

# The SHORT WAVE Magazine

3/6

VOL. XXIV

JANUARY, 1967

NUMBER 11

## KW 201 *High quality - low price* AMATEUR BANDS COMMUNICATIONS RECEIVER



The KW 201 has been specifically designed for optimum performance on Single Sideband. 11 ranges give coverage in the amateur bands from 1.8 mc/s. to 30 mc/s. A mechanical filter gives an I.F. selectivity of 3.1 kc/s. at 6 d.b., and 6 kc/s. at 60 d.b. A 'Q' multiplier is available giving a variable range of 3.1 kc/s. to 200 cycles selectivity.



### KW 2000A TRANSCEIVER

90 watt P.E.P. operation on all amateur bands 10-160 metres, complete for only £173.0.0, PSU £32.0.0

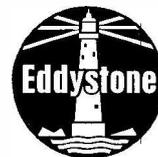
Exclusive U.K. agents for DAVCO receivers. Agents for Sommerkamp transistorized transceivers.

**K. W. ELECTRONICS LTD.**

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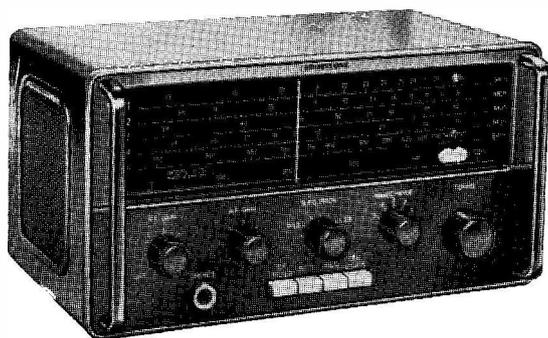
# Eddystone RECEIVER

**OF MAJOR INTEREST TO ALL RADIO ENTHUSIASTS**

## EC 10 transistorized communications receiver

A most efficient transistorized communications receiver of light weight, compact dimensions, and capable of a really good performance. Five ranges give continuous coverage from 550 kc/s to 30 Mc/s (545 to 10 metres), and included are the medium-wave broadcast band, the marine (coastal) band from 1500 to 3000 kc/s, and all the short-wave broadcast bands. Also available are the six major amateur bands and many services in between.

The EC10 receiver accepts normal AM telephony and CW telegraphy, a special filter being provided to increase selectivity (and also reduce noise) in the CW mode, as is often desirable. Single sideband signals can



be successfully resolved by appropriate setting of the BFO for carrier reinsertion. A total of 13 transistors and diodes is used, leading to high sensitivity and consistent results on all ranges. The main scales occupy a length of nine inches and are clearly calibrated direct in frequency. The standard Eddystone precision slow-motion drive controls the tuning, which is exceptionally smooth and light to handle. An auxiliary logging scale permits dial settings of chosen stations to be recorded.

An internal speaker gives good aural quality and a comparatively high audio output is available—one can easily believe the set is mains operated. For personal listening, a telephone headset can be plugged into the socket on the front panel, the speaker then being out of action.

Alternative aerial sockets are provided, for dipole, long wire, or short rod or wire. Power is derived from six cells housed in a separate detachable compartment. Current consumption is related to audio output and, for long life, HP2-type heavy-duty cells are recommended.

The receiver is housed in a metal cabinet, and, with robust construction throughout, it will stand up to hard usage over a long period with a high degree of reliability. The finish is an attractive two-tone grey. The dimensions are width  $12\frac{1}{2}$ ", height  $6\frac{3}{4}$ ", depth 8"; weight with batteries is 14 lb.

## Eddystone Radio Limited

Eddystone Works, Alvechurch Road, Birmingham 31

Telephone: Priory 2231 · Cables: Eddystone Birmingham · Telex: 33708

LTD/EDS

# We are the Antenna People



V-3 Jr.

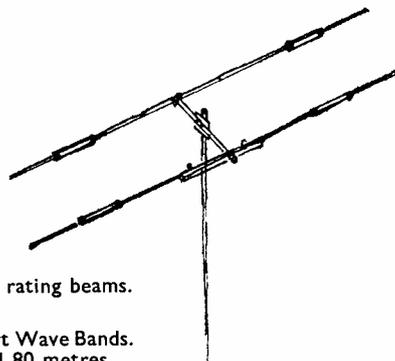
### SOME OF OUR ANTENNAS

- 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.  
 MP-33. 10, 15 and 20 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-4BA. 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-32

### SELECTED PRICES

TA-32 Jr.	£19 5 0	MP-33 ...	£32 17 0
TA-31 Jr.	£11 0 0	A-315 ...	£19 16 0
		A-203-C	£46 5 0

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

**HOME RADIO LTD.** 187 LONDON RD., MITCHAM, SURREY. \*CR4 2YQ (MIT 3282)

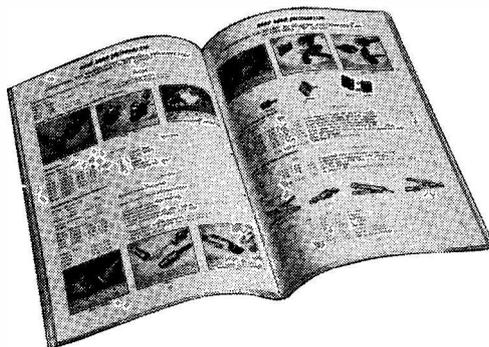
## How good is the Home Radio Component Catalogue?

This is a question that can only be answered by you the user! We have been compiling these component catalogues for nearly 10 years and apart from saying we are never completely satisfied with what we produce, we would admit to having acquired a little expertise on the subject over the years. So let us suggest how you, the user, can judge the merits of any component catalogue, including our own.

1. Think of any electronic component you wish to purchase and see if you can find it quickly in the index.
2. Repeat this 5 times: Award 10 points for it being in the catalogue, and 10 points for finding it quickly.

100 points would be magnificent. 90 very good. 80 good. 70 fairly good.

If you are satisfied on that test, send for the goods and see how quickly they are despatched.



But, of course, in order to do all this you must have a catalogue, so send for one today, 7/6 plus 1/6 postage and packing. Each catalogue contains 5 vouchers each worth 1/- if used as directed.

\* Please include code in our address.

Please write your name and address in block capitals

NAME .....

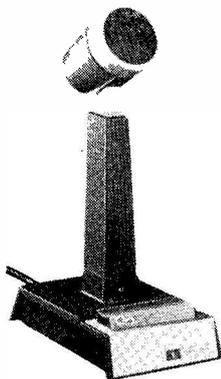
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HOME RADIO LTD., Dept. SW, 187 LONDON RD., MITCHAM. \*CR4. 2YQ

## You can depend on Shure quality MICROPHONES For amateur radio communications

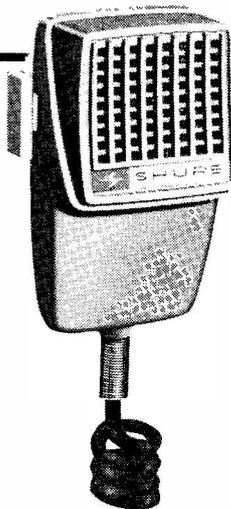
### Shure Model 444 Controlled Magnetic Microphone

Specially designed for radio communications, giving optimum performance from single sideband transmitters as well as AM and FM units. Response cuts off sharply below 300 c/s and above 3,000 c/s, with a rising characteristic to 3,000 c/s. This results in optimum speech intelligibility and audio punch to cut through noise interference. High impedance. Dependable under all operating conditions. Complete with switch for instantaneous press-to-talk or VOX operation; finger-tip control bar; long-life switch; adjustable microphone height; sturdy, high-impact base and case; 7 ft. two-conductor shielded cable.



### Shure Model 201 Diaphragm Type Ceramic Microphone

- \*Provides clear, crisp, natural voice reproduction of high intelligibility
- \*High impedance \*Ideal voice response and omni-directional polar pickup characteristics
- \*No humidity or temperature problems
- \*Light, strong and compact
- \*Heavy duty push-to-talk (non-locking) switch
- \*Frequency response: 200 to 4,000 c/s
- \*3-conductor retractable cable.



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## MORE TITLES AVAILABLE FROM STOCK

BEGINNER'S GUIDE TO RADIO (Newnes)	9/-						
BEGINNER'S GUIDE TO COLOUR TELEVISION (Newnes)	15/8						
BEGINNER'S GUIDE TO ELECTRONICS	15/6						
ELECTRICAL HOBBIES (Collins)	5/6						
ELEMENTS OF RADIO ENGINEERING (Cleaver-Hume)	15/10						
Q. & A. ON (Newnes)	<table border="0"> <tbody> <tr> <td>AUDIO</td> <td>10/-</td> </tr> <tr> <td>ELECTRONICS</td> <td>10/-</td> </tr> <tr> <td>TRANSISTORS</td> <td>10/-</td> </tr> </tbody> </table>	AUDIO	10/-	ELECTRONICS	10/-	TRANSISTORS	10/-
AUDIO	10/-						
ELECTRONICS	10/-						
TRANSISTORS	10/-						
SHORT WAVE LISTENING (by J. Vastenhou)	13/2						
INTRODUCTION TO VALVES (Iliffe's)	9/4						
RADIO ASTRONOMY FOR AMATEURS. 220 pages (by Frank Hyde)	31/-						
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 PAØHH, Philips Technical Library)	22/-						

All prices inclusive of postage and packing

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

**YUKAN SO PROFESSIONAL THE YUKAN SELF-SPRAY AEROSOL WAY**

Get these AIR DRYING GREY **HAMMER** or **BLACK WRINKLE (CRACKLE)** Finishes

Yukan Aerosol spraykit contains 16 ozs. fine quality durable easy instant spray. No stove baking required. Hammers available in grey, blue, gold, bronze. Modern Eggshell Black Wrinkle (Crackle) all at 14/11 at our counter or 15/11, carriage paid, per push-button self-spray can. Also Durable, heat and water resistant Black Matt finish (12 ozs. self-spray cans only) 13/11 carriage paid.

**SPECIAL OFFER:** I can plus optional transferable snap-on trigger handle (value 5/-) for 18/11, carriage 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. SW1 307a Edgware Rd., London W.2.**  
Open all day Saturday. Closed Thursday afternoons.



Other Yukan Aerosols include: Clear car lacquer, Hammer, Wrinkle (crackle), anti-tarnish gold, Black matt finish

**NEW "DX ZONE MAP"**

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. (ABWey 5341/2.)**

**J. B. LOWE** 51 Wellington Street, Matlock, Derbyshire  
Tel.: Matlock 2817 (or 2430 after 6 p.m.)

In the new line I can offer the Sommerkamp range comprising the FL-200-B Tx, FR-100-B Rx, FL-1000 Linear and the FT-100 transceiver, all of which are incredible value for money. Incidentally, if the temporary 10% import surcharge is removed as promised, my prices will of course, go down accordingly.

Other new stuff includes National NCX5 and the new NC2000 transceiver, Swan 350, KW2000 and the Lafayette range. In the second-hand line I can offer the following:—

<b>RECEIVERS</b>	£	s.	d.
REDIFON R50—Magnificent beast, as steady as the rock of Gibraltar, about the same size and weight	75	0	0
RI07—One of the ugliest Rx's ever built. However I never cease to be amazed at the performance of these old clunkers. This one does perform extremely well and is AS NEW	15	0	0
EDDYSTONE 358—A1	20	0	0
HA55A AIRCRAFT RX—In stock. These honestly are GOOD	19	7	6
STAR SR600—This one has shaken me. I thought they were dreadful, but this one is really good. As new and well worth	75	0	0
NATIONAL NC77X—As new	20	0	0
EDDYSTONE 358—With ham band only coils. Excellent	20	0	0
HAMMARLUND HQ-145-XE—Excellent	65	0	0
HRO—Unmarked	25	0	0
GELOSO G209—A1 hambander at a reasonable price	40	0	0
EDDYSTONE EC10—A1	38	0	0
HALLICRAFTERS S120—Mint. Twice the number of stations above 15 mc/s.!!	18	0	0
EDDYSTONE 740—A1	25	0	0
HEATHKIT RAI—Mint	35	0	0
An enormous MARCONI Double Diversity effort, complete with Marconi 1 kc/s. and 2 kc/s. crystal filters. A Rx in the grand manner	35	0	0
<b>TRANSMITTERS</b>			
KW500—Linear—Excellent. Surely must be worth 2/- a watt !!	50	0	0
HOME BREW SSB TX (DAF TYPE)—160 to 10. Complete with 1" monitor 'scope built-in. Separate p.s.u. Eddystone dial. The wiring is truly amazing but it works! Must be worth	25	0	0
HOME BREW CW ONLY TX—80-10. Made of Minimitter modules and pokes out the legal limit with ease. This is a good one	25	0	0
TOKAI 10 METRE WALKIE-TALKIES—Crystal controlled on 28.5 mc/s. These are better than most and cheaper than most	10	10	0
KW VICEROY Mk. 3—Excellent	80	0	0
LABGEAR LG50—Mint. Not just one lousy sideband, this rig transmits both and a carrier as well !!	30	0	0

CODAR AT5—Tip-top home brew p.s.u., as new	16	0	0
SWAN 350—Demonstrator	200	0	0
SWAN FULL COVERAGE VFO—Demonstrator	45	0	0
SPECIAL —NATIONAL N.C.190's, Brand new. (List over £97.0.0)	75	0	0

**ODDS AND ENDS**

NOMBREX TRANSISTOR SIG. GEN.—Very cute. Mint	7	0	0
70 MC/S. BALUNS. MARCONI—Brand new. Amongst other things they make a good putter! (Post free)	1	10	0
KYORITSU GRID DIP METER—New	12	10	0
BUG KEY—New. Rattle off those dits like a mad thing!	4	10	0
QPI66—In stock (and the transistor version ordered 2 years ago looks like being finally delivered)	12	12	0
BOOM MIKE EARPHONE	4	0	0
HAMGEAR PML—Preselector	5	0	0
HANSON TRANSISTOR CHECKER—New	6	0	0
ELECTRONIC KEYS—New. 30 w.p.m., while tuning over the band with your other hand!	16	10	0
GELOSO 4/102 VFO	2	10	0
EAGLE SIGNAL GENERATOR—Mint	12	10	0
BC221—A good one	20	0	0
CODAR PR30X—As new	5	0	0

FILTERS—Mechanical and crystal.  
Meters, plugs, sockets, chokes, knobs, coils—a wide selection of bits and pieces.

