3LPH, K. F. Moss, 29 Delaheys Road, Hale, Altrincham, Cheshire.

G3MFO, P. J. Elliot, 17 Weighton Road, Harrow Weald, Harrow, Middlesex. (Tel. Underhill 3551.)

G3MJK, J. C. Clinch, Hq. R.A.F. Germany, B.F.P.O. 40.

G3NAC, J. M. Hern, H.A.M.C., R.A.F. Station, Andover, Hants.

G3NXX, C. Waterman, 19 Wroths Path, Loughton, Essex.

G3NQO, V. T. Brown, 242 Little Waking Road, Waking, Essex.

GW3OIN, J. G. Nicholas, No. 2 Police House, Hanmer, Flintshire.

G3PXT, Norfolk Amateur Radio Club, Old Lakenham Hall, Mansfield Lane, Norwich, Norfolk.

G3RJH, R. J. Harding, 60 Wychall Park Grove, Kings Norton, Birmingham, 30.

G3RRN, Dr. K. E. Jones, 4 The Oval, Bicton, Shrewsbury, Salop.

G3RUS, L. Beaumont, (*ex-VS9ALB*), Royal Signals, c/o Officers' Mess, 24th Signal Regiment, Catterick Camp, Yorkshire.

G3SBT, R. E. Snell, 64 Westway, Raynes Park, London, S.W.20.

G3TMU, C. A. Neale, 32 Oxford Road, Farnborough, Hants.

G3TOA, J. Otter, 20 Tower Avenue, Lincoln.

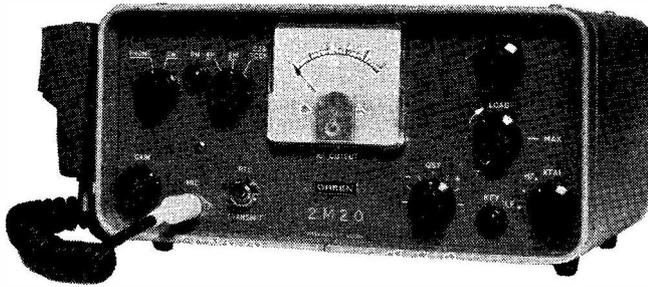
GD3TOH, C. P. Ford (*ex-G13TOH*), Kesaby, Fistard, Port St. Mary, Isle of Man.

G3TZV, P. Fry, c/o 57 Swann Lane, Chedale Hulme, Stockport, Cheshire.

G3UFB, N. G. Brinkworth, 8 Gloucester Road, Stonehouse, Glos.

G3UGH, J. K. McHugh, 97 Foxcroft Drive, Hayes Lane, Wimborne Minster, Dorset.

G3UOV, M. B. Beck, 11 Orde Close, Pound Hill, Crawley, Sussex. (Tel. Pound Hill 3075.)



**WHY BUY ONE BAND VHF EQUIPMENT?
THINK about a 2M-TWENTY**

2M20 is a 50 watt, 2m. TX for fixed, mobile, portable, phone/CW. Extremely versatile with 4m., 70cm. and 23cm. operation at little extra cost. Think about wanting now or at a later date, to operate on other VHF-UHF Bands at very little extra cost. The new lower priced CTX-4 and CTR-70 for 4 metre and 70cm. connect to the 2M20. Band switch on 2M20 to the appropriate band and you save the cost of three extra transmitters, i.e. CTX-4, CTR-70 and CTR-23 make automatic use of the 2M20's big power supply and transistor modulator. **WHY BUY A TRANSMITTER THAT LIMITS YOUR OPERATING TO ONE VHF BAND?**

WE ARE NOW DELIVERING COMPLETE 70 cm FIXED E/P STATIONS

SOMMERKAMP IN STOCK (Super SSB)
Ph/Write—coloured Brochure

GREEN ELECTRONIC & COMMUNICATION EQUIPMENT LTD

79-91 BRAEMAR ROAD LONDON N.15

TEL.: STA 1387

DISTRIBUTORS: G W. Smith & Co. Ltd., Chas. H. Young Ltd., J. & A. Tweedy Ltd., Peter Seymour Ltd., Taurus Electrical, James-Stephens Ltd.

SECOND GENERATION

70 cm. Mk. FIVE Converter

Many of these Converters are now in use and we feel so strongly that each and every 70-cm. enthusiast, past and present, should have an opportunity of proving that this Converter IS BETTER THAN ANY OTHER AVAILABLE—we are offering £5 for your old Converter, whatever make, in part exchange. We make no ridiculous claims for noise factor or ex-stock delivery for any I.F. but simply: this Converter's gain, noise factor and general performance is better than that at present available. £5 P.X. offer until end of Exhibition. Latest full specification on request. Delivery of a few I.F.'s is about 7 days, but any I.F. can be supplied within 21 days. A few are available from stock, telephone to confirm and collect from us here at the Works. I.F.'s in stock: 30-34, 24-26, 12-16 Mc/s.

2 metre and 4 metre Mk. FIVE solid-state Converters are also of second generation design and construction (introduced August '66).

LA-600 Linear, maximum input. Spec. as before, but inc. 160m. Price: £85. Avoid extended deliv. Enquire now.
Mk. 3 CTR-70-30w., 70 cm. Trip, £18, for use with CTX-2 or 2M20.

5RV MULTI-BAND DIPOLE

(by kind permission of GSRV)

Efficient on 160-10 metres. Senior version 102 ft. long, £6 18s., complete with 94-ft. feeder, 72 ohm. Junior version 51 ft. long, complete with 77-ft. feeder, 72 ohm. Carriage 6/-.

3-30 Mc/s SWR Indicator, 50-72 ohm, £6 18s. 450 Mc/s version available soon. Both have phone Monitor and 1 KW rating.

Two-tone oscillator for SSB Transmitters and Transceivers. On convenient printed board. Write for descriptive literature. Price £3 18s. 6-3v. A.C. operation.

Now available from stock:

SWAN 350 SIDEBAND TRANSCEIVERS
£250. Deposit only £38.

N. W. ELECTRICS
G3MAX

MECHANICAL FILTERS. 455 Kc/s. 2-4 Kc/s. or 3-4 Kc/s. approx. bandwidth at 6 dB points, £9/5/- . Small type as used in the HA350. £9/19/6. All post paid.

72 and 300 ohm ribbon feeder, Flexible Conductors. 72 ohm, 80 watt, 200 Mc/s. Coax. All 6d. per yard. Post 2/- any length.
75 ohm Super Aerial Coax 300W, 200 Mc/s. 20 yds., £1; 40 yds., 37/6; 60 yds., 55/- . Post and packing 2/6 any length.

12v. TRANSISTOR P.S.U. 220 or 300v. 100 mA output, silicon bridge rectifier, choke/capacitor smoothing, £8/19/6, p.p. 3/6. (Can be supplied for negative earth.)

LOG BOOKS, 7/-, post paid.

OCI71 (CV7089), 3/6, post paid.

PCR RECEIVER VIBRATOR POWER UNIT. New, with 12 volt supply lead and plug, 25/-, post paid.

Range of Aluminium Chassis 2½" high. S.A.E. for list.

Morse Keys, American Type J37, lead and jack plug, 5/-, p.p. 1/6.

807 moulded valve holders, 6/- per doz., post paid.

0.002 and 0.01 µF metalite 1,000 volt, 6/- doz., post paid.

AF116 and 117 Mullard transistors, 4/- each, post paid.

Low resistance phones, 7/6, p.p. 2/-.

Noise Limiter Kit for TCS receiver, store soiled, 5/-, post paid.

HRO, AR88D and AR88 LF. S.A.E. for lists of spares.

HIGH to LOW Impedance Phone adaptor, 3/- each, post paid.

HALSON MOBILE AERIALS, £6/10/-, post paid.

T.W. EQUIPMENT AVAILABLE

Range of STANDARDS and H.F. XTALS available

EDDYSTONE RECEIVERS AND COMPONENTS, CODAR, DENCO, REPANCO, etc. We welcome all enquiries however small

Stamped addressed envelope please

52 GT. ANCOATS STREET
MANCHESTER 4
CENTral 6276

JXK CONVERTERS

TRANSISTOR EQUIPMENT

- 100/1000 kc. Crystal Marker. 4 transistors ... £8
- VHF Noise Generator. IN21 UHF silicon diode... £5
- S.W.R. Indicator/Modulation Monitor/RF Output Meter. 50-450 mc. Trough line construction. Matched GEX66 UHF diodes. 75 ohms ... £6
- Speech Compressor. 5 transistors and 3 diodes. AC107 low noise emitter follower input. Adjustable compression ... £6
- 2m. Preamplifier. 2 x Texas GM290 in grounded base cascade. 3 tuned circuits. 3 dB NF. 25 dB gain. Copper screening ... £6
- 70cm. Preamplifier. 2 x GM290 in grounded base cascade. 3 silver plated striplines. 4.5 dB NF. 25 dB gain. Copper screening ... £7
- 4m. Converter. 2 x GM290 grounded base cascade. GM290 mixer. 2.5 dB NF. 35 dB gain. Copper construction. IF's 2.1/2.7, 4.1/4.7, 13.1/13.7, 20.1/20.7 mc. ... £12
- 2m. Converter. 2 x GM290 grounded base cascade. GM290 mixer. 3 dB NF. 35 dB gain. Copper construction. IF's 1.8/3.8, 4/6, 12/14, 20/22, 21/23, 24/26, 27/29, 28/30 mc. ... £12
- 70cm. Converter. 2 x GM290 in grounded base cascade. GM290 grounded base mixer. 4.5 dB NF. 35 dB gain. Copper construction. IF's 12/14, 18.67/20.67, 24/26, 27/29, 28/30 mc. ... £14

All units are mounted in 14 s.w.g. aluminium instrument cases, size 4½" x 2½" x 1½", in silver grey, hammer finish with white engraving. Batteries are supplied.

Please add 3/9 post and packing PER ITEM. S.A.E. for further details.

Texas GM290 UHF transistors, 19/6. GEX66 UHF diodes, 7/6. 2C39A, £4. Finger-stock bases, 15/-.

JXK CONVERTERS (G3JXK)
PEEL HOUSE, PORTERS LANE, OSPRINGE,
FAVERSHAM, KENT

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, London, S.W.1.

SITUATIONS VACANT

YOUNG and Enthusiastic Trouble Shooters wanted immediately by **EAGLE**. Good prospects. Write or phone—Rex Toby, G2CDN, 32A Coptic Street, London, W.C.1. (MUSEum 9606.)

TRADE

70-CENTIMETRE Cavity Converter, as “RSGB Handbook,” £5. Wavemeter for 70 cm., 420-450 mc, £4. Transistor 12v. to 300v. PSU, £3. PSU, 19in., 250v. 75 mA. 30s. Transformer 1200-0-1200v., 150 mA, 25s.; 500-0-500v. transformer, 25s. Assorted power chokes, 10s. each. Modulator, 10-watt, with three inputs and xtal mic., £7. TV camera case, with scan coils on focussing mount, with lens turret, £20. Heavy-duty tripod, with pan and tilt head, £6. Studio Staticon, no blemishes, as new, £25. Wide-angle lens, F1.3, £30. Six assorted meters, £3. Two 40-watt PA Amplifiers, £5 each. SWR Bridge for VHF, £2. One thousand assorted high-stab. resistors, 20s. TV Tube, 19in., perfect, £5. 17in. ditto, 50s. PSU, 24v. at 5A, 25s. Mullard 4in. by 1½in. CR tube, 30s. Also many other small items.—Hearsey, 2 Primrose Hill, Oadby (5768), Leicester.