**SPECIALS—BRAND NEW**

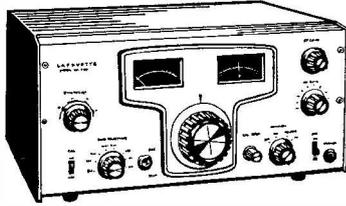
Miniature tubular trimmers 1/2-5 pF and 3-15 pF 1/- each or 5 for 4/-, 1000 pF feed throughs 6d. each, 5/- a dozen.  
Small temp. compensators NI500 and N750 negative temp. coefficient 1pF capacitors. Stop that drift, 6d. each, 5/- a dozen.  
A s.a.e. will get you my lists of stuff ranging from the exotic to the horrible (mostly horrible!).

**TRADE-INS:** Certainly. **H.P.:** Certainly

**SERVICE DEPARTMENT:**  
Time and again customers trade in stuff ("perfect, old boy") because it has an obscure fault which neither they or their friends have been able to trace! In the past this has caused us much weeping, wailing and gnashing of teeth (those without teeth gnashed their gums!) but those days are over because I have at last found a colleague who has been in this business a long time and who sorts out troubles quicker than I thought possible. So if you are baffled, give me a yell and we'll let John out of his cage long enough to fix it.

**73 de Bill. VE8DP/G3UBO.**

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



**75 gns.**

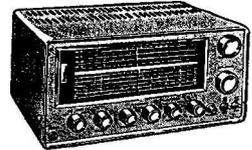
EXTRAS :  
100 Kc/s. xtal 35/-  
Speaker Mate 55/-

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.  
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● Product Detector for Selectable Upper and Lower Sideband Reception.  
● Complete with Crystals for 80, 40, 20, 15 and 10 Metres.  
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● "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. at 6 dB down and 6 Kc. at 60 dB down 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—Off/AM/SSB—CW/SSB2; RF gain; AF gain; ANL; Phone jack. Valves: 6BZ6—RF amp.; 6BL8—Xtal controlled 1st mixer; 6BE6—2nd mixer; 6BA6—VFO; 6BA6—IM amp.; 6BA6—IF amp.; 6AL5—AVC rectifier and AM noise limiter; 6AQ8—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**

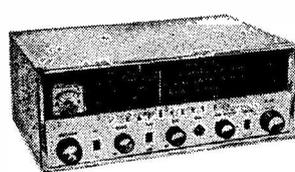


Build this wonderful receiver and save pounds. Supplied semi-completed, main components ready mounted, RF section already wired and aligned. Full and precise instructions supplied. Specifications:—8 valves plus rectifier, 4 bands covering 550 Kc/s.-30 Mc/s. Incorporates 1 R.F. and 2 I.F. stages, 'Q'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



**S.W.R. METER MODEL S.W.3**  
Freq.: 1:1 to 1:3.  
100uA DC meter.  
Available 52 or 75 ohms. Bargain Offer 79/6. P. & P. 2/6.

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Freq.: 1-250 Mc/s.  
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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/-.

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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.

50uA	32/6	5mA	22/6	1A	DC 22/6
100uA	29/6	10mA	22/6	2A	DC 22/6
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50-0-50uA	29/6	100mA	22/6	10v	DC 22/6
100-0-100uA	27/6	150mA	22/6	20v	DC 22/6
500-0-500uA	A22/6	200mA	22/6	50v	DC 22/6
1-0-1mA	22/6	300mA	22/6	100v	DC 22/6
1mA	22/6	500mA	22/6	150v	DC 22/6
2mA	22/6	750mA	22/6	300v	DC 22/6



500v DC 22/6 150v AC 22/6  
750v DC 22/6 300v AC 22/6  
15v AC 22/6 500v AC 22/6  
50v AC 22/6 'S' Meter 29/6  
Larger sizes available—send for lists

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Compact true one hand operation. Frequency range 1.7-180 Mc/s. 230v. AC operation. Supplied complete with all coils and instructions, £12/10/-, Carr. 5/-.

**KYORITSU GRID DIP METER**

Hand held, 220/240v. AC. 360 Kc/s.-220 Mc/s., £12/10/-, P. & P. 3/6.



**TRANSISTORISED GRID DIP METER**

9v. DC, 440 Kc/s.-280 Mc/s., £11/11/-, P. & P. 3/6.

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200 P.I.V. 200 mA	£ s. d.
200 P.I.V. 6 amp.	5 6
400 P.I.V. 3 amp. (S.G.R.)	10 0
400v. 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
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70v. P.I.V. 100 amp.	2 9 6

Discount for quantities. Post extra

- Bug Keys ... .. £ s. d.
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A good selection always available from £30.

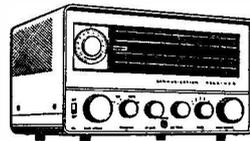
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- PARTRIDGE AERIALS

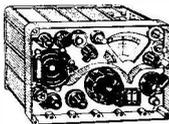
**HAMMARLUND SP-600JX RECEIVERS**

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

**LAFAYETTE HA-63A COMMUNICATION RECEIVER OUTSTANDING VALUE**



High class receiver covering 550 Kc/s.-41 Mc/s. on 4 bands. Incorporates 7 valves plus rectifier. RF stage, illuminated "S" meter, 1.5uV sensitivity, electrical bandspread on the 80/40/20/15 and 10 metre bands, slide rule dial, aerial trimmer, B.F.O., noise limiter. Output for phones or speaker. Operates on 115/220/240v. AC. Supplied brand new and guaranteed with manual, 24 gns. Carr. 10/-.

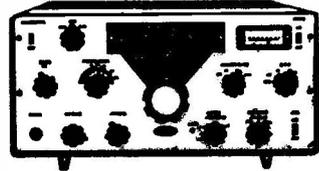


**R209 Mk. II COMMUNICATION RECEIVER**

11 valve high grade communication receiver suitable for tropical use. 1-20 Mc/s. on 4 bands. AM/CW/PM operation. Incorporates precision vernier drive, B.F.O. Aerial trimmer, internal speaker and 12v. D.C. internal power supply. Supplied in excellent condition, fully tested and checked, £22/10/-, Carr. 20/-.

**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.



**LAFAYETTE V.H.F. RECEIVERS:**  
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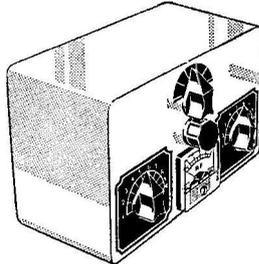
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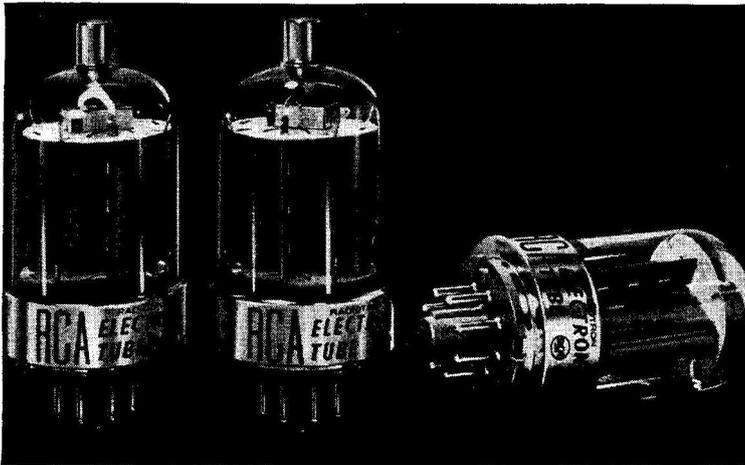
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# SHORT WAVE MAGAZINE

(GB3SWM)

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JANUARY, 1967

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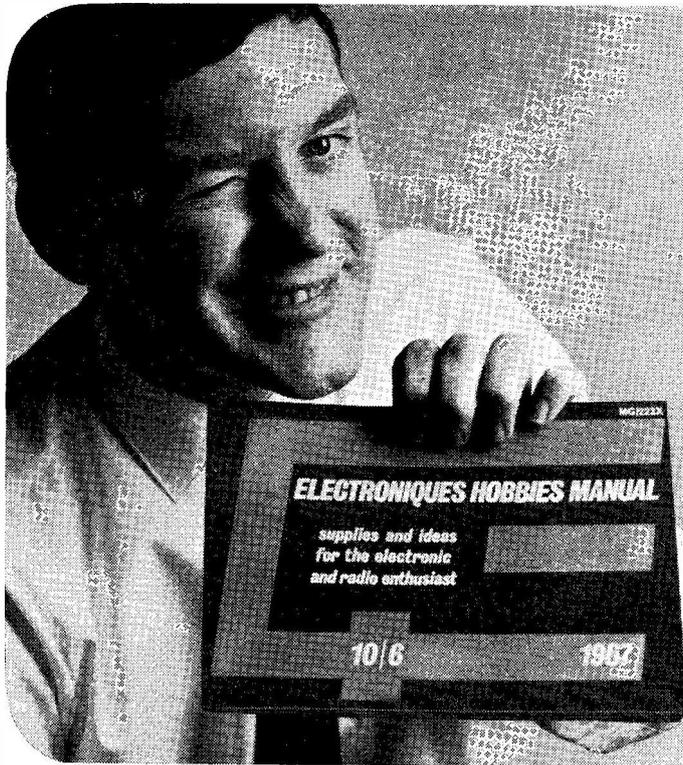
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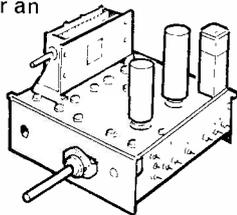
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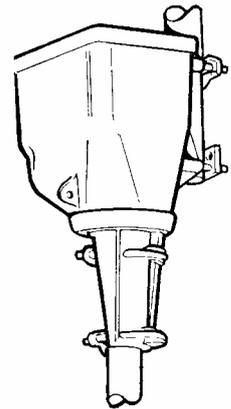
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FOR THE RADIO AMATEUR AND AMATEUR RADIO

# The SHORT-WAVE Magazine

## EDITORIAL

**Safety** *In previous comments in this space, we have touched upon the necessity for taking proper precautions in the design of a mobile installation, so that it would be safe to operate under all road conditions.*

*Safety does not, of course, begin and end with the mobile rig. In a different sense, due regard must also be paid to safety in and about the station itself. There is a long catalogue of precautions which can be taken, and which will in any event suggest themselves to the serious and responsible radio amateur. To attempt to list them all here will be of no help to anyone who fails to keep constantly in mind that the ordinary HT power pack is dangerous, and can be lethal.*

*It is not clever, or bold, or daring to dice with death when handling power leads — it is foolish, irresponsible and inconsiderate, and frequently has the same consequences as those that eventually catch up on the reckless.*

*The most important precautions to be taken for safety in the amateur station have often been stated: Keep N, L, E, sorted out all through the mains wiring; fit a double-pole master switch for cutting the power to the whole station, and make sure other members of the household know where it is and what it is for; earth down all chassis; install high-voltage power units out of immediate reach, preferably in protective cages; bleed all HT filters; fuse HT supplies and packs at all possible points; protect all HV points on open-chassis apparatus — the easiest way to do this is to put it out of reach; never use both hands if adjustments have to be made to live gear — one hand should always be in a pocket; if a large rack-built assembly is in use, it should stand on, and be surrounded by, rubber mats; fit a large aerial earthing switch, and use it when there is heavy static about; make sure that even in the event of a major break-down, no HV DC can reach the aerial.*

*A station laid out in accordance with these broad principles should be absolutely safe not only to the operator, but also to his family and his friends.*



AND A VERY HAPPY, PROSPEROUS AND SAFE NEW YEAR  
TO ALL WHO SEE THESE LINES

*Austin Forster,  
G6FO.*

WORLD-WIDE COMMUNICATION

# RUNNING THE NATIONAL NCX-3 TRANSCEIVER

## NOTES ON ADJUSTMENT FOR IMPROVED PERFORMANCE

F. G. RAYER, A.I.E.R.E. (G3OGR)

**T**HE National NCX-3 covers the whole of the 80, 40 and 20m. bands, for SSB, CW and AM (inserted carrier). Rated power inputs are 200 watts for SSB and CW, and 100 watts for AM, with RF outputs of 120w. p.e.p. SSB, 120w. CW, and 30w. AM. After using one of these transceivers for some time, several points emerged which it is hoped should be of interest to other users of the NCX-3. Many of these points apply also to other transceivers.