FIVE-TON FACTORY CLEARANCE: RADIO, TV AND ELECTRICAL COMPONENTS IN MIXED PARCELS. EXAMPLE: 22lb. MIXED PARCEL, £1 PLUS 7s. 6d. POST/PACKING — SPEAKERS, GRILLES, VALVE BASES, COVERS, CONDENSERS, ETC., HUNDRED OTHER ITEMS. — POSTAL ORDERS AND S.A.E. FOR LIST TO: P. NEWTON, 16 SHALLCROSS CRESCENT, HATFIELD, HERTS.

QSL Cards and Log books, GPO approved, cheapest and best. Prompt delivery. Samples from:—Atkinson Bros., Printers, Looe, Cornwall.

GOVERNMENT Surplus Electrical and Radio Equipment. Our new catalogue No. 16 ready now, 2s. 6d. post free. Cost refunded on first purchase of goods over £2 value.—Arthur Sallis Radio Control, Ltd., 93 North Road, Brighton, Sussex.

COMMUNICATION Receivers Required. FOR SALE: Eddystone EC-10 receiver, £38. Eddystone S.740, £15. HROMS complete, £20. Codar PR-30X Preselector, £5. Available: New Honda generators. Write or call. — Moean Electronics, Westbury Road, Cheltenham (24217), Glos.

ANNOUNCING That The Universal Z-Match Co., Ltd., will have the 150-watt Z-Match Unit available for immediate delivery as from September 14. Other models forward in another 14 days. A large range of colours can be supplied to special order; send us your sample colour.—Universal Z-Match Co., Ltd., 18 Queen's Road, Fareham, Hants.

INTERESTING! Television tuners, UHF, complete with PC86 and PC88 valves, 32s. 6d. Skeleton pre-sets, 20K, 50K or 250K, 10s. dozen. Linear pre-sets, 25K or 50K, 1s. 6d. each. T.C.C. 0.1 mF 500v. condensers, 6s. dozen. Silver micas, 56 mmF or 220 mmF, 5s. dozen. Concentric potentiometers, 1 meg. log/1 meg. inverse log., 5s. each. GJ6M rectifiers, 150v. p.i.v., 1 amp., 2s. 3d. each, or four for 7s. 6d. UHF receiver front ends, designed for 4/EC88, 3/EF91, 2/E88CC for double (10.7 mc) or triple conversion (455 kc) outputs, less valves and crystal oven, 22s. 6d. All items brand new. On orders below 20s., add 2s. for post/packing. — Radiomatics, 140 Oak Street, Norwich, Norfolk, NOR.83K. (Tel. Norwich 22390.)



TELECOM MK. II

Pocket size. V.H.F. 118-136 Mc/s

AIRCRAFT-BAND TRANSISTOR RECEIVER

complete with telescopic aerial, loud-speaker and battery

£26 . 0 . 0
carr. paid in U.K.

BRITEC LIMITED
17 Charing Cross Road
London, WC2. WHITEhall 3070

HAMMERITE HAMMER PATTERN BRUSH PAINT FOR PANELS, METALWORK, ETC.

3/6 TIN ● JUST BRUSH ON ●

COLOURS: blue, silver, black, or bronze.
2½oz. tins, 3/6. ½ pint, 7/6. 1 pint, 15/-. ½ gallon, 35/-. * 1 gallon 58/-. *
Carr. up to 5/-. 9d., up to 10/-. 1/9, over 10/-. 2/9. *Sent by road.
No order too large or too small. All receive prompt attention. **HAMMERITE** produces the cellular pattern known as hammer finish. Just brush on, dries in 20 minutes, withstands 150 C, oil, water etc. Ideal for prototypes, overhauls etc. Economical to use, easily applied by unskilled labour to any size job, covers 40 sq. ft. per pint, no primer needed.

RETURN OF POST SERVICE, Monday to Friday.
From your component shop or direct from manufacturers:
FINNIGAN SPECIALITY PAINTS (SW)
MICKLEY SQUARE, STOCKSFIELD, NORTHUMBERLAND
Tel.: Stocksfield 2280

THE Radio Constructor

The September issue, ON SALE NOW, features

VHF/FM FEEDER UNIT

By V. E. Holley

Many other constructional articles

From your newsagent 2s. 6d. per copy

or 3s. post paid from :

DATA PUBLICATIONS LTD., 57 MAIDA VALE, LONDON, W.9.

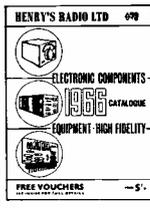
QUARTZ CRYSTALS

- 100 Kc/s. R.C.A. ... 15/-
- 500 Kc/s. 10X ... 15/-
- 100 + 1000 Kc/s. ... 22/6
- 1000 Kc/s. HC/6U ... 25/-
- 27-255 Kc/s. HC/6U 15/-

NEW 1966
16 Page Illustrated
List of Valves, Transistors, Crystals, Rectifiers, Zeners, etc. 1/- Post Paid.

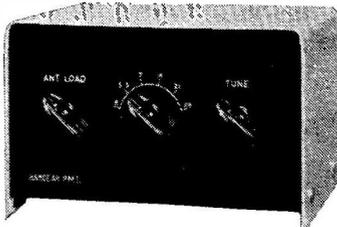
CATALOGUE

NEW 150 PAGE fully illustrated CATALOGUE
6/- post paid
With discount vouchers worth 6/- when used



HENRY'S RADIO Ltd. PAD 1008/9
303 EDGWARE ROAD, LONDON, W.2 Mon.-Sat. 9-6 p.m.
Thurs. 9-1 p.m.

NEW STYLE PRESELECTOR



Giving 25 DBS gain over 1.8/32 Mc/s. A pentode amplifier with a built-in Pi tank antenna tuner. Two units in one, self powered. Will make the most of any antenna, only

£6. 18. 0

S.A.E. for details

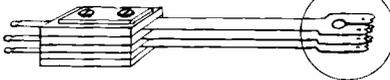
HAMGEAR ELECTRONICS
29 CARLYLE ROAD, NORWICH.

WANTED

THIS TYPE OF RELAY CONTACT

112 GROBY ROAD
GLENFIELD,
LEICESTER

Send S.A.E.
for details



RELAY CONTACT SPRINGS

QUARTZ CRYSTAL UNITS

Hermetically sealed, Gold or Silver Electroded Crystals, post free at the following prices:

each
Fundamental 3 Mc/s. to 15 Mc/s. at £1 5s. 0d.
Fundamental 15 Mc/s. to 20 Mc/s. at £1 10s. 0d.
Overtone 20 Mc/s. to 30 Mc/s. at £1 10s. 0d.
State holder type preferred—HC-6/U or FT243

PROFESSIONALLY MADE FOR THE AMATEUR

Other frequencies available on request. Send cash with order stating your exact requirements.

These crystals are made to your order and are not Government surplus stock.

CATHODEON CRYSTALS LTD. Linton, Cambridge

READERS' ADVERTISEMENTS

3d. per word, min. charge 5/-. payable with order. Add 25% for Bold Face (Heavy Type). 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, London, S.W.1.

MASTS: Tubular 2in. dural, forty lengths 4ft. 8in., with mating ends, to make up to four 45ft. masts. £5 per ten lengths.—O'Connor, 4 Clandon Road, Guildford (2682, after 6.0 p.m.), Surrey.

BY-100 Silicon Rectifiers, bargain price 4s. each, any quantity. Also OC-71 transistors, 3s. 6d. All post paid.—Beasley, G3LNS, 219 Moseley Road, Birmingham, 12.

WANTED: Cheap as possible, T.W. Topband Mobile Receiver, also FIF mobile whip for 160m.; price and condition, please. **FOR SALE:** Command Rx for 160m., self-powered from 12v., including transistor output stage giving two watts (can be used separately), £10. Eddystone 556 receiver, front-end only, in case, with miniature valves, incl. two RF stages with 465 kc output, needs alignment, £7 10s. Two 6v. 42 amp-hour steel cased accumulators, as new, £4. Transformer 2,200v. CT 650 mA, with matching choke, 50s. Modulator, 250-watt, xtal mic. input, with valves and meter, but less PSU, TZ-40's in output, £10. Or The Lot for £30. All items "or near offer." Buyer collects or postage extra.—G3PWU. QTHR. (Or ring Reading 83523. evenings.)

FOR SALE: Dawe Pulse Generator, £12. Marconi BFO, £3. Battery Charger, 6/12v., 6 amp., £3. Cine Editor, £5. All items "or near offer."—Keeping, 11 Falcon Close, Langley Green, Crawley, Sussex.

WANTED: Three-band Cubical Quad, also suitable rotator and remote indicator.—Details, condition and price asked: Lord, G3PHN, Newfield House, Moira, Burton-on-Trent, Staffs. (Tel. Swadlincote 7537.)

SALE: Geloso receiver 64/214, £70. Geloso VFO 4/102V, with PA coil, £4 10s. Minimitter PA stage, using two 807's, £5 10s. HRO cabinet and some spare parts. Offers for all items. Also many other pieces for sale.—Barker, 82 Main Street, Balderton, Newark, Notts.

SELLING: T.W. two-metre nuvistor converter, IF 4.5 to 6.5 mc. Offers?—Box No. 4354, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Labgear wide-band multiplier unit suitable for 5763's. **SALE:** HRO S-meter, five coils, £8. AR88LF in cabinet, some IF's missing, ideal for spares, first £10 secures. All letters answered.—Box No. 4353, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: T.W. Communicator 160m. Transceiver, practically brand new, with G3FIF mobile antenna, microphone, cables, etc., complete mobile station, vy FB, price £50. Three only: Klaxon slow-rev. motors, adjustable up to 30 r.p.m., ideal as light aerial rotator, 40s. each. Clearing out over 150 modern valves, 40s. the lot.—Clarke, G3LST, 30 Tomlyns Close, Hutton, Essex.

STAR SR.550 Communication Receivers, brand new and unused, in maker's sealed cartons, two only at £53 5s. each (listed at £61).—Avill, G3TPX, 7 Moorland Crescent, Staincross, Barnsley, Yorkshire.

FOR SALE: Transmitter, home constructed, 60-watt for 10 to 80 metres, £12. Eddystone S.640 Rx, £15. Heathkit GDO, factory built, £10. Electric drill, 5/16th in., £5. Test meter, £2. Low-pass filter, 30s.—Smith, 19 Osborne Terrace, Luddenden Foot, Halifax, Yorkshire.

OFFERING: Transistors AUY-10, 25s.; BY-100, 4s.; BY-124, 2s. 9d.; OC-26 (unmarked), 5s.; OC-35, 7s. 6d. Zener diodes, 1.5 amp., all voltages up to 40v., 4s. 813 Valves, 30s. 807 bases, 1s. 3d. All items plus postage, s.a.e. for full list.—Hatley, 2 Fitzgerald Avenue, Seaford, Sussex.

SMALL ADVERTISEMENTS, READERS—continued

SALE: Postal Course for the R.A.E., including "Radio Amateurs' Examination Manual" and specimen question papers, price £5. **WANTED:** Suitable Morse Course, disc or tape.—Westwood, 6 Ogwen Drive, Cardiff, Glam., South Wales.

SELLING: An entire two-metre rig, consisting 25-watt AM Tx, small mod. for CW, with 4/4 slotted beam, two-valve two-nuvistor Converter, 12v., tuning 28 to 30 mc IF, less PSU, with 28ft. of 2in. all tubing, including rotary nylon bush and coax feeder, spare QQV03-20A PA valve, and 145.2 mc xtal, the lot for £22, or near offer. Rig can be seen operating. Buyer collects.—Targett, G3NUP, 1 Rectory Terrace, Pulham Market, Diss, Norfolk.

WANTED: For going mobile, a KW-2000. **SALE:** Eddystone EA-12, immaculate, price £145. Prefer buyer inspects and collects (Midlands area).—Box No. 4356, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Codar CR-66S receiver, with matching speaker cabinet, £16 or near offer?—Hardy, 522 Halifax Road, Bradford, 6, Yorkshire.

SELLING: B.46 Rx with PSU, coverage 1.5 to 15 mc. Rather an unique receiver, this, worth an s.a.e. for details. Also a Minimitter converter, amateur and BC-band version. Offers for either.—Latimer, 36 Fife Street, Barrow-in-Furness, Lancs.

EDDYSTONE 840C For Sale, new this year, little used, owner emigrating, price £45.—Parsons, Penfold House, Great Billing, Northampton. (Tel. Cogenhoe 239.)

HAVING Passed R.A.E., wish to dispose of Course; about twelve months old, cost £12. Best offer.—Box No. 4355, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SAILING AWAY Soon and cannot take following: National NC2-40, octal valves, internal coils, with PSU, price £25. Heathkit RA-1 receiver, never used, £30. Creed 7D teleprinter, 230v. AC T.U., with PSU, £10. New Pye 25w. 4m. and 2m. units, with four xtals, £35 pair. G. & D. 4-metre converter, £5. Transistor converter for two metres, 50s. Pye Ranger, transistorised 4-metre mobile, price 50s. Commercial 5in. 'scope, 110v. AC, price £5. Signal Generator, AM/FM. Sweep, 110v. AC, £5. Crystal calibrator, 1 mc xtal, 10/100 kc points, as new, 30s. All items of commercial manufacture. Will haggle, prices at your risk. (Surrey area).—Box No. 4357, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: AR88D receiver, with manual, spare valves and cabinet speaker, also aerial tuning unit, 30ft. sectional steel mast, aerial wire and spare speaker. The lot for £35, buyer collects (Essex area).—Box No. 4358, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED URGENTLY: Valves type 832, QQV06-40A, QQV03-20A, and 4X150A. Please state condition and price.—Wadsworth, G3NPF, 130 Ashingdon Road, Rochford, Essex.

SALE: Valves, unused Acorns type 954, 1s. 6d. each, or 15s. a doz.; 1625, 4s. each, 36s. doz.; 6B8G, ML6, 1s. each. Many other types, list free.—Box No. 4306, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Heath Apache and SB-10U, in excellent condition. 150-175w. CW/AM/SSB, £100. Laboratory built QRO AM modulator, 19-in. standard panel, £15. Mosley V-4-6 vertical, £4. Free delivery in London area.—Box No. 4359, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

EXCHANGE: New 12x50 binoculars, worth £25, plus £10 cash, for AR88D or similar Rx.—Critchley, G3VKG, 42 St. Davids Road, Lytham St. Annes, Lancs.

FOR SALE: KW-2000, with AC/PSU, in mint condition, price £150. KW-600 Linear Amplifier, 500 watts p.e.p., mint, £80.—Tucker, G3FTA, 4 St. Margarets Road, St. Leonards-on-Sea, Sussex.

hallicrafters

25% OFF LIST PRICE!

Limited quantity only, so HURRY !!

SX-117 Triple Conversion Receivers—129 gns. (List price £178).

Brand new, just flown in from Chicago. Incl. Xtal calibrator, variable 'T'-notch filter, i.f. noise limiter, 1 kc. readout.

Don't miss this opportunity to acquire one of the finest ham band receivers ever produced.

IN STOCK

at time of going to press

New SX-146, ham band rx £118
HT-46 SSB/CW tx £160

Accessories in stock:

100 kc. Xtal calibrator
500 c/s CW filter for rx
Vox unit for tx

Send for leaflets to:

COURIER COMMUNICATIONS
182, Pentonville Road
London, N.1

Telephone: 01-BRU 6358

(All items carriage extra)

G3ZY

G3ZY

J. & A. TWEEDY (Electronic Supplies) Ltd.

Appointed Dealer and Stockist

Eddystone, KW Electronics, Green, Codar, Eagle, etc.
J.D. Products (Chesterfield) Transistorised Equipment

SOMMERKAMP SSB EQUIPMENT

NEW
KW 2000 £173, AC PSU £32
DC PSU £32
KW 2000A £195, AC PSU £40
DC PSU £40
KW 600 linear £115
KW Vespa £110, AC PSU £25
Eddystone Edometer £19 10s.
Eddystone EA12 £185
Eddystone EC10 £48
Eddystone 840C £66

Starr SR550 ham band D.Shet
58 gns.
TR10 JR60U G.C. and B.S.
includes
144 mc/s 59 gns.
Lafayette HA350 75 gns.
Lafayette HA63A 24 gns.

USED EQUIPMENT
Heathkit RG 1 £30
Olympic 1100 X £55
KW77 as new £87 10s.
KW Viceroy with extra ½
Lattice Filter £100
Olympic T150 £65
"TW" Two Metre Transmitters,
Receivers and Converters in
excellent condition.

Ex. W.D.
Class D Wavemeters 78/9 plus
7/6 carr.
No. 10 Calibrators 4£ 4s. plus
4/6 carr.
Transistors (post free)
AC126, AC127, AC128 (OC75),
29374b, S187, S19T 2/- ea.,
OC44, OC45 2/6 ea.; OC81,
OC81B, OC82, OC82D 2/3 ea.,
AF118, AF119, OC169, OC170,
OC172, OC71, OC72 3/-;
AF117 3/3; AF115, AF116 3/6;
AF114, AF171 4/-; OC26 7/-;
OC35, OC38 15/-; AD140 11/-

RECTIFIERS

Westinghouse 1000V PIV 250V
½ amp. 6/-
BTH 69J3 70V 1 amp. 3/- ea.
Valveholders (postage 1/-)
7G McMurdo with skirts 6d. ea.
(5/- doz.)
O low loss ceramic 6d. ea.
(5/- doz.)

MICROPHONES

KO5 MIC45 18/-, post free
Eagle 100C 32/6, postage 1/-
Eagle dynamic DM614 (50K) 32/6,
postage 1/-
Codar preselectors, etc., in stock.

H.P. TERMS AVAILABLE

TRADE-INS WELCOMED

64, LORDSMILL STREET, CHESTERFIELD, DERBYSHIRE

Tel Chesterfield 4982 or Holmewood 506 (evenings)

SHORT WAVE (HULL)

GSGX

Second-hand

	£	s.	d.
AR88D. 550 kcs.-32 mcs., clean condition ...	33	0	0
HRO SENIOR. 5 coils, psu, clean inside and out ...	20	0	0
HALLCRAFTERS SX23. 540 kcs.-34 mcs., bandspread on amateur bands. Xtal filter, good condition ...	17	0	0
LINEARAMP. 4 6HF5's, built-in psu, 500w pep, constructed by G3MWV. Clean and well made ...	38	0	0
EDDYSTONE 840C. Excellent condition. 550 kcs. to 30 mcs. ...	42	0	0
FT 241 XTALS. Channels 1-15, 17, 20-24, 67, 71, 73, 76, 77, 79, Singles of 273, 275, 276, 280, 309, 351, 352, 369, 370, 371 ...	4	0	0

New Equipment

STAR SR550. 1-8 to 54 mcs., 7 bands, double conversion, product detector, Xtal Calibrator ...	61	19	0
EDDYSTONE EB 35. Transistorised, VHF/FM, Long, Medium and Short ...	59	7	6
EDDYSTONE 840C ...	66	0	0
EDDYSTONE 940 ...	133	0	0
EDDYSTONE EC 10. Transistor receiver ...	48	0	0
EDDYSTONE EA 12. Amateur bands receiver ...	185	0	0

Professional type Receivers (to order only)

EDDYSTONE 850/4. 10 kcs.-600 kcs. in 6 bands. Audio filter, 2 Xtal filters, AC mains 100/125 and 200/250volts, 40/60cycles version ...	220	0	0
EDDYSTONE 770R/11. 19-165 mcs., 20 valves, rack or table version ...	231	0	0
EDDYSTONE 830/7. 300 kcs.-30 mcs. in 9 bands, CW/AM/SSB. Selectivity continuously variable, separate detector for SSB, Xtal filter for CW. Single conversion up to 1.5 mcs. and double above 1.5 mcs. 5 meter ...	275	0	0
EDDYSTONE 770U/11. 150-500 mcs. in 6 bands. AM/FM. Double conversion ...	330	0	0
EDDYSTONE 990S. Fully transistorised single conversion, AM/FM, 230-870 mcs. 12 volt DC from inbuilt AC mains or dry cells or Accumulator ...	345	0	0
EDDYSTONE 880/2. 400 kcs.-30.5 mcs. in 30 bands. AM/CW/SSB. First Osc. is Xtal controlled. Xtal Cal., 3 Xtal filters available, IF selectivity variable ...	580	0	0
PANORAMIC UNITS. Eddystone ...	195	0	0

Carriage extra on all the above

£65 allowed on your Eddystone 888A against a new EA 12 Radio Control gear by Grundig, REP, MacGregor, O.S., etc. Models by Keil, Veron, Frog, Graupner, Ripmax, etc.

Wanted—your modern receivers, SSB gear, etc.

24a NEWLAND AVENUE, HULL

Telephone: 408953

Due to excessive demand the SUMMER

"CALLBOOK"

was sold out in record time . . .
three weeks . . . !

We are now taking orders for the
AUTUMN Edition, available end of
September

Ensure your copy by ordering early !

Known the world over as the CALLBOOK, this comprehensive reference lists over 268,000 licensed radio amateurs in the United States directory and more than 120,000 in the DX directory. And . . . the listings grow with every issue ! Over 35,000 changes are made in each quarterly issue of the United States directory alone. Each issue is an entirely new book with revised listings to new licenses, names and addresses. Every amateur operator needs the latest CALL-BOOK for top enjoyment of his rig.

DX Listings 31/6 US Listings 50/-
The two together, covering the world £3/17/6

Available from

SHORT WAVE MAGAZINE

Publications Dept., 55 Victoria St., London, S.W.1
Abbey 5341

SMALL ADVERTISEMENTS, READERS—continued

EXCHANGE: HRO, with coils for amateur bands, 10/40m. bandsread, with PSU, set spare valves and manufacturers' manual FOR Signal Generator or Tape Deck of similar value.—Smith, 46 Cow Heys, Dalton, Huddersfield (32280), Yorkshire. (Ring after 7.0 p.m.).