Failure to obtain the full rated input (300 mA) with a suitable load can arise from low anode voltage, low screen-grid voltage, insufficient drive, or poor PA valves. A good load for tests is 100-watt 50-ohm or similar carbon resistor, with a 2 amp. RF meter in series. The anode supply is most easily checked at the 700v. tag on the 9-way connector under the chassis, Fig. 1. It should not be checked at the PA anodes, but note that the anodes still have the full HT voltage present when receiving. The voltage (700v.) should be maintained with the PA loaded. The screen-grid voltage can be measured at tags 1 or 7 of the PA holders, Fig. 3, and is normally 220v. on transmit, and zero on receive. Heater voltages can also be checked here.

After these DC tests the PA valves or drive are suspected, if full input is still not possible. Should full input be obtained on one band only, lack of drive on the other bands is the probable cause.

The driver is a 12BY7, Fig. 2, and anode and SG supplies should be 280v. and 220v. respectively. If no spare 12BY7 is to hand (the easy substitution test) the cathode voltage can be checked at tag 1. For normal cathode current, the reading should be 3.5v., with meter negative to chassis.

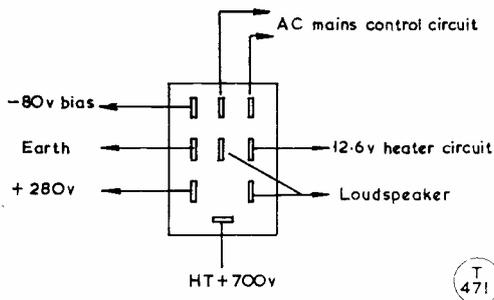


Fig. 1. Power supply socket as seen from inside of the NCX-3 Transceiver.

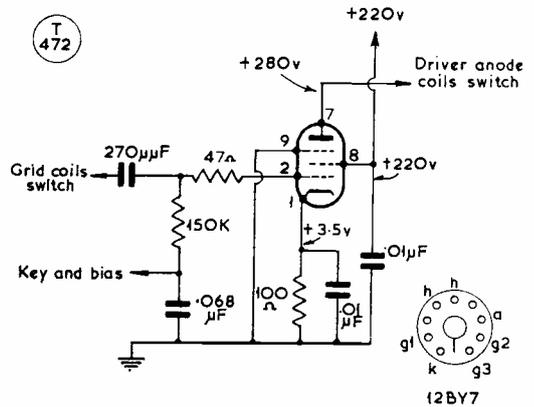


Fig. 2. Voltages associated with the 12BY7 driver stage in the NCX-3.

If lost emission in the driver is not the cause, wrong adjustment of the driver stage grid and anode tuned circuits may be responsible. Drive at the PA grids can be checked with a 'scope, and the display should exceed 100v. peak-to-peak. This requires an instrument effective at 14 mc. With HT voltages present the PA should not be left on "Tune" more than 30 seconds if tuned, or in action for more than 15 seconds not tuned.

To avoid the need for a 'scope (and this haste) it may be felt worth while putting the PA stages out of action, so that drive can be investigated. The makers recommend that the anode supply be removed. A point easily reached is the 700v. tag, Fig. 1, where the lead can be unsoldered. HT is applied to the screen grids from a separate supply, so the heater connection between the two PA valves, which are in series is unsoldered. A diode with resistor can then be lightly soldered to the junction of the grid resistors, Fig. 3, to supply a DC voltmeter and act as a tune-up indicator.

### Drive Adjustment

The transceiver can now be left in the "Tune" condition. It was noted that original adjustments were aimed at a wider band coverage than needed by a G station. That is, the coil adjustments at 3.5 and 4 mc, 7 and 7.3 mc and 13.9 and 14.4 mc. If drive is poor, despite the 12BY7 and its supplies being in order, it may be worth assuming that the cores are wrongly placed (especially with second-hand equipment). There is no apparent reason why coil adjustments should not be carried out within the actual bands required. That is, at about 3.55 and 3.75 mc, 7 and 7.1 mc and 14.1 and 14.3 mc. Fig. 4 is the coil positions, seen from below the chassis.

A properly shaped insulated tool is necessary for the cores, and a very small adjustment can cause a big increase in drive. The driver panel tuning control is rocked slightly while adjusting the cores, and drive is checked across each band.

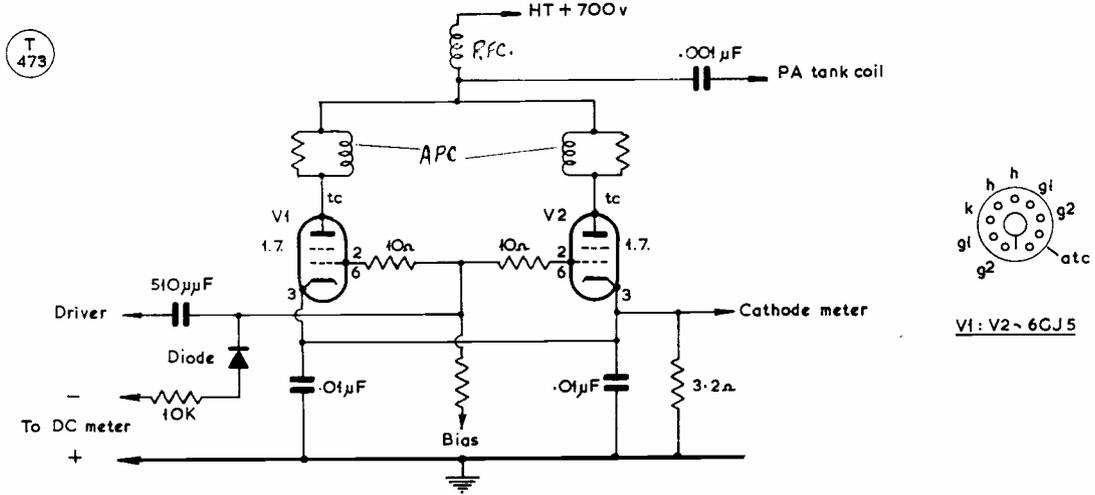


Fig. 3. Simple tuning-up indicator to show grid drive—see text.

The diode is then removed, and heater and HT supplies are restored. No touching up of L7, L8 and L9 (common to driver anode and PA grid circuits) was found necessary after disconnecting the diode. If the PA valves are good the PA should now load to 300 mA input easily. RF output should be around 120 watts—that is, about 1.3 amps. into a 70-ohm load, or approaching 1.5A with a 50-ohm load.

If power output increases with the PA anode circuit slightly off tune this indicates incorrect neutralising. Rotate the neutralising capacitor in the PA box slightly each way, as needed, until maximum RF output agrees with the anode current dip at 14.2 mc.

It is also worth checking that current shown by the panel meter is about 50-60 mA, with the function switch at SSB and push-to-talk switch closed, but with no audio. If not, the PA bias pot. on the rear

of the chassis should be adjusted to give around 45-55v. bias. This can be measured on "receive" with a meter at the PA grids. Note that if the PA valves and HT supplies are in order an off-tune current of at least 350 mA should be shown by the cathode meter.

**Aerial Points**

When comparing results between a 20m. dipole and long-wire, at some times of day very many interfering transmissions (giving S9 and 9+ readings) were present with the long wire, and wholly absent with the dipole. These transmissions were not heard with a receiver. The long wire used an impedance matching circuit A, Fig. 5. This is a Z-match, and not a selective or resonant tuner. Merely changing the coupling to the tuner, B, Fig. 5, caused so enormous an improvement when receiving that it was no longer often necessary to switch to the dipole for reception. The parallel tuned circuit B requires that the aerial length is a multiple of half-waves. It is apparent that while A allows an impedance match at the required frequency, it does not reject 2nd

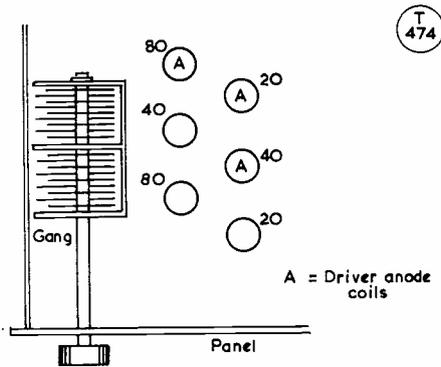


Fig. 4. Adjustable cores of the driver stage seen from below the chassis.

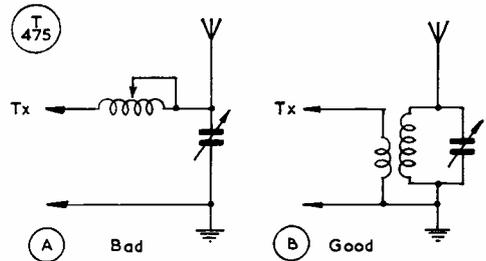
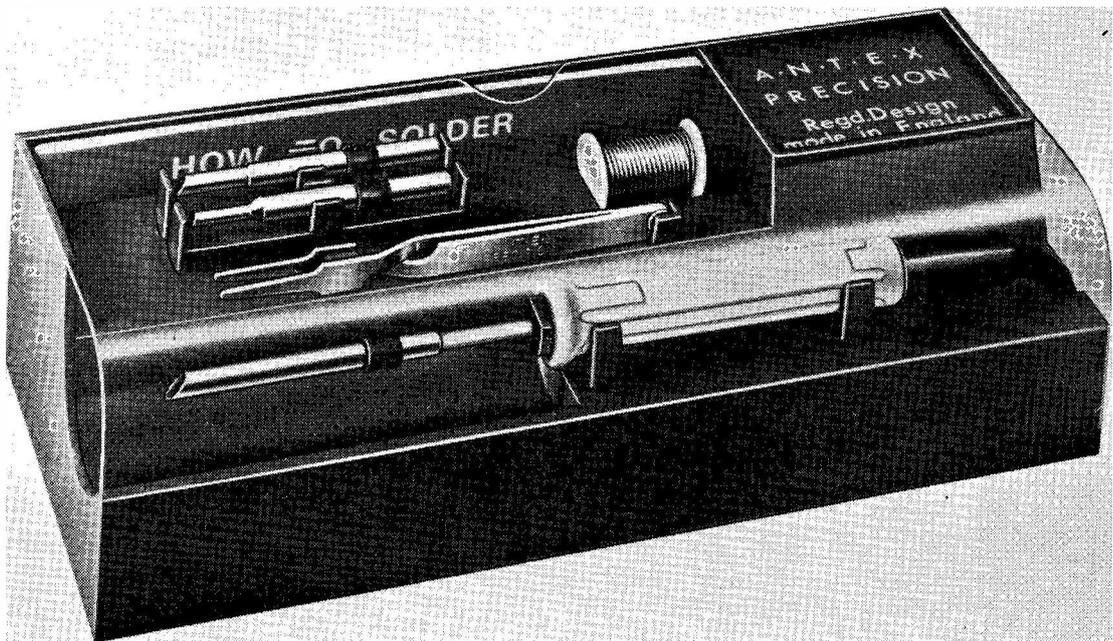
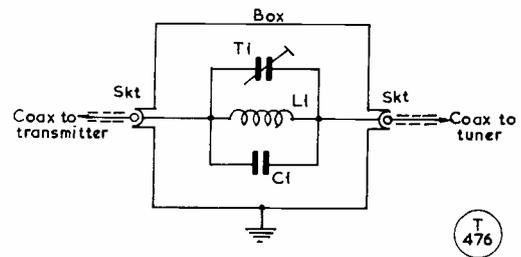


Fig. 5. Suggested arrangement for avoiding second-channel interference—see text.

channel signals in the way achieved by B. The tuner can be switched or tapped for three-band working.