FOR SALE: Home-built all-band 60w. CW Tx, with Geloso VFO into 6146 PA, separate PSU giving 400v. 500 mA and 350v. 350 mA, efficiency 75%, price £15. Modulator, 25-watt, £2. Mosley V-4-6 vertical. £8. G4ZU 3-ele beam, £8, or near offer. Buyer collects.—Ring Mitcham 2592.

WANTED: Information on any modifications, or converters, for R.1155 receiver. Reasonable expenses refunded.—Box No. 4360, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Late model Hallicrafters SX-100. Also R.216 with PSU.—Beard, Orchard Close, Spring Hill, Nailsworth, Glos.

SALE: Panda Cub Tx, in good condition, £25. Buyer to collect, or would deliver locally.—Fletcher, G3TVM, 10 Cedar Walk, Bottisham (270), Cambs.

SELLING: Sphinx SSB Tx, in mint condition, £65 or near offer. Also an R.C.A. AR88LF, a good one, for £30. Going transeiver. — Edwards, G3RJE, 5 Powys Walk, Hereford.

ACCOMMODATION Wanted: Licensed amateur, now mature student (over 30), requires board and lodging for term-time in Grantham/Colsterworth area. Any offer of accommodation welcome, particularly from amateur or SWL who would like a station at home QTH and/or help for R.A.E.—Box No. 4361, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Mosley TA-33Jr. beam, or similar. State price and condition.—Fantham, G3TGL, 52 Calverley Road, Birmingham, 30.

WANTED: Top Band coil pack for Eddystone 358X receiver. **SALE:** Because of XYL trouble, eight 12ft. bamboo poles for 10-15m. Quad, 40s. TA-31Jr., radiator of TA-33, £4.—G300Q, QTHR.

SELLING UP: R.C.A. AR88D. with S-meter, phones, speaker and manual, £36. Five-band CW Tx, VFO and 2/807 PA, with 70w. PSU, reflectometer and change-over relays, £8. Crystal Calibrator, 100 kc and harmonics, 30s. Transformers: Mains input, 440-0-440v. 170 mA, 5v. 6A., 6.5v. 20A., oil filled, 40s.; 250-0-250v. 60 mA., 0-4-5v. 2.5A., 0-4-6.3v. 4A., 10s. PSU's: 250v. DC, 150v. stab., 80 mA., 4-5-6.3v. twice, 30s.; 12-15-20-24-30v. 2A. DC, 20s. Components for Minimitter 160m. Tx, 50s. Xtal microphone, new, 20s. Meters: 0.5 amp RF, 50 mA, 100 mA, 300 mA, DC, 7s. 6d.; 50 microamp. DC miniature, new, 20s. Jackson variables, 75 mmF split-stator, 10s. Air trimmers, 50 mmF, 3s. 6d. each. RSGB "Amateur Radio Handbook", 1963 Edn., 20s. "Short Wave Magazine" Vols. XX, XXI, XXII, XXIII, 12s. 6d. each. Send s.a.e. for sundries; carriage extra.—McCole, GM3SQI, 204 Copland Road, Glasgow.

SALE: Valves 813's, 807's, 805's, 6BA7's, and hosts of others; also small oscilloscope; remote control gear for mobile; plugs, switches, Acos mic., "Short Wave Magazine" copies—all going for an old song.—Cole, El Cid, The Green, Pitton, Nr. Salisbury, Wilts.

FOR SALE: Eddystone S.640 Rx, in very good condition, with panel handles, slope blocks, voltage regulator, separate Q-multiplier. All reasonable offers considered.—Jones, G3RRN, New Lanark, 4 The Oval, Bicton, Nr. Shrewsbury, Shropshire.

WANTED: A transmitter suitable for all bands Top to Ten. CW and AM essential, and SSB if possible. Must be stable enough for RTTY, and TVI-proof. Appearance unimportant. W.H.Y.? Price and full details.—Morton, 12 Stuart Street, Millport, Isle of Cumbrae, Buteshire, Scotland.

WANTED Urgently: American receiver Type BC-1147, 1.5 to 30 mc. — Runciman, 24 Oakleigh Avenue, Bolton, Lancs.

SMALL ADVERTISEMENTS, READERS—continued

SELLING: Collins mechanical filter Type F455-H31, 3.1 kc bandwidth, new and unused, £10. AVO Model 7, price £8 10s. 4X150D, 15s.—Heys, G3BDQ, 418 The Ridge, St. Leonards-on-Sea, Sussex.

WANTED: By CW-only enthusiast, transmitter for 10 to 80 metres, 100 watts minimum, TVI-proof essential. — Box No. 4362, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Valves, 813, 15s.; pair new TZ40's, 20s. Type 1985 two-metre Tx/Rx, £4 plus 15s. carriage. General Radio rack-mounting BFO, 0-40 kc and 40 kc to 5 mc, bit rough but frequency-determining components as new, with output meter, for 230v. AC. £2 plus 15s. carriage. GCRE high-speed bridge, Type T13D/1, 3 meters, etc., £5 plus 15s. carriage. Three units on 7-in. rack mountings, in poly blue, new components throughout: DL6EQ T.U. with CRT monitor, less toroids and 3BP1; PSU giving 110v. DC 1A, 24v. DC 5A., 250v. DC 100 mA, 6.3v. AC; PSU, 50/250v. DC var. stab., neg-pos 300v. DC 100 mA, -2000v. 2 mA, 4v./6.3v. AC, fully metered, with all plugs and cables, £10 the lot, plus 30s. carriage. —Spence, School of Physics, The University, Newcastle-upon-Tyne, 1, Northumberland.

SELLING: Mint Codar A.T.5, with home-built PSU, £17 10s. Two-metre table-top Tx, 25-watt, QQV03-20A PA, with push-pull 6V6 modulator and PSU, price £11 plus carriage. New and unused Kokusai filter, Type MF455K-10, £7 10s. Panadaptor, 455 kc, 2-in. screen, for 115v. AC, in excellent condition, price £18 10s.—G3NMY, QTHR. Ring Cromer 2664 day, 2410 evenings.

FOR SALE: KW-160, in perfect condition, £17 or near offer. (The Tx for CW/AM Top Band). Bandspeed coils for HRO, 10-20-40-80m., 20s. each. Prop pitch motor with indicator, £5. VHF beam rotator with indicator, 40s. Geloso VFO 4/101, £4.—G3RIR, QTHR (or ring Coventry, Tile Hill 66981.)

WANTED: BC-221, with charts. Also an unmodified amateur-band receiver in first-class condition.—Pryse, 36 Hart Road, Byfleet, Surrey.

PLEASE: Required circuit diagram for R.209.—Jones, G3ESY, 94 Holme Lacy Road, Hereford.

SALE: Heathkit DX-100U for 10-160 metres; SSB Tx if used with Heathkit SB-10U adaptor. This Tx has worked W6/JA1 on a "Joystick". Price £65, no offers. —Kernaghan, G3USK, 59 Seacroft Road, Mablethorpe (2234), Lincs.

FOR SALE: National HRO with eight coils and PSU. HE-40 Rx. Codar PR-30X preselector. Signal generator; valves; relays; components; chassis, etc., and other bits. The lot for £35, buyer collects.—Brown, 2 Newport Road, Wavendon, Bletchley, Bucks.

SELLING: FT-243 type xtals 6042, 7173, 7475 kc, 4s. 6d. each. VR-97 'scope tube, with base and 1000v. transformer, 40s. Shrouded LF choke, 30 Hy, 16s. PT-15 PA valve, 12s. 6d. IF strip, 9.7 mc, 6-valve, wired 12v., 25s. "Admiralty Handbook", 7s. 6d.—Line, 7 Dinmore Avenue, Northfield, Birmingham, 31.

FOR SALE: Philips Transceiver, Type DR.106/1, coverage 60 to 80 mc, in good condition, suitable for mobile operation, price £12. —Jarrett, 13 Thorney Hill Park, Catterick Camp, Yorkshire.

GEORGE FRANCIS G3TW
FULL KW RANGE IN STOCK

Genuine BY100 Silicon Rectifiers, 5/-; discount for quantities. 10-way min. Group Panels, 1/6. 12-way Group Panels standard, 2/-. Key Switches, 3/-. IT4 Valves, 1/6. 1 mΩ Controls with S/P switch ex Gov., 6d. each or 4/6 per doz. Piher ½ watt Resistors, 5p. 5d. each; discount for quantities. Set of Allen Keys in plastic case, 4/3. 3 Screwdrivers in case, 2/6. 6 Files in case, 14/6. Intercom, 70/-. Clear plastic Mains Cable, 4jd. yd.; brown, white, 6d. yd.; 23/0076 nonkink, 1/6 yd.; p.v.c. grey, 9d. yd. all 3 core. Semi Automatic Bug Keys, £4/10/-. Morse Keys, 5/-. Panel Meters, 50 μA, 32/6; 100 μA, 29/6; 500 μA, 25/-. MA's Rangers, all 22/6. TK500, £7/17/6. Pocket Test Meters, PT34, 39/6. 6146, 41/-; 6146B, 50/-; 572B, £7/10/-. Resistance Sub Box, 24/3. Cap. Box, 35/-. Shure 444, £9/10/-. Lapel Mics, 10/-. Hand Mics, 15/-, with press switch, 19/11. BM3, 35/-. 100C, 36/3; MC70, 50/-; ACS45, 26/-; M18, £4/14/6; MM71, 15/-; CM70, 33/9; DF12, £4/14/6; DF3, 75/-; DF1D, 66. Floor stands and cable stand available. Solder Solder Irons—£15, 26/-; 625, 27/4; Solder 6d., 2/6, 5/6. 100ft. pvc Wire, solid and stranded, 3/6; 75ft. pvc Sleeving, 3/9. Printed Circuit Board, 11½" x 3½" and 5½" x 8½", 2/- each. Bakelite Sheets, 6" x 4", 10d.; 8" x 6", 1/5; 10" x 7", 12" x 8", 3/-. Veraboard, 2½" x 5½", 3/7. American Coax Plugs—PL259, PTFE, 7/6; Sockets, 8/-. Instrument Knobs, 2", 1/6; 1½", 2/-; 1½", 2/7; 2½", 4/6. Pointer Knobs, 1½", 1/3; 1½", 1/6. Round Knobs 2", 9d.; 1", 10d.; 1½", 1/-. Mains Neons, 3/9; Signal Lamps, 2/-; EGG Insulators, 6d.; Coax Cables, 300Ω, 6d. yd.; 72Ω, 7d. yd.; Low loss, 1/10; 52Ω 1/1 per yd. Low loss 2/1 per yd.

HE30, £18/0/0; HE40, £12/0/0; Eddystone 888A, £70/0/0; Tiger Trigrass, £35/0/0; AR88D's, from £30/0/0; Heathkit Scope 0-12U £12/0/0.

Cosor 4 track 2 speed Tape Recorder in immaculate condition, all complete, 25 gns.

Fidelity Tape Recorder, 4 track. As new, complete, 17 gns.

BRAND NEW 625 IF Panels. Includes 40 resistors, 33 condensers, 6 IF's, 6 valve bases, cable etc. Only a few at a give away price of 8/-.

FIF MOBILE WHIPS AND COILS
NOW IN STOCK

Agent for KW, TW, FIF Mobile Whips, Eddystone, etc.

No orders too small. Part Exchanges. Goods despatched return of post.

Postage extra

93 Balderton Gate, Newark, Notts.

Tel. Newark 4733. After 6 p.m. 2578.

LEARN

The Morse Code
In One Day

By PARRY'S RAPID METHOD

New, unique approach to learning Morse quickly and pleasantly.

3/6 post free.

Send postal order and NAME and ADDRESS in BLOCK LETTERS to

Dept. B. The Doppler Press,
85 Grove Park, London,
S.E.5. England.

YUKAN SELF-SPRAY AIR DRYING MODERN WRINKLE (CRACKLE) FINISH EGG SHELL

Black same price as Hammer finishes (see our main advert., page 446)

Like our hammers?
Now have a crack
at our—

WRINKLES!

S.S.B. PRODUCTS

DERBY

"SPHINX" TX. SSB/AM/CW. 75 watts. P.E.P. 160m., 80m. (40m.), 20m. Modern styled cabinet. Built-in mains pwr. unit. Quality Signal, Quality Components. Hand-built and made to outlast many other flimsy tx's. Reliable and stable. Just listen and compare value. £78, carr. paid.

CANNONBALL TX. SSB/AM/CW. 160m.-1.8 to 2 mc/s. Measures 8" x 6" x 6". Requires 6v. 1½ amps., 260v. 70ma. Xtal filter. Direct Freq. Calibration (80m. and 12v. models available), £28/10s., 5/6 P. & P.

PYRAMID LINEAR PARTS. Ready prepared chassis, panels, cabinets. Any colour. All components, etc., £49, plus 25/- carr. Uses 4-6HF5's at 800 watts. P.E.P. 1/P. Built-in pwr. unit (uses SPHINX cabinets), any single component or part available. 6HF5's, 31/6. Bases 4/- ea. P. & P. extra.

SCARAB Xtal filter kit, inc. carrier Xtal (436 kc/s), I.F.'s, Mica's, etc., £6/19/6, 2/- P. & P. Ready made and aligned for excellent speech quality, etc., size 3" x 2" x 1", £8/17/6, 2/- P. & P. Uses new miniature Xtals. Undoubtedly the best buy in Filters. All details on circuitry around filter sent.

HA350 RECEIVERS. 160-10m., 80 gns., 80-10m., 75 gns. (Conversion to 160m. Professionally done internal), 100 kc/s CAL., 35/- Speakers, 55/-.

NAPOLION, s.w.r. bridge. For/Ref. sw. Sensitivity control. Steel case in Hammer Blue. Very good quality accurate instrument. 70-80 ohm., 5 gns., 3/6 P. & P.

"DELTA" CO-AX RELAY control unit. Mains A.C. i/p. Press to talk button and override sw. Several auxiliary C/O contacts, etc. In Hammer Blue case. Wonderful value at £7/5/-, 4/6 P. & P.

SILPLUG. Replaces 5v. Rect's. 500v., 39/6, 750v., 49/6, 1/- P. & P. We use only newly made diodes and quality parts (not surplus or rejects).

BUG KEYS, 85/- ea., 4/- P. & P., 6146 at 30/- ea., 1/6 P. & P. (new British).

DYNAMIC MIC'S, 99/-, BM3 MIC'S, 37/6. Large stock of components and parts for all amateur and professional needs, send S.A.E. We do really recondition our part exchanges and use the same test equipment as used in our manufactured products. Try us first for all makes of reconditioned gear. —Norman Birkett G3EKX.

ALL LINES ARE EX-STOCK!!

7A EDWARD STREET DERBY 42909

STEPHENS - JAMES LTD.

North Western stockist for all the latest Amateur equipment
Part exchanges. H.P. Terms arranged

KW2000 Transceiver, £205. KW2000A Transceiver, £235
KW Vespa Transmitter, £135. All complete with A.C. P.s.u.
KW600 Linear, £115. KW Vanguard, 10-160, £73/10/-,
KW SWR Bridge, £8/10/-, KW Balun, 35/-, Low pass Filter, 4 gns.
KW E-Z Match £12/10/0

CODAR	£	s.	d.	"JOYSTICK"
AT5 Transmitter	16	10	0	Distributors
AT5 A.C. P.s.u.	8	0	0	Full range of Joystick antennas
AT5 D.C. P.s.u.	11	5	0	and tuning units. Trade supplied.
AT5 Control Unit	2	7	6	
T2B Mobile Receiver	15	10	0	SR600 Triple Con-
CR70A Receiver	19	10	0	version Receiver ... 95 gns.
PR30 Preselctor	5	10	0	HA350 Dual Con-
PR30X Self powered	7	4	0	version Receiver ... 75 gns.
RQ10 "Q" Multiplier	6	15	0	HA55 Aircraft Receiver £19 10 0
RQ10X Self powered	8	8	0	KT340 Receiver Kit ... 25 gns.
CC60 Control Unit	6	10	0	

NATIONAL and EDDYSTONE equipment supplied

National NCX5, £284. Complete with A.C. speaker supply.
Latest Sommerkamp Sideband Receiver. 80-10 metres. Two mechanical filters, 1 crystal filter, full 500 Kc/s. coverage each band, £120. Sommerkamp Transmitter SSB/AM/CW. 120 watts PEP, £130. 260 watts PEP Transmitter, £140. Transmitters complete with internal supply matched with receiver for transceiver operation. Linear amplifier available.
Panda Cub Tx, £30. National NC121 Receiver, £43. Creed 7B Teleprinter, £15. AR88LF £35. AR88D, £42/10/-, Hickock Oscilloscope, £25. CR45, £7. Eagle Rx 60, £12/10/0.

Webster Bandspanner Mobile Whip, coils 160, 20, 15 metres, bumper mount, £10.
Complete station: HQ170a Rx. HX50 Tx. HXL Linear. Mint condition, £350.

Morse keys, 6/-, Semi-automatic bug key, £4/12/6. Lafayette Grid Dip Meter, £12/12/6. Egg Insulators, 6d. 300 ohm Ribbon Feeder, 6d. yd. High pass filters, 18/6.

Latest G3JF Mobile Whips. Fibre glass top section, 7 gns.

Mk. 3 Type. Stainless steel construction, £9/19/6.

Post and carriage extra most items. S.A.E. enquiries.

Log Books. World Maps. World Atlas. RSGB Publications.

70 PRIORY ROAD, ANFIELD, LIVERPOOL 4 (ANFIELD 3141)

SMALL ADVERTISEMENTS, READERS—continued

SALE: Codar A.T.5 transmitter with own AC/PSU, new, £20. — Peel, G3UGU, 254 Brownhill Drive, Blackburn, Lancs.

WANTED: R.C.A. AR88D, in good condition. FOR SALE: Vox AC-30 twin; Watkins Rapier; Watkins Copicat; Fuzz Unit; and Reslo ribbon microphone, with stand. All in good condition.—Mather, 87 Howick Park Drive, Penwortham, Preston (43588), Lancs.

WANTED: Avometer Model 8. Also manufacturer's handbook for R.C.A. AR88LF receiver. Please state condition and price.—Firth, G3MFJ, 61 Heights Lane, Bradford, 9, Yorkshire.

SALE: R.206 Rx, with PSU, coverage 550 kc to 30 mc, 13 valves, turret coil unit, in good condition, £20 o.n.o. No. 18 Set Tx, with key and mic., working, 30s. Home-made 3-in. 'scope, working, 30s. Variac transformer, 0-270v. at 2A, new and unused, £5. EHT transformer, 240v. in, 0-2.4v. and 2 kV out, with U22 rectifier, 30s. Various valves, transformers, rectifiers, meters, etc. Buyer collects; view after 5 p.m.—Wigham, 6 Shaftesbury Crescent, Blackhall Colliery, West Hartlepool, Co. Durham.

WANTED: BC-221 or LM-14 Frequency Meter. Price, particulars and condition. — Wilson, 28 Plane Street, Hull (506594), Yorkshire.

WANTED: National NCX-3 Transceiver and K.W. Viceroy transmitter, also Mosley TA-32 or TA-33Jr. beam.—Box No. 4364, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Heathkit Mohican GC-1U receiver, Mk.II, in good condition, £25. Lafayette HE-30 receiver, £22. Would Part EXCHANGE for Rollei-flex camera. — Habesch, 19 High Street, Rhyl, Flintshire.

SALE: HRO bandspread coils for 10-20-40-80m., price £8.—Heathkit OS-1 'scope, £14. All as new. Buyer must collect.—Stead, 2 Cliff Road Gardens, Leeds, 6.

FOR SALE: Complete mobile installation, comprising Minimitter three-band Tx and control box, Command Rx for 160m., G3JF mobile whip, PSU and all connecting leads, price £21.—Wyse, G3IWE, 36 Wilmslow Crescent, Warrington (64178), Lancs.

BARGAIN: Collins TCS receiver, with internal PSU, S-meter, speaker and headphones, price £7.—Hinder, G3SCB, Rangemoor, Roundhill, Radstock, Bath.

WANTED: Late model KW-77 or KW-707 receiver, also KW-500 Linear Amplifier. Please send fullest details.—Joslin, G3NPY, 13 Talbot Road, Skegness (1185), Lincs.

FOR SALE: AR88 in excellent mechanical and electrical condition, £33. Green & Davis two-metre converter, 28 to 30 mc IF, as new, £7 10s. Five-element two-metre beam, new, 35s. Parts for 20-80m. SSB Tx and 750/6.3v. PSU, £7 10s. Offers invited for Swan-350 SSB/AM/CW Transceiver, 350 watts, with AC/PSU and in mint condition.—Lord, G3PHN, Newfield House, Moira, Burton-on-Trent, Staffs. (Tel. Swadlincote 7537.)

SELLING: Hallicrafters SX-28, price £25. Two "Electronicues" DIF/II/85 plus multiplier coil, new. WANTED: Two similar 460 kc IF's.—Garlick, 135 Rookhill Road, Pontefract, Yorkshire.

FOR SALE: Lafayette HA-350 receiver, with crystal calibrator and speaker, price £55, no offers.—Simpson, G3SEE, 48 Wilmer Way, London, N.14. (Tel. ENTERprise 1343.)

SALE: Sphinx SSB Tx and Delta Control Unit, £45 o.n.o. Geloso 209R, 10 to 160 metres, £40 o.n.o.—G3OZJ, QTHR. (Tel. Nantwich 64169.)

VALVES: 832, 12s. 6d.; 832A, 20s.; 6J5, 3s. 6d.; 6L6, 5s.; 807, 3s. 6d.; 957, 958, 2s. 6d.; 6J6, 2s. 6d. Guaranteed and post paid.—G3JGJ, QTHR.

SMALL ADVERTISEMENTS, READERS—continued

WANTED: K.W. Viceroy, Mk.IIIA or Mk.IV. Full details, price and condition.—Harding, G3RJH, 60 Wychall Park Grove, Kings Norton, Birmingham, 30.

SELLING: Eddystone 888A, with S-meter and as new, price £75. HRO Senior, superior specimen, with noise limiter, PSU and coils GC 480-960 kc, 900 kc to 2 mc; bandspread for 10-15-20-40-80m., price £24. Panadaptor to suit this Rx, input 450-470 kc, 2½-in. CRT, with manual, £23. (Or HRO/Panadaptor together, £42). BC-348R, with PSU, £15. Command receivers: Unmodified Q5'er, 190 to 550 kc, £5; 3.0-6.0 mc, £3; 6.0-9.0 mc, £3; modified medium-wave, with PSU, £5 10s. Pre-war copies "Short Wave Magazine". All items or near-offer, carriage extra. **WANTED:** Eddystone 680X, S.750, or similar; also 770R.—Knight, Homefield, Upper Nazeing (2274), Essex. (Not available Sept. 3-17.)