In the circumstances where the transceiver has been used, no intermediate frequency breakthrough has been experienced. If this arises a boxed 5.2 mc wavetrap such as that opposite is recommended. This is left permanently in circuit. The makers suggest 50  $\mu\mu\text{F}$  for T1, about 950  $\mu\mu\text{F}$  for C1, and 7 turns of 16g. wire, spaced to occupy 1in. and 1in. inside diameter, for L1. The resonant frequency can be adjusted to that of a troublesome transmission.



The new Antex Precision Soldering Kit is a complete outfit containing everything the keen amateur needs for successful soldering—particularly where precision work is required. The pack, which itself serves as an iron-stand, contains an Antex Model CN240 precision miniature iron, rated 15 watts and fitted with a 3/16in. nickel-plated bit; two spare interchangeable bits of smaller size are also provided, enabling a wide variety of jobs to be undertaken. The kit is completed by a reel of resin-cored solder, a cleaning pad and a heat-sink for soldering transistors and other light work. The cost of the pack complete is 49s. 6d. and it is being made available through the usual retail outlets in the hardware and D-I-Y category.

*“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.*

# SUBURBAN AERIAL FOR EIGHTY

## INVERTING A GROUND PLANE

E. M. WAGNER (G3BID)

THE writer had always wanted to try working the DX on 40 and 80 metres, but had no suitable aerial for the purpose. The garden is only 65-75 feet long and while a half-wave on 40m. was possible, this was out of the question for 80 metres.

Conventional methods were tried of drooping the ends, as in Fig. 1, with off-centre feed using 300-ohm tubular line, the layout being a two-band Windom for 40 and 80m. The results were not exciting.

Then a bent vertical for 80m. was put up, as in Fig. 2, with somewhat better results. It was then realised that the current antinode was at the bottom end, and that the radiating portion was being screened by the surrounding houses. It seemed that the problem was to get a vertical radiator with the current-carrying portion at the top—an inverted ground-plane, in fact! This clearly being impossible, a vertical coaxial dipole for 40m. was built; this had to be bent somewhere because enough height could not be gained to have the whole half-wave in the vertical. For simplicity, it was bent at the bottom, as in Fig. 3. This got the current antinode off the ground, anyway. It again showed an improvement as regards 40 metres but did not solve the problem, as the real objective was still effective radiation on 80 metres. For this, the current antinode would have to be developed higher up.

So the old two-band Windom was hoisted again, but this time to the configuration shown in Fig. 4, with one part vertical and the other horizontal. The current distribution was now reckoned to be more or less as Fig. 5. The inverted ground-plane idea was nearly achieved. It was realised, of course, that the feed-line (to a dipole) should not run parallel to either radiating portion—but this was difficult to avoid with the layout of Fig. 4 as the aerial now had two arms at right angles, and it was not possible to find a position for the feeder to be horizontally at right angles to both arms. So as a compromise it was pulled away at about 45°.

Results are quite encouraging for an 80-metre aerial in a suburban garden. The horizontal section gives good medium and short range working to Europeans and round the U.K., while the vertical produces a certain amount of DX. At any rate, W, VK, 4X4, VO1 and HZ have all been worked on phone, using either AM (150 watts) or SSB (180 watts p.e.p.).

This does not pretend to be a clever sort of

super-DX aerial design, but a reasonable compromise to get G3BID out on the LF bands from a suburban location, at the cost only of a little experimental effort. As such, it may be of interest to others similarly placed.

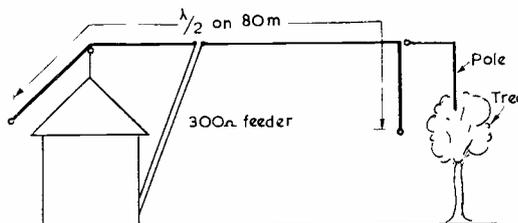


Fig. 1

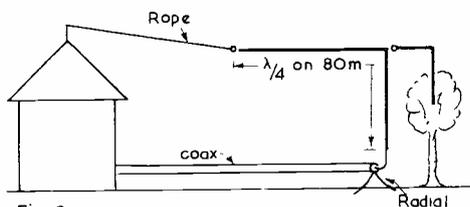


Fig. 2

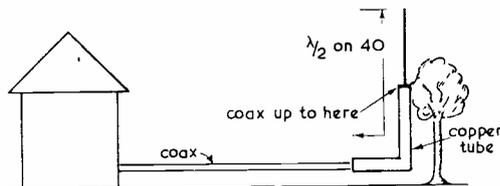


Fig. 3

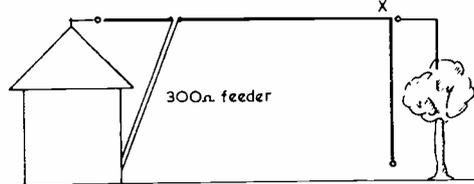


Fig. 4

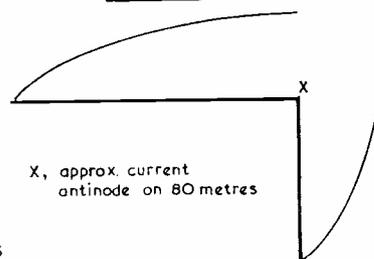


Fig. 5

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The various arrangements tried by G3BID and discussed in his article. The Fig. 4 layout gave the best results in the end.

# THE PADDINGTON TRANSCEIVER

CLUB PROJECT FOR TOP BAND  
TX/RX—SIMPLIFIED APPROACH  
TO MODERN REQUIREMENTS

E. W. HOLT (G3MHQ)

*This article shows how the transceiver concept can be adapted, quite simply, to the practical problem of 160-metre operation, either on the bench or in the field. The object is not so much to give detailed constructional information as to show the circuitry, proven by results, and how any difficulties that may be encountered can be overcome. There are many ways of building up the equipment discussed here and, given the basic ideas, most constructors would make their own approach as regards application and the refinements.—Editor.*

**T**HE idea for the transceiver described here was formulated as a Club project. The transceiver had to fulfil the following conditions: (1) To be inexpensive as possible; (2) The design to be flexible, to make the most use of the private junk boxes; (3) Parts easily obtainable; (4) To have a built-in mains power unit, and provision for external supplies when used for field day or portable working.

For ease of construction commercially made coils were chosen, (except for the PA). Each coil was mounted in a brass can 2in. x 1½in. x 1½in. The size of the cans should be approximately three diameters of the coils, and they should be of aluminium, brass, or copper.

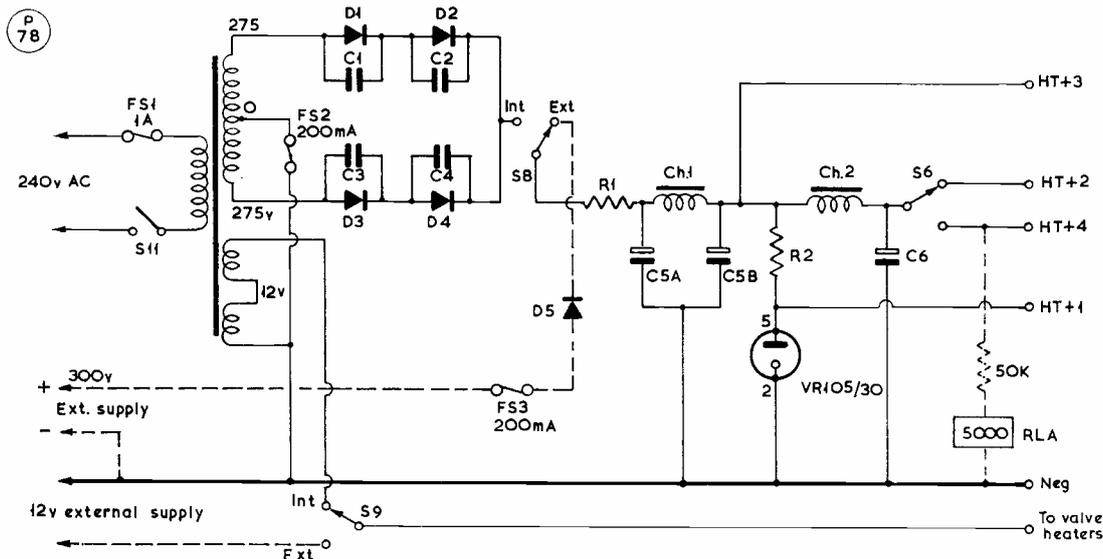
The PA coil (L6 in Fig. 5) was made of 1½in. diameter paxolin tube wound with 50 turns of 24g. enamelled wire. The aerial coupling, 8 turns of plastic covered wire, is wound over the earthy end of L6.

While a six-pole changeover switch (S1 to S6) can be obtained, it can easily be improvised by using a double-pole toggle for switches S1 and S6, while switches S2, S3, S4, and S5 can be on a high resistance type of relay operating off the HT4 line, through a suitable resistance of about 50K (see Fig. 1).

The whole circuit is broken down into four sections. Each can be constructed separately, and with a little ingenuity tested before complete assembly.

### METHOD OF CONSTRUCTION

Wire first the power supply unit (Fig. 1), and connect all valve heaters (Fig. 2). If the mains transformer has no 12-volt winding, then two 6-volt windings connected in series will give 12 volts. Most small transformers have only one 6-volt section and a 5-volt winding. These can be joined to give 11 volts and the extra volt can usually be made up by putting about 4 or 5 turns of 18g. enamelled wire round the core, over the other windings, and connected in series. When windings are connected in series in this way they must be in the correct phase, or their voltages will subtract. An AC voltmeter will



**Fig. 1.** Circuit of a power supply unit suitable for the 160-metre "Paddington Transceiver." It can be built as a separate item, like all other sections of the circuit and, if using the values given, will be found adequate for running the transceiver.

show which is the correct way round for the connections.

Ensure the valve heaters are lighting up, and that the HT is about 350 volts (off load).

**Rx Side**

Wire now the receiver section (Fig. 3). Connect a pair of high resistance phones to point "A," and earth. Set the IF gain control (VR1) to about half-way, and AF gain (VR2) to maximum. With the aid of a modulated signal generator connected to the grid of V1 adjust the IF transformers to 455 kc. Advancing VR1 to almost maximum will probably cause the IF amplifier to oscillate due to the very steep slope of the EF80, V2, and slight RF feedback across the valve base. This feedback can be used to advantage by setting VR1 to the point just below oscillation, and peaking the IF's at this point; they then become slightly regenerative and extremely selective (similar to when a Q-multiplier is peaked).

No AVC is included in the RF or IF sections, but C8 and R3 and C12 and R7, prevent strong local signals from blocking these stages. A negative bias is developed due to grid current flowing if the signal exceeds the cathode bias of the valve. This negative bias reduces the incoming signal (effect similar to AVC).

Connect the signal generator to the aerial winding of L1 (Fig. 3) and close the vanes of the tuning condenser, TC1. Set the signal generator to 1.8 mc, and adjust the core of L2 until the note is heard. Should no signal come, then probably the feedback winding of L2 is round the wrong way. Reversing the connections to this winding should put it right (do not reverse both windings of L2). Adjust the core of L1 for maximum signal. Fully open the vanes of the tuning condenser, and set the signal generator to 2000 kc. Adjust VC2 until the signal is heard, and now adjust VC1 for maximum signal. Repeat tuning procedure to L2 and L1 at 1800 kc with the tuning condenser closed, and VC2 and VC1 at 2 mc with condenser vanes open. After several such adjustments the RF section should track correctly over the whole band—but it takes a little time. A word of warning at this point: It may be possible to adjust L2 to the wrong side of signal

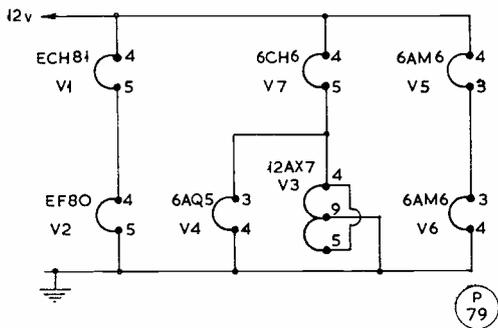


Fig. 2. The heater chain interconnection for 12-volt working with the "Paddington Transceiver"—see text.

**Table of Values**

Circuitry for the Paddington Transceiver

C1, C2, C3, C4,	= .001 $\mu$ F, 500v.	R7	= 220,000 ohms, $\frac{1}{2}$ w.
C5, C24	= 16 + 16 $\mu$ F, 450v.	R8, R12,	= 68,000 ohms, $\frac{1}{2}$ w.
C6	= 16 $\mu$ F, 450v.	R13	= 22,000 ohms, $\frac{1}{2}$ w.
C7, C14,		R17, R23,	
C21, C22,		R27, R31	= 10,000 ohms, $\frac{1}{2}$ w.
C35, C42	= 220 $\mu$ F, 500v.	R21	= 270 ohms
C8, C13,		R22	= 18,000 ohms, $\frac{1}{2}$ w.
C28	= 150 $\mu$ F, 500v.	R30, R33	= 100 ohms, 1w.
C9, C19,		R32	= 300 ohms, $\frac{1}{2}$ w.
C43	= .05 $\mu$ F, 500v.	VR1	= 10,000-ohm potentiometer
C15	= 500 $\mu$ F, 500v.	VR2,	
C16	= 600 $\mu$ F, 500v.	VR3	= $\frac{1}{2}$ -megohm potentiometer
C10, C11,		T1	= 275-0-275v. 120 mA, + 12v. (see text)
C17, C18,		T2	= Push-pull speaker xformer, rated 60 mA or more
C20, C23,		RFC's	= 2.5 mH standard
C26, C29,		D1, D2,	
C33, C34,		D3, D4,	
C41	= .03 $\mu$ F, 500v.	D5	= 0A211, or BY100
C12, C32	= 0.1 $\mu$ F, 250v.	V1	= ECH81, or X719
C25, C27	= 50 $\mu$ F, 12v.	V2	= EF80, 6BW7 or Z719
C30	= 80 $\mu$ F, 500v.	V3	= 12AX7 or ECC83
C36, C39,		V4	= 6AQ5 or EL90
C40	= .002 $\mu$ F, 750v.	V5, V6	= EF91, Z77 or 6AM6
C37	= 50 $\mu$ F, 500v.	V7	= 6CH6 or EL821
R1	= 51 ohms, 2w.		
R2	= 10,000 ohms, 5w.		
R3, R15,			
R16, R18,			
R20, R34	= 470,000 ohms, $\frac{1}{2}$ w.		
R4, R10	= 470 ohms, $\frac{1}{2}$ w.		
R5	= 27,000 ohms, $\frac{1}{2}$ w.		
R6, R9,			
R11, R14,			
R19, R24,			
R26, R28	= 1,000 ohms, $\frac{1}{2}$ w.		

COILS: Denco "Maxi-Q," L1, Range 3, blue; L2, Range 3, red; L3, Range 3, yellow; L4, Range 2, red; L5, Range 2, red; L6, PA tank, 50 turns 24g. on 1- $\frac{1}{2}$ in. diameter former, 8 turns p.v.c. covered for aerial winding at earthy end.

TUNING CONDENSERS: TC1, TC2, TC3, 75  $\mu$ F, three-gang; TC4, 10  $\mu$ F; TC5, 240  $\mu$ F, air spaced.

VARIABLE TRIMMERS: VC1, VC2, VC3, 100  $\mu$ F, air spaced.

SWITCHES: S1-S6, 6 pole, two position (see text); S7, single pole, two position, change-over; S8, S9, two pole, two position, change-over; S10, S11, SPDT, on-off.

frequency. Should it be found that when screwing in the core of L2, the signal can be heard in two places, choose the position where the core is most out of the coil. This will put the oscillator on the HF side of signal frequency. This is the correct setting of the local oscillator for tracking.

Connecting an aerial to the input winding of L1 should bring in stations through the headphones.

**Modulator and Output Stages**

Next the modulator/AF output stages should be wired as in Fig. 4. With the send/receive switch to "receive," signals should be heard at loud speaker strength. It may be necessary to peak up the final IF transformer again as when the headphones are removed, the load on the final tuned circuit will be reduced. Switching to "transmit" should cut the receiver dead.

In the transmitter section, Fig. 5, special attention should be paid to the construction of the VFO/BFO, V5, as the whole stability of the transmitter depends on this. Both VFO coil and associated condensers

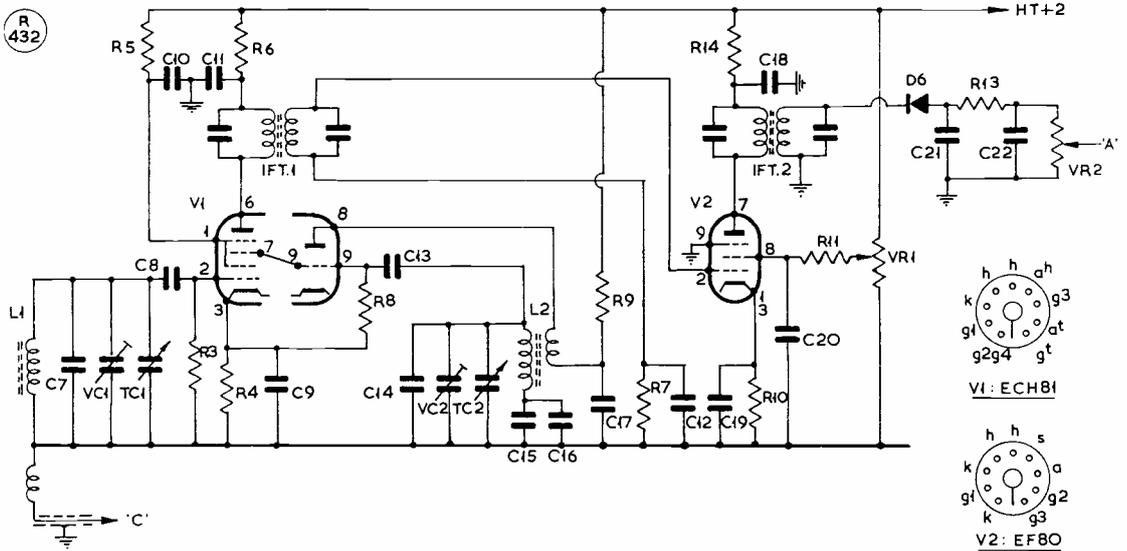


Fig. 3. Three-stage receiver section for the 160-metre Transceiver described in the article. This is a straightforward design and is sensitive and selective enough for normal operation on Top Band. Detailed constructional information is not given, as this will depend largely on individual preference.

Note: All values for these circuits are in the Table on p.657

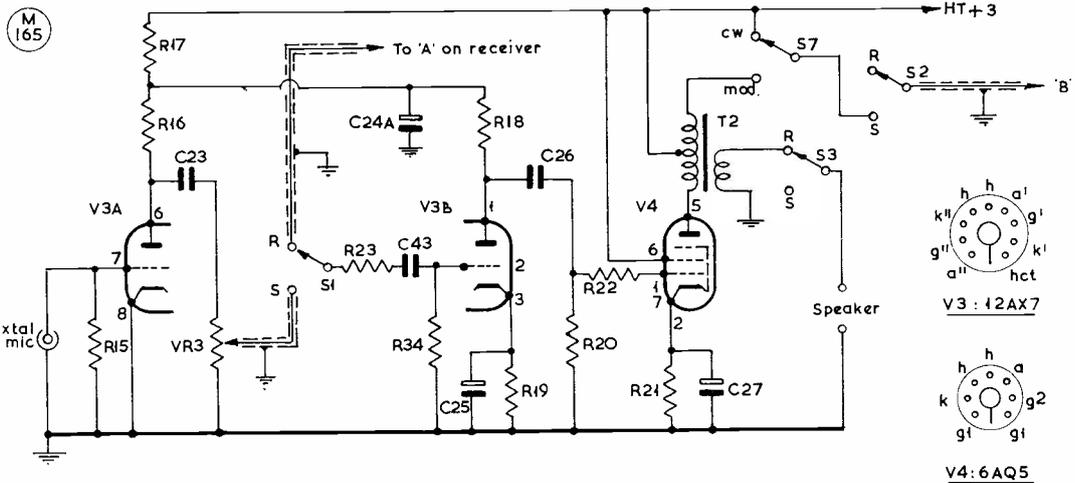


Fig. 4. The speech amplifier (V3A-V3B) and modulator (V4) for the "Paddington Transceiver." Values are given in the main table and the inter-connection can be followed by examination of the various sections of the circuit. Note that V3B, V4 also act as the receiver audio stages.

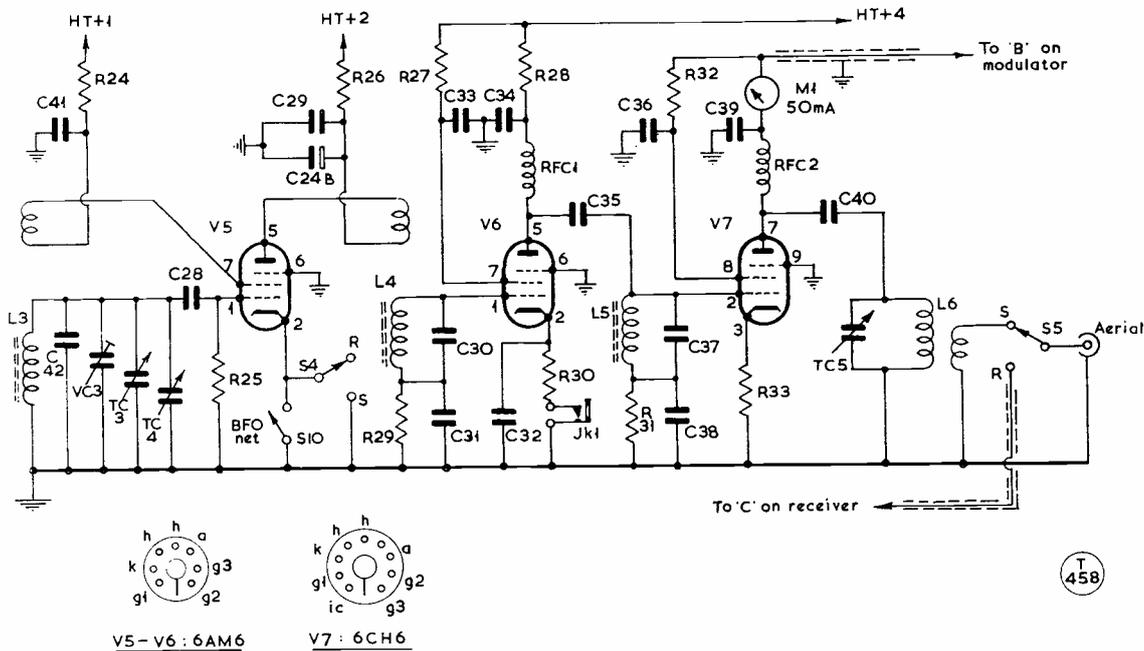


Fig. 5. RF section for the 160-metre transceiver. V5 is the VFO/BFO unit and can be a 6AM6, or equivalent. V6 is the tuned buffer amplifier, very loosely coupled from V5, driving the PA, a 6CH6, by direct coupling through C35. The 6CH5 PA stage can be driven and loaded to 10 watts.

should be firmly mounted, and screened, from the rest of the transmitter.

It is recommended that a close-fitting screen be fixed across each valve holder in the RF section (Fig. 5), screening the grid pin from the anode pin, to avoid unwanted feedback which could cause instability, and probably parasitic oscillation. Thin copper or brass foil is suitable for this purpose, as it can be easily soldered direct to the valve pins.

**Tracking the VFO**

This is done with the receiver tuning control. Set the signal generator to 1.8 mc and tune it on receiver. Switch on BFO/VFO and set BFO tuning control, (TC4, Fig. 5) to half-open position. Adjust the core of L3 until the BFO/VFO is at zero beat with signal generator. Set signal generator to 2.0 mc, and retune the receiver to this frequency. Now adjust trimmer VC3 to zero beat. Repeat tuning L3 at 1.8 mc and VC3 at 2.0 mc. After several adjustments at each end of the band the BFO/VFO should track reasonably well, right across the band. Any small deviations in frequency can be corrected by the BFO/VFO control (TC4). This will move the transmitter frequency approximately 5 kc either side of tune.

Remove R31 from the chassis and insert a 5 mA meter. Tune to the middle of the band, and switch to "transmit" (dummy load connected to aerial). Adjust L4 and L5 for maximum grid current on milliamp meter. This should be about 4 mA.

Tune across the band. If the drive falls off badly near the ends of the band it may be necessary to stagger the cores of L4 and L5 until the drive remains reasonably constant over the whole 200 kc range. Remove the meter and restore R31 to chassis. Now tune PA for maximum RF current in the dummy load.

With the aid of a spare Top Band receiver check the transmission for spurious radiations before air testing the rig. These spurious radiations can cause splatter at the receiving end even when the transmitter is not over-modulated, and can be extremely annoying to other band users. If these unwanted radiations are taking place, the signal will appear to spread several kc on the local Rx.

**Causes of Spurious Radiation**

(1) *Feedback from PA tank circuit to grid circuit:* This can usually be cured by screening across the valve base, and screening the PA tank from the grid circuit. If the feedback still persists after screening, then the PA must be neutralised. This can easily be done using the spare winding on L5 in a "reversed reaction" circuit (Fig. 6), i.e. feedback is supplied from the PA tank to the grid in such a phase as to cancel out the unwanted feedback.