FOR SALE: CR-150/3 Rx, 2.0 to 60 mc, £27. Pye car radio, long, medium and three short wave bands, incl. 40m., £5. Minifon pocket-size wire recorder, complete with spare spools and attachments, hardly used, £9. Minimitter mobile Tx for 40-80-160m., modified so that everything is in the Tx case, £7 10s. Mohican receiver, £15. Two-metre Rx/Tx, £10. Free delivery.—G3LZN, QTHR.

WANTED: AR88D, in good condition, in cabinet. Will pay up to £35. —Farlow, 49 Mount Pleasant Road, Chigwell, Essex. (Tel. 500-4546.)

SHACK CLEARANCE: Receivers are complete but do require attention. An HRO at £3; Hallcrafters, £3; R.1132, £3; fixed-freq. Rx, about 90 mc, 12-volt, £2; similar Tx, £2. Pair VHF radio telephones, freq. unknown, £2 each. Signal Generator 100-150 mc, £2. AVO Valve Tester, £3. Test Meter, £2. Transistors, new and unused: OC25, OC28, 7s. 6d. each; OC81, OC81D, AC127, OC71, 2s. 6d. each or 27s. dozen; rectifier BY-100, 3s. 9d. each or 43s. dozen; carriage 1s. 6d. on transistors. Remainder buyer collects or pays carriage.—Blackburn, 74 Shenley Avenue, Ruislip (8719), Middlesex.

FOR SALE: Hammarlund HQ-180, £120. Heavy-duty Beam Rotator, £25. K.W. Victor, £50. TCS-12, modified mains PSU, £15. Kendon all-band SSB exciter, 10-watt, with internal PSU but requires VFO, £25. All items subject to offer.—Williams, EI7AF, 5 O'Connell Street, Birr, Co. Offaly, Eire.

SELLING: Frequency Meter Type LM-14, £12 10s. Q-Max GDO, £4. Withers two-meter nuvistor converter, 90s. HRO receiver, nine coils, less cabinet, £7 10s. All plus carriage.—Eley, 14 Warmington Road, Hollywood, Birmingham.

SALE: Modulator, 50 watt, with built-in PSU, £12. Command receiver BC-454, with mobile PSU, £10. Pye Ranger two-metre Tx/Rx, 12v. DC, £8 10s. Home-built 160m. Tx, with PSU, £9 10s. — Gee, Dorjac, Henley Road Avenue, Ipswich, Suffolk.

OFFERING: A Racal RA-17 Communications Receiver, with cabinet, reconditioned and in as-new condition, works S-meter modification, with manual, price £250 or very near offer. Delivery at cost.—McCarty, 1 Baden Road, Brighton, 7, Sussex. (Ring Brighton 65132, evenings.)

SALE: Gardner transformer 1000-0-1000v. 500 mA, 6.3v. 1 amp., 40s. Two AR88 transformers, 20s. each. Two Eddystone condensers, twin-gang, 60 mmF, 4s. each. Two ceramic coil formers, 5in. long by 2½in. diam., with 5-pin bases, 4s. each. Slow-motion drive, 6in. diameter, 0-100 degrees, 4s. 6d. Carriage extra.—Buckingham, G3GZN, 16 Morning-side Avenue, Porchester, Hants.

FOR SALE: 19 Set, reconditioned as new, mains PSU, two RF stages, bandspread and speaker output, £8. Regulette 35mm. camera, leather case, £8. Manimex L8b light meter, hardly used, £3 10s. —Whitmore, 12 Holland Road, Bath, Somerset.

G. W. M. RADIO LTD.

RECEIVERS PCR2. 6-22 mc/s., 200-550 and 900-2000 metres. Good working order, £7/10/-, carriage paid. Matching 12 volt vibrator supply, 15/-, carriage paid.

RECEIVERS RI475, (type 88). 2-20 mc/s. Large slow motion dial etc. Power needed, 12 volts and 260 volts. Good working order, £8/10/-, carriage 12/6.

COSSOR 1049 OSCILLOSCOPES, £17/10/-, carriage paid.

PAPER CAPACITORS, 8 µF at 400 volts working, 2 for 8/-, post paid. Selenium rectifiers, 300 volts at 100 ma., 2/-, post 1/-. Rubber shock mounts 4½", 3 for 3/-, post paid. Rotary transformers, 11.5 volts in, 250 volts 125 ma. out, 12/6, post 3/6. Small fluted knobs for 52 Receiver, less grub screws, 6 for 5/-, post paid. 70 feet 7 strand copper aerial on reel with insulators, 10/-, post 2/6. 19 or 22 set head and mike sets, 8/-, post paid.

"SOLO" instant heat Low Voltage Soldering Tool. Trigger fed magazine for resin cored solder. Fitted in metal box with transformer for 110 volts A.C., spare parts and solder. Supplied with dropper unit for 230 volts A.C. operation, 14/- post paid, or less dropper, 8/-, post paid. May also be disconnected from transformer and used direct from 6 volt battery.

ORIGINAL DRY BATTERIES for 38 and 18 Walkie-Talkie sets, recent manufacture, 7/6, post 3/6 any number.

COSSOR GANGING OSCILLATOR, £7/10/-, carriage paid.

CANADIAN MARCONI 52 RECEIVERS. 1-75 to 16 mc/s. New condition. Less outer case, £10/10/- or with ZE12 power unit for 230/115 volts A.C. and connecting cable, £13/10/-, both carriage paid.

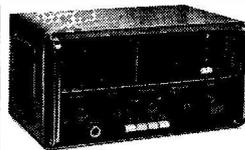
WHIP AERIALS. Eight 4ft. sections and heavy base. Will make up to 24ft. max. 35/-, carriage paid.

All equipment offered is complete but not tested unless otherwise stated. Carriage charges quoted are for England and Wales only. Telephone Worthing 9097.

Terms: Cash with order. Early closing Wednesday.

40-42 PORTLAND RD., WORTHING, SUSSEX

IMHOFS FOR EDDYSTONE



VISIT THE EDDYSTONE DEPARTMENT AT IMHOFS

SEE, HEAR AND COMPARE ALL MODELS WORKING SIDE BY SIDE ON PERMANENT DEMONSTRATION

SAME DAY DESPATCH TO ANY PART OF THE WORLD

FREE DELIVERY IN THE U.K.

GUARANTEED AFTER SALES SERVICE SEND TODAY FOR FULL DETAILS

IMHOFS

Alfred Imhof Ltd. Dept. 11/9, 112/116 New Oxford Street, London, W.C.1. MUS. 7878.

See it now at Imhofs—the Eddystone EC10 transistorised receiver for communications work. £48 come to Imhofs for other Eddystone receivers, including EB.35 EA.12 £60.6.3 £185 840.C 940 £66.0.0 £133 —also Eddystone die-cast instrument boxes and slow motion dials. All items can be sent abroad, tax free, under our personal and direct trouble - free export schemes.

main Eddystone retail distributors for London area

YUKAN SELF-SPRAY SO PROFESSIONAL
... THE YUKAN AEROSOL WAY!

GET THIS AIR DRYING Hammer Finish NOW!

YUKAN Aerosol spraykit contains 16 ozs. fine quality durable easy instant spray. No stove baking required. Available in grey, blue, gold, bronze at 14/11 at our counter or 15/11, carr. paid, per push-button self-spray can. SPECIAL OFFER: 1 can plus optional transferable snap-on trigger handle (value 5/-) for 18/11, carr. paid.

Choice of 13 self-spray plain colours and primer (Motor car quality) also available.

Please enclose cheque or P.O. for total amount to:

YUKAN Dept. SWM/8
307a Edgware Rd., London, W.2

Open all day Saturday
Closed Thursday afternoons



ANNOUNCING!

NEW "DX ZONE MAP"

Revised to October, 1965. Reprinted in four colours, on durable paper for wall mounting, 35in. wide by 25in. deep. Giving essential DX information—bearing and distance of all parts of the world relative to the U.K. The 40 Zone areas into which the world is divided for Amateur Radio purposes, with major prefixes listed separately. Distance scale in miles and kilometres. Time scale in GMT. Marking of Lat./Long. close enough for accurate plotting. About 1,000 place names, mainly the unusual ones, and most of the rare islands.

Immediate delivery from stock
Price 14s. 9d.

including postage and special packing in postal tube to avoid damage in transit.

Publications Dept.
Short Wave Magazine Ltd., 55 Victoria Street,
London, S.W.1. (ABbey 5341/2.)

AMERICAN MAGAZINES BY SUBSCRIPTION

CQ 56s. per annum
73 34s. per annum

Short Wave Magazine
55 Victoria Street, London, S.W.1

EMSA C—SWBI

Standing Wave Bridge: 160-2 metres; 50 ohm ("mod kit" included for 72 ohm); Diecast case; Excellent long term stability; Consumes negligible power; Standard coaxial socket terminations (two plugs supplied). Other terminations to order. The price £5. 8. 0, P. & P. 2/6. Ceramic Disc Capacitors, 500v. D.C. Wkg. .01 7d. each, 12 for 6/-; .001 5d. each, 12 for 4/-.

ELECTRONIC & MECHANICAL SUB-ASSEMBLY CO., LTD.
Dept. S. 73 FRENCHGATE, RICHMOND, YORKSHIRE

SWANCO PRODUCTS

SPECIALISTS IN ELECTRONICS FOR THE AMATEUR

Sommerkamp F-SERIES SSB EQUIPMENT

FR-100B double conversion superheterodyne with crystal controlled first mixer, 80-10 metres, 99 gns.

FL-200B SSB/AM/CW transmitter. 240 watts PEP. Complete with built-in power supply and antenna relay.—Nothing else to buy, £115.
FL-1000 Linear Amplifier. 960 watts PEP with built-in PSU, and designed to match any SSB exciter capable of 30-100 watts PEP, £89.

Second-hand equipment

AR88LF Rx—very nice cdx. recently realigned, and housed in attractive grey case. ONLY £35.

Eddystone 888A Amateur band receiver.—With "S" meter and loud-speaker and AS NEW—Bargain at only £65.

T.W. 2 metre converter—28 Mc/s. I.F., £5.

MULLARD high speed valve tester, type E7600. Complete with two sets of cards (to 1115C). ONLY £22/10/-.

Many other items in stock, your enquiries please

Mail order or by appointment—for the moment please. SAE Lists

SWANCO PRODUCTS
56 ALDERMINSTER ROAD, COVENTRY. Tel. Tile Hill 64279

SMALL ADVERTISEMENTS, READERS—continued

SELLING: Heathkit OS-1 Oscilloscope; Creed Type 3 teleprinter; KW low-pass filter and SWR meter, for 75 ohms; T.W. 6BQ7A-type converter for four metres; Dow-Key electronic aerial switch. All in FB condition. No reasonable offer refused.—Cross, 21 Lyncroft Gardens, London, N.W.6.

SALE: Eddystone EC-10 transistor receiver and Joystick Type 3 aerial complete, almost new and hardly used, £42.—Done, 84 Salisbury Road, Barry, Glam., South Wales.