To neutralise the PA, put the key in the jack to cut off the drive, and remove the dummy load from the aerial. If feedback is taking place a dip in PA current will be seen as the PA tuning condenser,

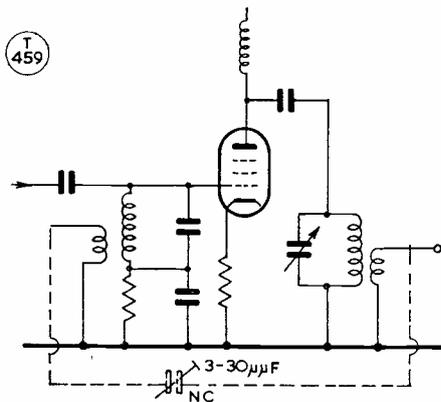


Fig. 6. A method of "reverse reaction" connection in the PA, to obtain neutralisation if spurious oscillation or PA take-off is encountered. The 3-30  $\mu\text{F}$  condenser is adjusted till the RF amplifier is quite stable.

TC5, is rotated. Adjust the neutralising condenser until PA current does not change as TC5 is rotated. Should the neutralising condenser appear to make feedback worse, reverse the connections to the feedback winding on L5.

(2) *Low frequency parasitic oscillations:* These are usually caused by the RF chokes resonating, through being able to "see" each other. The cure is to keep RFC1 and RFC2 as far apart as possible, and at right angles to each other. If parasitics still persist, then it will be necessary either to change RFC1 for a lower inductance, or remove RFC2 and connect the main winding L6 between HT and anode. The end of the coil that had been connected to earth should now be connected to HT, and the other end to anode. C40 should go between anode and TC5 to keep HT off the fixed vanes of the condenser. It may be necessary to increase C40 to about  $\cdot 01 \mu\text{F}$ .

High frequency parasitic oscillations are unlikely due to the negative feedback developed across R33. The power amplifier is cathode-biased to Class-A working by R33, and driven into Class-C by the large drive. This may cause some confusion when operating CW, for when the key is up (no drive), the PA anode current meter will read about 40 mA. If the HT is 250 volts, and the PA is loaded to 10 watts, the meter will still read 40 mA when the key is pressed. If the PA is loaded to less than 10 watts, the meter will kick backwards. In either case it will be giving RF into the load, as the usual checks will show.

The voltage measured at the anode of the PA, when loaded to 10 watts, should be about 250 volts,

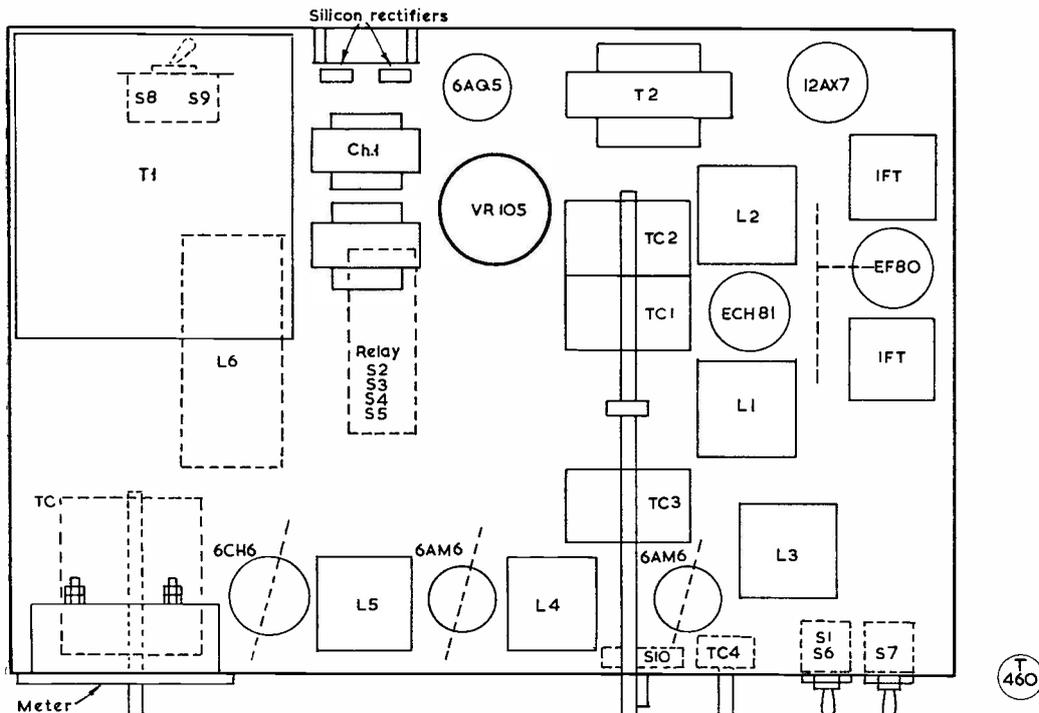


Fig. 7. A suggested general layout arrangement for the Top Band transceiver, to incorporate the circuits of Fig. 1, Fig. 3, Fig. 4 and Fig. 5. Any chassis and panel dimension that will accommodate the main parts will meet the constructional requirement. However, if using the circuitry as outlined in the article by G3MHQ, with the values given in the table (on which there is a good deal of tolerance) it would be as well to adopt this layout.

but this may vary a few volts either way, depending on the resistance of the smoothing choke and the modulation transformer.

The Morse key jack holder should be the type that when the plug is removed, the contacts make across, to switch on the drive to the PA for Phone operation. If preferred a second switch could be added to S7 to short the key when switched to Phone.

#### Mobile or Portable Working

Power supply requirements for mobile or portable working are 12 volts at 1.35 amps. and 300 volts at

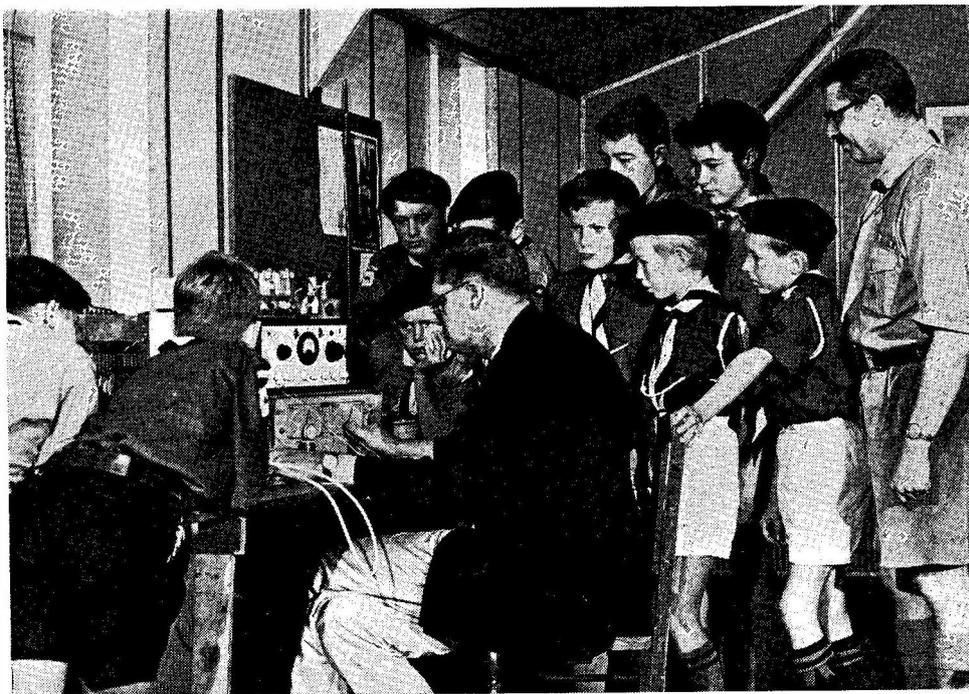
120 mA. A safety diode, D5 is connected in series with the external HT supply, to safeguard the electrolytic condensers, should the external supply be inadvertently connected the wrong way round. This can happen very easily if a motor generator is used to develop the HT supply. If connected wrongly to the battery, the motor generator will reverse, and give a reversed output.

The writer would like to thank the Paddington Club for the use of equipment to make this project possible.

#### NEW PLOTTING CHART

We are now able to offer a great-circle Map, centred on the U.K., in black-and-white only, without the Zone delineations and the colour boundaries of our regular *DX Zone Map*. As well as giving (magnetic) beam headings and distance in miles (and kilometres) to any part of the world from the U.K., it carries a GMT scale, enabling time in any part of the world to be worked out with reference to London. The lat./long. lines are at divisions close enough for plotting a known position with reasonable accuracy.

This new Map is envisaged essentially as a plotting chart, *e.g.* to show what distant parts of the world you have worked, or heard, and also as a working great-circle Map for beam calculations—hence, many active stations will probably need two sheets. For this reason the price of the new *GC Map* has been kept down to 5s. 6d. post free. Printed on good quality paper, for folding or mounting, the size is 24in. by 24in. wide, with immediate delivery from stock. Orders with remittance 5s. 6d. per *GC Map*, to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.



A real Jamboree-on-the-Air scene, taken during the Scout QSO party last October. The station is G3TDT/A, Redhill, Surrey, operated by G3TDT, who was entertaining the 6th Horley Scout Troop, with the district commissioner (Mr. Arthur Clermont, right) looking on. Scout group contacts were made round the U.K. and with various European stations, using 50 watts AM on 20 and 80 metres, in spite of a high level of local QRM.

## ELEGANT VERTICAL RADIATOR

### UNGUYED MAST-AERIAL SYSTEM FOR TWO BANDS

R. HART (G3SHM)

WHEN first licensed three years ago, the writer was faced with the familiar problem of, "aerial-wise," getting a quart into a pint pot. The back garden was only 20 × 30 feet with no high trees suitable for use as supports. Various lengths of wire were strung out and tried, but these proved to be rather ineffective owing to numerous bends and low over-all height.

The obvious answer seemed to be some form of vertical. A ground plane was not feasible owing to the base area needed for spreading out the radials and, in any case, a system which covered at least 80 and 20 metres was the requirement.

The main problem with a vertical system was that, to be an effective radiator on 80m. without being too heavily loaded, a height of about 50 feet was desirable—but no spread of space was available for guy wires.

The only possible support was an asbestos garage and it was therefore decided to devise some form of free-standing vertical using this as the base, with the radiator itself supported by a piece of timber. This presented the problem of how to support the aerial while keeping it insulated at the same time. After much experimenting, the arrangement illustrated here was decided upon.

Six hardwood blocks were cut as shown to act as stand-off pieces between the mast and the pole. The faces of the blocks in contact with the mast were lined with three layers of rubber (cut from an old inner tube) and placed between the mast and its support at regular intervals. A piece of *Tufnol* tube was inserted through the mast and blocks to insulate the mast from the support, and a *Tufnol* washer was put under the head of the bolt and under the nut. Each bolt head and nut was sprayed with *Ambersil* MS4 silicone grease to prevent rust.

#### General Arrangement

The mast itself consisted of a 2in. × 20ft. alloy scaffold pole, from the top of which were fastened four lengths of dural tubing, decreasing in diameter to  $\frac{3}{8}$ in. to make a total height of about 50 feet. An overlap of 18in. between sections was used for strength and the adjoining sections were drilled and bolted with three brass bolts. At each junction, a strap of braided copper was securely fastened to each section to eliminate possible future contact resistance. The upper end of the top section was crimped and sealed with bituminous compound, all exposed joints again being sprayed with *Ambersil*.

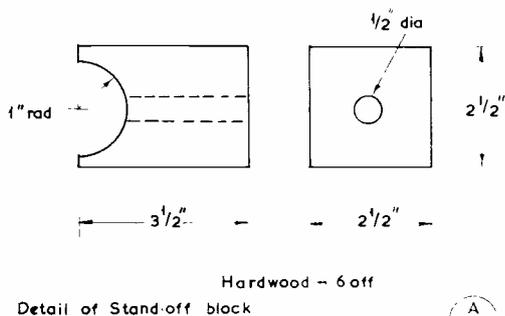
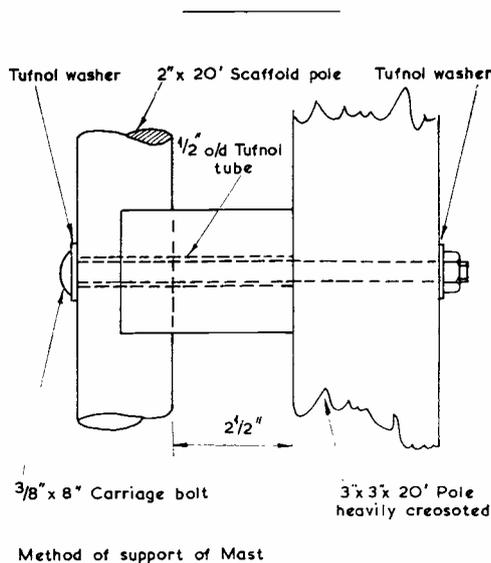
With the aid of four (strong) friends and a lot of careful manoeuvring, the entire assembly was then

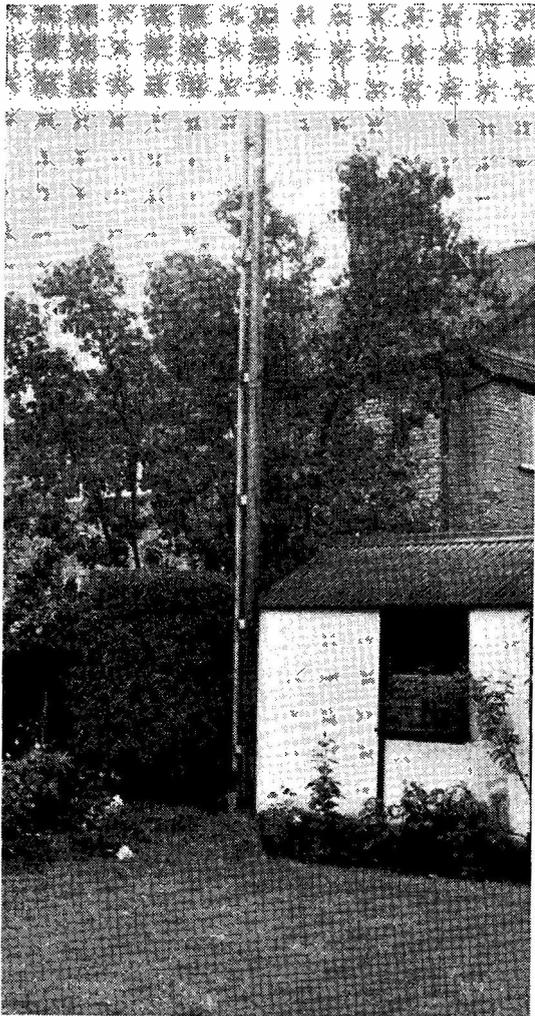
pushed up against the side of the garage, the foot of the post resting on a brick sunk 6 inches into the ground. Five bolts of  $\frac{3}{8}$ in. diameter with large washers under the heads were used to fasten the support post to pre-drilled holes in the garage framework.

The completed aerial, despite some fears, has withstood high winds with only a small amount of sway in the top 10 or 15 feet. It presents a slim, unobjectionable and not inelegant appearance (see photograph), the support post being largely hidden by the garage.

#### Tuning and Loading

A tuning arrangement based on an article in the November, 1964, issue of *QST* was used initially for 80 metres, but it was found that merely loading the base with a coil consisting of four turns wide-spaced on a 3in. former brought the system to resonance at 3515 kc. For radials, three 66ft. and four 32ft. 18g. hard-drawn copper wires were spread out through 90 degrees and buried to about four inches, the finished system being fed with 52 ohm coax.





The drawings opposite illustrate the fitting details and the picture above shows the general appearance. Results have been excellent with this vertical antenna, as outlined in the text (below).

### Some Results

Results on 80 metres during the 1965-'66 winter season were very encouraging, a total of 57 countries being worked using 125 watts of CW, the best including: CO2 (S7); WØ (S7); ZC4 (S6); 6Y5 (S6); VE3 (S6); 9K2 (S7); 7X2 (S9); KZ5 (S7) and many others.

On 20 metres, without any change in tuning, 124 countries have been worked in the past year, again using 125 watts CW and including: FO8M (S7); KH6 (S7); ZL (S7); LU8Z (S6); 9VI (S8); PYØXA (S7); YS (S8); VK8 (S6); ZL4CH (S7); and VU2DIA (S5).

The system also loads up quite nicely on 15 metres, but no outstanding results have been achieved, probably due to a considerable mismatch and not

enough trying.

While not claiming a performance comparable with a beam or Quad aerial, it is felt that the results obtained more than justify the effort of putting up this aerial and while the author has not attempted to give a rigorous technical account, it is hoped that some of the ideas suggested and results obtained will prompt others keen on DX but with restricted space to try a vertical system.

### NO "VHF BANDS"

We very much regret to have to explain that—because of three weeks' incarceration for some urgent medical attention—A. J. Devon has been unable to give his mind to "VHF Bands" for this issue. Indeed, his single-page offering last month was produced under conditions of some strain. While those who know A.J.D. personally may suspect the condition of his liver, we are assured that there was doubt as to whether it was his pipes or his tubes that needed sorting out. At any rate, he has now been released in what may be called "second-hand but good durable condition."

### THINGS THAT NEED SAYING . . .

To keep the record straight, and to counter the misrepresentations that sometimes can be heard rumbling round, it was none other than your A.J.F. who:

—Breathed life into the F.O.C. in the pre-war era, and resuscitated it in the post-war period, when a clean re-start was made by the appointment (by A.J.F.) of the late G2ZC as the first hon. secretary. (The only official pre-war record of the F.O.C. now extant is the statement on p.22 of the September, 1939, issue of SHORT WAVE MAGAZINE.)

—The same A.J.F. invented, for the *Magazine*, the whole idea of working the U.K. by counties, on 160 metres and the VHF bands. This was about 20 years ago.

—The notion of having a British Old Timers' Club (BOTC) was first conceived by A.J.F., and its first dinner was held on May 20, 1949, with an attendance of 78 (all two-letter callsigns) under the chairmanship of the late Gerald Marcuse, G2NM.

—Likewise, it was A.J.F. who thought up the idea of an inter-Club contest, now known as MCC and played off on Top Band for the 21st consecutive occasion in November last.

—And who do you think it was who first started writing Amateur Radio instead of "amateur radio" when referring to our activities?

—It was the same A.J.F. who coined the word "radionics" (see SHORT WAVE MAGAZINE, October, 1955) in turn suggesting "avionics." Both words have now come back to us from the States, and in professional circles are the in-words to use over here . . . marvellous, isn't it!

Well, you may say, so what? Nothing, actually, but it may just be interesting for the record—and it proves we are not growing in the same row as the other cabbages. (*More to come on another occasion.* —Ed.)

# COMMUNICATION and DX NEWS

EVERY now and then the old argument of "Phone versus CW" crops up, and of course the protagonists on both sides go all hot at the other man's point of view. On the other hand, while one often hears arguments about the best way to become the proud owner of a Big Signal, it is noticeable that when a station with a potent output of RF is actually named, that station is always blandly dismissed with the assertion that he is running power in excess of the permitted maximum, usually on the doubtful authority of "old So-and-So" who has seen this with his own eyes.

Just to prove a point for the benefit of one of your E.P.E.'s R.A.E. class last year, the writer undertook to reduce power during the course of one of his contacts. In addition, between overs, certain rearrangements of the aerial system were made, and after it all was over the results were collated and made to provide a valuable lesson for the SWL concerned. What it all boiled down to was this: The reduction from elephant-power to flea-power went completely un-noticed, even by those in the know, but the alteration to the aerial produced spectacular changes in the report. There was just a small snag—the change referred to as a "change to the aerial" involved no more than walking downstairs, collecting a cup of tea and walking back up to the shack with it!

The point we are trying to make is that signal strength is almost always a subjective thing as far as amateurs are concerned, and also that very few stations have S-meters that can even be trusted to vary in accordance with signal strength, let alone do so in any quantitative manner.

A similar line of reasoning can be adopted in the Phone/CW argument with some degree of

cogency. In this case the crux of the argument lies in the question "What do you want to do in Amateur Radio." If one wishes to communicate, pure and simple, then there is no doubt that technically CW is a superior method of communication to any known method of telephony allowable on our HF bands; on the other hand, as a confirmed addict of the microphone, your scribe would claim that there is more personality in a Phone contact. Leaving out of account the strictly contest-style QSO's (which are impersonal in any mode) it is a sad fact that an immense number of CW operators just cannot follow a ragchew type of contact, albeit they may be dab hands at getting through a rubber-stamp QSO as their log will show. It is felt that, in a lot of cases, CW stations are not prepared to have a long natter for this very reason, and the contact often seems to end with "Sri No Copy—Local QRM."

However, the discussion is purely academic (E.P.E. being without a modulator at the moment) so let us pass on to a survey of The News.

## Contests

The slip giving advance results of the 1966 *CQ SSB Contest* has come to hand from W1WY, to whom we are indebted. The first G in the "All-Band" category was G3UML, with 265,374 points, which takes him very near to the Top Ten rating. On 28 mc, G3NMH was fourth, with 4,522 points, and on 7 mc, in second place we find G3NLY with 22,601. To all these three, heartiest congratulations. The full results are slated to appear in this month's issue of *CQ*.

The 33rd *ARRL International DX Competition* takes place during February and March; for the CW types, Feb. 18-19 and

Mar. 18-19, and for the Phone operators, Feb. 4-5 and Mar. 4-5, the times being 0001 Saturday to 2359 Sunday (GMT). Stations outside the W-VE-VO area raise as many W/VE's as possible, giving RS(T) and input power in watts as the Contest exchange, and receiving in return RS(T) and the State or Province of W/VE. Each complete contact is worth three points and the incomplete ones two. As for the multipliers, the form is one for each of the continental U.S. States plus VE1 to VE8, and VO. The final multiplier is the sum of the multipliers collected on each band. Contact points times the final multiplier is then the final score. Incidentally, the same station may be worked again on another band or bands. Send the log (fair copy), plus a check list of the claimed multipliers, and a summary sheet. All the working paper can be obtained from ARRL if required. Logs are to be sent to arrive no later than April 22, 1967, at ARRL International DX Competition, 225 Main Street, Newington, Connecticut, 06111, U.S.A.

Canada celebrates its 100th Birthday in 1967, and to mark the occasion, the Amateur Radio Club of Newfoundland are running a Contest. The scheme is that the show goes on through the whole of March; contacts score one point for each QSO in each mode, on each band—thus, one could work a station on Twenty once on CW, once on Phone, and once on RTTY for a maximum of three points. The total of the VO1, VO2, 3B1, 3B2, stations accounted for in this way, quoting times in GMT, should be logged and sent to VO1AT, P.O. 266, Gander, Newfoundland, to arrive before May 31, 1967. As the man says, there will *not* be another Centenary year contest till 2067, and you'll never make it!

These Contests are fun to take part in, even if you never get round to sending in an entry.



Neat station of GM3SVK, now so well known on the amateur bands. Operated by Fred Curtis from R.A.F. Saxa Vord, Haroldswick, Unst, Shetland Islands, he is about as far north as you can conveniently get in the British Isles. GM3SVK showed up very well in the recent Magazine Daylight Test on Top Band, being heard or worked from almost all over the country. Up there, his trouble on 160 metres is intense local QRM from the fish-phones, and many contacts are lost thereby. All other bands are also worked, on CW and telephony, and GM3SVK has become a much sought-after callsign. The gear in view includes an AR88 Rx, a Heathkit DX-40U transmitter, and the Codar Top Band equipment.

The *CQ Top Band WW DX Contest* is already near at hand, and the date for this one is, of course, January 28-29.

#### QSL Cards

A note from MP4BGD says that anyone still needing a card who cares to drop him a line, enclosing details and a stamped, addressed envelope, will be accommodated forthwith. Brian remarks that this applies to SWL claims as well, always provided the report details are correct, of course. The address for correspondence is: B. Johns, 45 Royston Street, Edge Hill, Liverpool, 9.

#### Around the Bands

The bulk of the correspondence so far seems to be in some way or another connected with Top Band, so perhaps this is enough excuse to deal with the HF bands first this time!

Nice to hear from Dave, G3PQF (Cove), who has settled into the new home and already has managed a couple on Ten, to

wit 9J2DT and ZC4MO, just to keep his hand in. At the time of his letter, a grave problem existed with regard to the aerials insofar as the builders had "not till then delivered the garden." One would feel this would be somewhat of a snag in connection with earthing rather than aerials.

After a long interval of silence, it is a pleasure to hear once again from GM3JZK (Isle of Mull); George has a lot to say after all these years since Cambridge days, and much of it is thought-provoking. In the present context, he now has a  $4\frac{1}{2}$  kW diesel generator available and so has power to spare to get back on the bands. He was pleased to hook CT2YA on Ten CW, and remarks on the encouraging amount of A1 signals on this band. As for Twenty, IØRB, and KR6JZ—just to demonstrate the gear still works.

When he wrote his letter, GM3IAA had just come to the surface after a dabble in the *CQ WW Contest* on CW, and hence

was almost certainly suffering from that strange disease in which even the "dawn chorus" seems to be sending Morse—usually the most exotic one that got away. On Ten, Jim reports his 540ft. "VS1AA" aerial has produced good signals from all over the North American continent; the greater part of the time, however, has been spent on 21 mc, where he lists such items as ZS2-6, JA's, VS6, 9H1, VP6, 9Q5, ZD8, HK3, UAØ, and all the W and VE call areas including W6, K7, and VE7. Twenty has not received all that much attention, and the pick of the crop seem to be CP5, 9V1, EA3, and W's.