WANTED: Pye PTC-703, cabinet type or similar, complete equipment for any frequency acceptable if reasonably priced.—Perkins, G3VIJ, 35 Kingstown Road, Carlisle, Cumberland.

SALE: Lafayette HA-63 communication receiver, brand new, £18.—Spashett, G3RK, Bungay (88), Suffolk.

FOR SALE: CR-100 communications receiver, in very good mechanical and electrical condition, £15 or near offer; prefer buyer collects.—Mann, Ash-down, Miles Lane, Cobham (2391), Surrey.

EXCHANGE: Cathodeon crystal 11.71 mc, for 4m. band, for xtal of similar manufacture in 8 mc range for 144.5 to 144.7 mc.—Pellett, G3RZC, 29 Jubilee Road, Bexhill-on-Sea, Sussex.

MORSE MADE EASY !!

The famous RHYTHM RECORDED COURSE cuts practice time down to an absolute minimum!

One student, aged 20 took only 13 DAYS and another, aged 71, took 6 WEEKS to obtain a G.P.O. pass certificate. If you wish to read Morse easily and naturally, please enclose 8d. in stamps for full explanation booklet to:

G3HSC/F, 45 Green Lane, Purley, Surrey

Set of 6 N.P.N. 300 mc/s. 1w. S.T.C. SILICON PLANER TRANSISTORS, 20/- set.

ZENER DIODES: ¼w. 3/6, 1.5w. 5/-, 7w. 6/-, 4.7v. to 30v.

AF114, AF115, AF116, AF117, OC170, OC171, 4/- each.

ACY22, BY100, AFZ11, AFZ12, T1166, GET7, GET8, 5/- each.

Plus many others, send 6d. stamp for Lists:—

D. CURSONS

78 BROAD STREET, CANTERBURY, KENT

SELECTED BOOKS

Amateur Radio Handbook, R.S.G.B. ... 36/6
Communications Receivers, pamphlet ... 3/5
Guide to Amateur Radio 5/7
Radio Amateur Call Book, U.K. only ... 6/7
SSB Equipment, pamphlet 3/5
Technical Topics for the Radio Amateur 10/8

All the above mentioned titles plus many others available from:

PUBLICATIONS DEPT.

Short Wave Magazine, 55, Victoria Street,
London, S.W.1

PETER SEYMOUR LTD.

All items in stock at time of going to press

	£	s.	d.
NCX3 and home-made AC power unit and makers DC power unit. 80, 40, 20, 200W. P.E.P.	135	0	0
K.W. VICEROY Mk. III	115	0	0
MINIMITTER MR 44/2. 160-10 metres	25	0	0
DK 100 and SB 10	80	0	0
EDDYSTONE 888A. 160-10 metres	75	0	0
KW.77. 160-10 metres	85	0	0
DRAKE R4A and matching speaker 160-10 metres. New ...	190	0	0
BC221	12	10	0
EDDYSTONE 750. 480 Kc.-32 Mc/s, dual conversion 1:6 and 85 Kc. I.F.	45	0	0
COLLINS 51J-2. 500 Kc.-30 Mc/s., 1 Kc. dial accuracy ...	195	0	0
TRAP SETS. Full encapsulated in epoxy resin 80-10 metres and ideal receiving or transmitting aerial system per pair	2	5	
A DE-LUXE AM/CW. SSB Transmitter American Heathkit Apache TXIE and matching SB10 Adaptor European Mains input, factory made at a cost of over £200 as brand new throughout ...	140	0	0
New equipment available FROM STOCK. Top trade-in allowances. Hire purchase terms available on items from £35. 25% deposit.			
KW YESPA. 160-10 metres. SSB/CW/AM, with P.S.U.	135	0	0
KW 2000. 160-10 metres. SSB/CW, with P.S.U., 90W. P.E.P.	205	0	0
KW 2000A. 160-10 metres. SSB/CW, with P.S.U. 180W. P.E.P.	235	0	0
SWAN 350. 80-10 metres, full coverage, 400W. P.E.P.	250	0	0
H.A. 350. 80-10 metres. Dual conversion, with Mechanical filter ...	78	15	0
BY100 Equivalents ... each	4	6	
RF45 field strength indicators with telescopic antenna ...	2	5	0
Japanese semi-automatic bug keys. 5-50 w.p.m. ...	4	12	6
SWAN 400. 400W. P.E.P. 80-10 ...	295	0	0

410 BEVERLEY RD., HULL, YORKSHIRE

Telephone: HULL 41938 (43353 after 7.30 p.m.)

'CODA-MOBILE' SUCCESS!

NEWEST CODAR EQUIPMENT A SELL-OUT!

The manufacturers of the neat little 160 and 80 Mobile/Home station advertised at £39 earlier this summer are delighted to announce that they have been swamped with orders! Unfortunately this may mean a delayed delivery date for those orders last received.

So what is going to happen? Codar have gone out—got themselves a bigger factory and a substantial assembly line will shortly open, trebling the current production figures on all Codar gear. Senior personnel will supervise every stage of manufacture and each Codar unit will continue to be rigidly inspected and tested.

Codar do apologise for keeping keen Coda-men waiting.

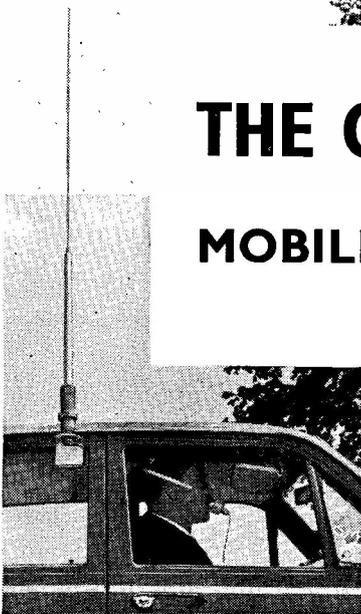
What's all this about? You had better send for the brochures—in the meantime take a look at pages 132-133 of the May issue.

CRC CODAR RADIO COMPANY

BANK HOUSE, SOUTHWICK SQUARE, SOUTHWICK, SUSSEX. TELEPHONE: SOUTHWICK 3149

THE C.S.E. TYPE 2. A.T.M.A.

MOBILE - PORTABLE - FIXED ANTENNA



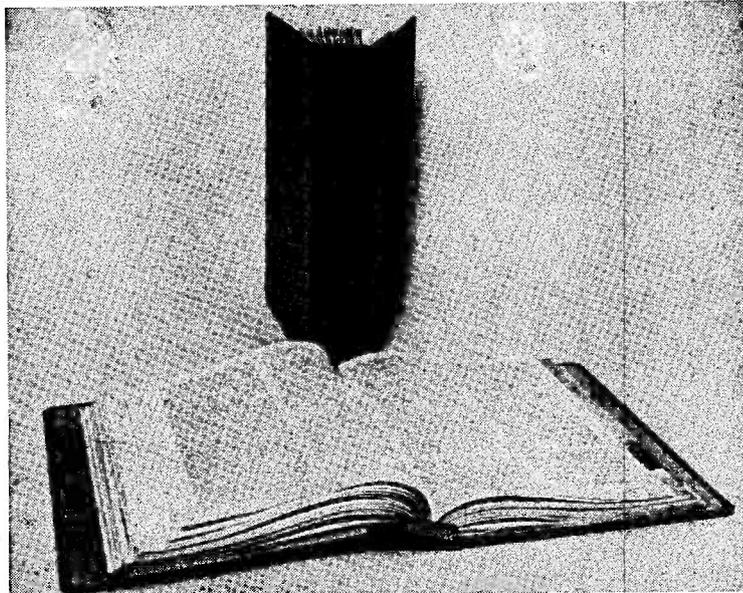
STAR FEATURES

- * Instant optimum loading.
- * Any frequency 1.8-2 Mc/s.
- * Instant tuning ring.
- * Simple installation—no holes! for
- * Instant window mounting.
- * Special nylon clad window bracket.
- * Instant demounting for inconspicuous parking.
- * Safe at speed—no detuning.
- * Instant sleek appearance to any car.
- * Proven performance—wintered permanent installation.
- * Instant full telescopic extension—no adjustment.
- * Simply dip tank—rotate tuning ring to load.
- * Instant operation—no dismantling from car.
- * Mount /M window or wing. /P on fence. /A at window.
- * Instant satisfaction—another C.S.E. quality communications product.
- * Length 70 inches overall.
- * Only £9.15.0 U.K. Post and packing paid.

SPECIAL SAFETY MOBILE LIP MICROPHONE ONLY £2.17.11 P & P PAID

CONTACTOR SWITCHGEAR (ELECTRONICS) LTD. MOORFIELD RD, WOLVERHAMPTON, STAFFS. Telephone: Wolverhampton 23883 Ext. 1.





CREATE YOUR OWN REFERENCE LIBRARY

by binding copies of Short Wave Magazine in the "EASIBINDER."

The "EASIBINDER" is designed to bind 12 copies of the Magazine as you receive them month by month, eventually providing a handsomely bound volume for the bookshelf.

No need to wait until twelve copies are assembled. As each copy is received, it is quickly and simply inserted into the binder. Whether partially or completely filled, the binder is equally effective, giving the appearance of a book, with each page opening flat.

Strongly made with stiff covers and attractively bound in maroon Leathercloth and Milskin, the binders have only the title gold blocked on the spine.

Price 14s. 0d. post free.

PUBLICATIONS DEPARTMENT
SHORT WAVE MAGAZINE
55 VICTORIA STREET,
LONDON, S.W.1

Short Wave Magazine advertising gives World-Wide coverage in the Amateur Radio field

MAPS

AMATEUR RADIO MAP OF WORLD

Mercator Projection — Much DX Information — In Colour.
Second Edition, 8s. 6d.

DX ZONE MAP

(New edition) 14s. 9d.

RADIO AMATEUR MAP OF THE U.S.A.

State boundaries and prefixes, size 16in. by 36in., paper, 4s. 9d.

RADIO AMATEUR'S WORLD ATLAS

In booklet form, Mercator projection, for desk use.
Gives Zones and Prefixes, 10s. 9d.

CALL BOOKS

"G's" only, 6s. 7d.

AUTUMN EDITION

"DX Listings," 31/6. "U.S. Listings," 50/-.
The two together, covering the World, £3/17/6.

LOG BOOKS

A.R.R.L.

(Spiral bound), 8s. 6d.

A.R.R.L.

(Minilog) 4in. by 6in., 5s. 6d.

R.S.G.B.

(Replaces Webbs Type),
7s. 3d.

MORSE COURSES

G3HSC Rhythm Method of Morse Tuition

Complete Course with three 3 speed
L.P. records with books 84/-

Beginner's Course with two 3 speed
L.P. records with book 60/6

Single, 12" L.P. Beginner's with book 50/-

Single, 12" L.P. Advanced with book 50/-

Three speed simulated GPO test. 7in.
d.s. E.P. record 11/6

Available from **SHORT WAVE MAGAZINE**

Publications Dept., 55 Victoria Street, London S.W.1 • Abbey 5341



MIDLAND AGENTS FOR



EDDYSTONE

Receivers & Components

**TRANSMITTERS, RECEIVERS and
SUNDRY EQUIPMENT BY**

KW ELECTRONICS

GREEN E.C.E.

WITHERS ELECTRONICS

CODAR RADIO

H.P. Facilities Part Exchanges

At your service
G2AK, G3LAY, G3VfV

**AERIAL
EQUIPMENT**

TWIN FEEDER. 300 ohm twin ribbon feeder similar K25, 8d. per yard. 75 ohm twin feeder, 6d. per yard. Post on above feeders and cable, 2/- any length.

COPPER WIRE, 14G, H/D, 140ft., 30/-; 70ft., 16/-, Post and packing 3/3. Other lengths pro rata.

FEEDER SPREADERS, 6" Ceramic type F.S., 10d. each. Postage 2/6 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. 4/-.

SUPER AERAXIAL, 70/80 ohm coax, 300 watt very low loss, 2/3 per yard. 50 ohm 300 watt, 2/6 per yard. P. & P. 2/6.

TOUGH POLYTHENE LINE, type ML1 (100lb), 2d. per yd. or 12/6 per 100 yds. Type ML2 (220lb), 4d. per yd. or 25/- per 100 yds., ML4 (400lb.), 6d. per yd. Ideal for Guys, L.W. Supports, Halyards, etc. Postage 1/6 on all line.

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 25/- EACH. Post free.

BANDCHECKER MONITOR, 3.00-35.00 Mc/s. in 3 switched Bands. 0-1 mA indicator. Monitor Socket. Very sensitive, £3/13/6. P. & P. 3/6.

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, 10/6. Extension for ganging. P. & P. 2/-.

SEALED RELAYS, 12v. 105Ω Coil. Type A, 4 Pole, C.O. 15/-, Type B, 2 Pole, C.O. + 2 Pole Norm. on, 12/6 P. & P. 1/6.

For Immediate Delivery

CODAR MOBILE £39
WITHERS 2m. COMM. £74

K.W.

VESPA,	£110	PSU. £25
2000,	£173	PSU. £32
2000A,	£195	PSU. £40

CHAS. H. YOUNG LTD
170-172 Corporation St., Birmingham 4

Please print your address. No C.O.D. under £1. 'phone CEN 1635

J. B. LOWE

51 Wellington Street, Matlock, Derbyshire

Tel.: Matlock 2817 (or 430 after 6 p.m.)

SOMMERKAMP "F" LINE

FL200B Tx

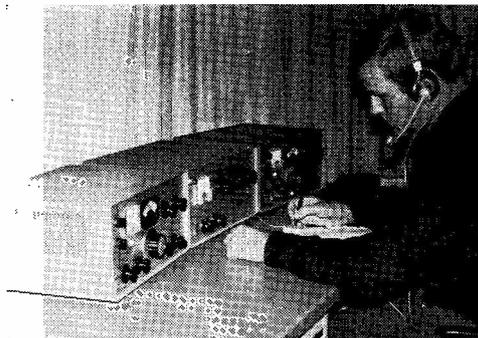
240W p.e.p.

80 - 10

50 db suppression carrier and opposite sideband.

VOX, PTT, manual and break-in C.W.

Full transceive facility built-in.



FR100B de luxe Rx

500 cycle CW filter.

2.1 kc/s mechanical filter.

4 kc/s filter for AM better than 1/2 microvolt sensitivity.

Direct readout to 1 kc.

FL1000 Linear Grounded grid AB₂ 960W p.e.p. input

I'm rather at a loss how to go about advertising this equipment—the Madison Avenue Advertising Man would probably go for something like—"The excitingly new "F" line with secret ingredient QRX" and somehow get a luscious blonde and a Ferrari into the act. Alternatively, he might go for the snob approach—oak panels, a gazelle head stuck on the wall and a butler serving a distinguished looking gent (preferably with a patch over one eye) from a cut-glass decanter on a silver tray. Maybe I'd better just content myself with the facts and let you decide for yourselves. Full details on request.

Prices : FR100B de luxe Rx **£120.** FL200B Tx **£140.**
FL1000 kilowatt linear **£95.**

In addition to the "F" line, I carry a goodly stock of Rx's, Tx's, linears, bits and pieces, including NCX5, Swan 350, KWV2000, Redifon R50, the Lafayette range, etc. etc. etc. On receipt of a s.a.e. the postman will come flying to your door with my stock lists (it would be better to send me the s.a.e., not the postman!).

P.S. That's a dandy head set the man has—leaves both hands free to open bottles and pour out ale. Too bad he can't drink it—the damn' mike gets in the way! Ah well, you can't have everything.

73 de Bill VE8DP/G3UBO



The first choice of Radio Amateurs throughout the World

AMERICAN HEATHKIT SSB EQUIPMENT "The world's most advanced Amateur Equipment"

Prices quoted are Mail Order and include duty, carriage and current import levy where applicable



Monitor 'Scope, HO-10E



Transceiver HW-12



Receiver SB-300E



Transmitter, SB-400E

FILTER-TYPE SINGLE BAND SSB TRANSCEIVER, Models. For the 80, 40, or 20 metre bands. 200 W. P.E.P. input TX. 1 μ V sensitivity RX. Employs easy-to-build printed board techniques, with pre-aligned circuits. Power Req.: 800v. D.C. at 250 mA., 250v. D.C. at 100 mA., 125v. D.C. at 5 mA., 12v. A.C. or D.C. at 3-75A.

Models HW-12 (80m.) £67. 10. 0 Kit
HW-22 (40m.), HW-32 (20m.) £66. 0. 0 either Kit
GH12. Push Talk Microphone £4. 0. 0 Assembled

MONITOR 'SCOPE, Model HO-10E. Displays waveforms of transmitter output from 5 W. to 1 kW, up to 50 Mc/s. Can also be used to indicate P.E.P. Will monitor received signal (I.F. up to 500 Kc/s.). Built-in two-tone generator. Power Req.: 110v. or 240v. A.C. £38. 10. 0 Kit.

2 METRE TRANSCEIVER, HW-30. Input 5 watts c.c. Tunable regenerative Rx. Compact size. 12v. power supply available. £25. 0. 0 Kit

NEW! 80-10m. TRANSCEIVER, Model SB-100. Send for full details. £198. 0. 0 Kit

Suitable A.C. Power Supply, Model H.P.23E. £24. 10. 0 Kit

AMATEUR BANDS 80-10m. RECEIVER, Model SB-300E. This de-luxe receiver offers unsurpassed value to the Radio Amateur. Of advanced concept, employing up-to-date design and construction techniques, its ultimate specification ensures unparalleled performance. Full specification and details on request. Weight 22lb. Power Req.: 115/230v. A.C. 50/60 c/s. 50 watt. Size: 17 $\frac{3}{8}$ " x 6 $\frac{3}{8}$ " x 13 $\frac{3}{8}$ ". £139. 0. 0 Kit (Less speaker)

AMATEUR TRANSMITTER, Model SB-400E. This transmitter is designed for "lock-in" facility with the SB-300E. A self-powered filter type Tx covering the "Amateur" bands, 80 to 10 m. with a P.E.P. of 180 watts. Weight 33lb. Power Req.: 115/230v. A.C. 50/60 c/s. Size: 14 $\frac{7}{8}$ " x 6 $\frac{3}{8}$ " x 13 $\frac{3}{8}$ ". £179. 0. 0 Kit

LINEAR AMPLIFIER, Model SB-200. Covers 80-10m. 1200 W. P.E.P. input SSB—1000 W. C.W. Solid state power supply. 120 or 240v. A.C. £112. 0. 0 Kit

THE WORLD'S SMALLEST KILOWATT LINEAR. The Heathkit, Model HA-14. 80-10m. Provides 1000 W. P.E.P. input power. Size only 3 $\frac{3}{8}$ " x 12 $\frac{3}{8}$ " x 10" deep. Weight 9lb. Power supply available. £56. 5. 0 Kit

Please send for the FREE British Heathkit catalogue



AMATEUR BANDS RECEIVER, Model RA-1. Covers all amateur bands 10-160 metres. Half-lattice crystal filter at 1.6 Mc/s. I.F. Provision for fixed, portable or mobile uses. Switched USB and LSB for SSB. £39. 6. 6 Kit £52. 10. Assembled

OPTIONAL EXTRAS. Crystal Calibrator CL-1 £4. 12. 0 Kit
Loudspeaker Cabinet SG-4 £1. 9. 6. Loudspeaker £1. 4. 5 incl. P.T.

AMATEUR TRANSMITTER, Model DX-40U. From 80-10 m. Power input 75 W., CW, 60 W. peak, C.C. phone. Output 40 W. to aerial. £29. 19. 0 Kit £41. 8. 0 Assembled

AERIAL TOWER, Model HT-1. Strong steel construction. Height 32ft., self supporting. 3ft. x 3ft. at base.
HT-1G (galv. finish) Kit £43. 15. 0
HT-1 (red oxide finish) Kit £37. 15. 0

"MOHICAN" GENERAL COVERAGE RECEIVER, Model GC-1U. In the forefront of design with 4 piezo-electric transistors, 10 transistors, variable tuned B.F.O. and Zener diode stabiliser. £37. 17. 6 Kit £45. 17. 6 Assembled

Suitable Battery Eliminator, Model UBE-1 £2. 17. 6 Kit

REFLECTED POWER METER, Model HM-11U. Indicates Antenna/Transmitter match. £8. 10. 0 Kit £10. 15. 0 Assembled

HIGH-SENSITIVITY GENERAL COVERAGE RECEIVER, Model RG-1. A high performance, low cost receiver for the discriminating short-wave listener. Frequency coverage from 600 Kc/s. to 1.5 Mc/s. and 1.7 Mc/s. to 32 Mc/s. Send for details. £39. 16. 0 Kit £53. 0. 0 Assembled



AMATEUR TRANSMITTER, Model DX-100U. Covers all amateur bands from 160-10 metres. 150 watts D.C. input. Own power supply. £81. 10. 0 Kit £106. 15. 0 Assembled

Q MULTIPLIER KIT, Model QPM-1. May be used with receivers having 450-470 Kc/s. I.F. Provides either additional selectivity or signal rejection. Self powered. Model QPM-16 for 1.6 Mc/s. I.F. Either model £8. 10. 0 Kit £12. 14. 0 Assembled

GRID-DIP METER, Model GD-1U. Continuous coverage 1-8 to 250 Mc/s. Self-contained. £11. 9. 6 Kit £14. 19. 6 Assembled

VARIABLE FREQ. OSCILLATOR, Model VF-1U. Calibrated 160-10m. fund. outputs on 160 and 40 m. Ideal for our DX-40U and similar TX. £10. 17. 6 Kit £15. 19. 6 Assembled

To DAYSTROM Ltd., Dept. SW-9 Gloucester, England

Please send me

FREE BRITISH HEATHKIT CATALOGUE (Yes/No)

AMATEUR RADIO BROCHURE (Yes/No)

American Heathkit Catalogue 1/- ... (Yes/No)

Full details of model(s)

NAME

(Block Capitals)

ADDRESS

SW9

WELCOME TO OUR LONDON HEATHKIT CENTRE

Showroom and retail stores at
233 Tottenham Court Road.
Tel. MUSEum 7349

Open Mon.-Sat. 9 a.m.-5.30 p.m.
(Thurs. 11 a.m.-2.30 p.m.)

WHEN YOU ARE IN TOWN, WE HOPE
THAT YOU WILL VISIT US THERE.

SEND FOR LATEST CATALOGUE
for full detail of Test Instruments,
HiFi and other models.