G3IDG (Basingstoke) mentions that he has spent less time than usual on Ten, but nevertheless has heard 25 countries in the month under consideration, the best of which he gives as CX2CO, HKØAI, VU2FN, WØGTA/8F4; as for 21 mc, Allan has recently worked his 150th Novice W on the band. In this connection, there can be little doubt that the

struggle to work a CW station who is "DX" to these chaps must be quite an encouragement to go on to get the General ticket. However, the biggest task seems to be that of making them understand the meaning of "QSL via Bureau" when they are apparently in the habit of sending all cards by direct mail! Despite this problem, Allan comments that the QSL return from these stations is in the order of 76 per cent, as against the overall average of 67 per cent.

Another who has been at work on the 28 mc front is GI3IVJ, who has a score which one would expect makes the finding of *anything* new somewhat of an event. Nevertheless, Cedric came out of the battle no less than *ten* countries to the good on the 10m. band in the period under review, by way of UJ8KAA on CW, FH8CD, WØGTA/8F4, 6O6BW, VO9AA/D, FP8CY, ZFIGC, FG7XL, FL8AC, and VP3JR on Sideband. Turning to 14 mc, the Mecca of the DX-pedition hunters, two new ones were VQ9AA/F and FR7ZP on the mike with a possible new one on CW in 1G5A; another new one in the prefix line who was landed in the same way was 4L7A in Soviet Georgia.

Your conductor's rudery about shutting the sun out with wire to obtain DX receives the *riposte* it deserved from GM3SVK, who points out that in Unst they just cannot do this as the sun goes down around 1530 anyway. However, the inverted-Vee was duly erected and produced CR6, KP4, KZ5, ZC4, ZD7, ZS2, ZS6, 4L7A, 5A4TL, 7XØ, 9J2's and W's, all on CW. As for 21 mc, this has been in excellent form, with VK's and JA's during the morning, stateside stuff in the afternoon, and the odd African poking a cautious head out through the QRM. The lunch-time period quite often yielded Pacific stations in sufficient quantity to satisfy all comers—GM3SVK's list includes CO2, CX1, EL2D, HP1AC, JA's, KP4, KS4, KZ5, MP4MAW (Muscat), SU1, LU's, PY's, VK's, 7XØ, and much besides. Twenty was not considered to be quite as good, with periods of both "up" and also "down," but an

interesting observation was that some stations were getting through over both the long and the short paths at the same time, the delay giving rise to a considerable lack of intelligibility—it is surprising how much damage a seventh of a second can do! CW yielded contacts with, among others, CX3, FG7XJ, HK3RQ, JX5XF, KH6, KL7, PY's, LU's, VK's, ZL's, TA2AC and much besides.

Over in Hailsham, G3VPS continues to get out with his shiny new call, to considerable effect. One thing above all stands out for him as far as the last month is concerned, namely, the first couple of QSO's with VK, both within half-an-hour of each other, on Fifteen. One can easily recall how

G3VPS felt when he says he was so excited that he just did not know what to say. Some improvement to the CR-100, is, we gather, indicated, in the stability line, but this and the proposed improvements to the aerial will have to wait awhile—there just is not enough time for eating, sleeping, and operating, in the reverse order of course! Fifteen has so far yielded VK, CO, 4X4, 9J2, UA9, and MP4B, while Sideband has added VK, MP4B, W's, and VE's to the tally.

G3LXO (Maidstone) was so fascinated by the results obtained with his QRP rig on 28.43 mc that he determined to prove to himself that they were no flash in the pan. As a result, his log now shows

#### FIVE-BAND DX TABLE

(New Cycle)

Starting Date: January 1, 1966

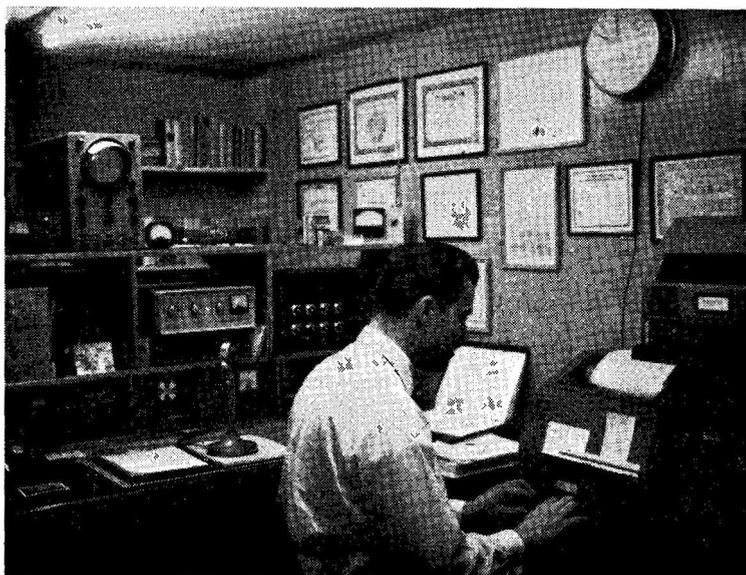
Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc
G3UML	211	110	107	183	68	45
G3IAR	136	51	83	92	61	41
G3NMH	187	48	93	177	—	—
G3LZQ	161	48	71	135	30	18
GM3SVK	151	36	122	117	65	11
G3VDW	106	28	72	68	24	16
G3PQF	72	21	6	18	58	24
GM3KLA	101	15	79	50	56	40
VP8HJ	102	15	24	100	7	2
9V1LP	35	14	22	24	21	21
G3VDL	102	13	45	75	40	20
GM3RFR	149	11	103	103	76	13
G3MWZ	72	11	22	59	21	17
G3UDR	104	9	43	68	2	20
GM3JZK	57	5	17	11	41	—
G3UBI	70	2	25	52	8	30
GI3GTR	22	1	6	14	10	9
G3VES	36	1	18	27	4	11
G3IGW	110	1	59	68	46	81
G3RJB	59	—	—	59	—	32
G3VPS	54	—	16	30	43	5

Note: Placings this month are based on the "28 mc" column.

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G8YEK, who is OTHR, runs a Hallcrafters HT-32A into a GSB-201 kilowatt final, his main receiver being a Drake-2B. Also interested in RTTY, Peter has a full range of teleprinter equipment. His aerials include an inverted-Vee for 80 metres, a 40-metre dipole and a Mosley TA-33Sr.

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XE, CX2CN, LU, ZC4, ZS6, CR7, ZE, all hooked on AM Phone using the tiddler Tx. All of them were completely free of QRM, and George says he has come to the conclusion that Ten is the ideal band for him as a confirmed rag-chewer, albeit he would prefer yet more reliable performance from the sunspots.

A very short note this time from G3UML (Ilford), just to say that his time on the band has been limited and what he has managed to hook was not worth worrying the other correspondents with—your conductor can only say that he would be only too pleased to see what Laurie calls the run-of-the-mill stuff going into the log at all! G3UML “rests his case” for the year on the Five-Band Table entry shown, as he is busily preparing for a trip to EA6 (*sans* gear) leaving home on December 17.

Over now to Yeovil, where G3NOF has been finding the state of the 28 mc band a little down during the first part of December, as compared with the very lively state of things earlier; in the morning period Don notes VS9AJC and 9J2BK, and in the afternoons he has been finding the band good to W on occasions, and managed to unearth some of the rarer states, including K7URP in

Arizona. After about 1700 Ten has apparently been dead. Again, on 21 mc the band has been down, with the W signals around noon deferring their appearance till almost lunch-time. The only contacts Don thinks are worth mentioning were the ones with UD6BR, and WØKOQ (Colorado). The main part of G3NOF's letter refers to 14 mc, on which Don comments that little has been heard before 0800 or after 1700. Africans can be heard around 1800, but they mostly seemed to have been working each other and did not yield to blandishments. The best of the crop were FB8YY, FR7ZP, HR2AFK, PJ3CD, UAØBP in Zone 18, UWØIN (Cape Schmidt, Zone 19), VP2, VP9, VQ9AA/A, with VQ9AA/F as a persistent gotaway.

Nice long letter and lots of news from G2DC (Ringwood), who takes a rather more optimistic view of the period under review than G3NOF. Jack has had good results on all three HF bands. Ten has been producing all-round DX, with CX2CO, CR6 and 7, EL2D, KP4, PY's, UF6, UG6, VE7BNG, VK, ZD7, and ZD8, WØGTA /8F4, ZS1 to 6, and all the W call areas. As for 21 mc, G2DC has also noted the phenomenon of both long and short paths being open simultaneously to VK and ZL, in the mornings. CX1AAC, CR6 and

7, EL2FD, EP2RV, KP4, UD6, VK3AXK, VQ9BC, VE7BNX, ZD7, 8, and 9, 4L7A, and all the W's make an impression of a band that is far from being tired. Where 14 mc is concerned, Jack is more than happy, although he is far from happy about the quality of the notes in some cases; as he says, an S9 signal with a T7c note right alongside makes it difficult not to lose the DX. The log is so full of stuff that Jack feels it would be invidious to single any specific ones out for mention.

As far as G3VDL (Chalfont St. Giles) was concerned the best DX was VQ9BC; to clear a query, this station is, according to the *Call Book*, in Mahé in the Seychelles Islands, and quite on the level. G3VDL tells us that since he first came on the air at the end of April, running 60 watts CW to dipoles, he has been able to push the score up to 100 countries worked; he is very surprised to find already that as many as 52 countries are confirmed, in some cases by the return of a card direct in response to one sent out *via* the bureaux, for which kindness G3VDL is duly grateful.

Ron, G3TLX (Edgware), succumbed to the delights of Twenty in a big way; to get going real QRO was needed, so the 7 mc device was loaded up to 10 watts, using the PA as a power doubler,

and the results were quite interesting—EA8EO, ZS1 and 2, EA2, W1, 2, 3, 4, and 8, and VE1 and 2, all in addition to UA9, and the EU stuff. Which only goes to prove that it is not impossible to have a QSO with low power, as some idiots would have us believe!

#### Forty Metres

Always used to be the band which received the ultimate in contempt—no mention. But of late swung to some extent the other way, and more people are on Forty, in the DX context. G3VDL, who as already related, has now got over the magic "ton" in fact had the 100th country on this segment, with an IS1.

G3TLX comes on 40m. fairly regularly, and in the last month heard such things as JH1XX, HK7XI, OD5EJ, JA6FOF, and JA6FOF/MM, and worked TF5TP, 9H1AM, 9H1AB, 4X4RD, IT1AQ, UD6KCA, and the usual

crop of W and VE stations, all of course with the aid of his trusty key.

GM3JZK was on Forty for the CQ WW exercise, and had quite good sport—the only snag being the typing out of the log, which is the bind with so many contests. The results obtained when the rig was first set up were so encouraging that the "droopy dipole" was replaced by a ground-plane set a bit higher up the hill. Before the GP went up results included UF6's, VK3, and 7XØ. The first event of importance was the CQ Contest, and this produced all W areas other than WØ, even the sixes being a comfortable S6 among the Borises, Vlads, and Ivans. CO2BO and VP7DX came back to a CQ; at one stage a VR1 was lost due to QRM from W6 stations. Others worked included EP2BQ and ZL4BO. A gotaway was CR6AI, while also heard on the band were FL8RA, UH8, UJ8, and WØGTA/8F4. Odd little side-

line in this account is the fact that the JA stations were not worked although the lads in Scandinavia were peeling them off with an average report of 589.

GM3SVK also finds 7 mc a quite good band for DX, if one is prepared to work it through the QRM. Fred observes that it is possible to raise VK/ZL in the morning and again in the evening; he heard Africa in the shape of CR6AI and 7XØAH during the Contest, but as yet neither is in the bag. The South Americans are to be found in the late evening and through the night. The sample offered gives a fair idea—EA8FF (Canary Is.), EP2RV, HI8XAL, MP4BDF, OY6FRA, UG6AD, UAØAG, VE8BB, W6 and 7. 6Y5MJ, and 9H1AM.

"The good old DX band of the thirties" is the description of 40m. offered by G2DC in his notes this month—and it can still produce the goods when given at least a sporting chance. As Jack says, the DX stations using this band need to select a frequency with great care, if they are not to find themselves getting tangled up with the whiskers of Peking or one of the other odd "commercial noises" which infest this part of the spectrum. The right move is to keep away from the LF end, and go right up to the top end of the CW allocation, where quite a lot of interesting stuff can be worked in comparative comfort. As a sample of the things that can be done Jack lists the following: EP2RV, HI8XAL, KP4, PY7, UA9's UD6's, YV, ZL4BO, 7XØAH, all W cail areas, ZC4, 4X4, VE1, 2, and 3, and VO. Which would not be bad pickings on Twenty!

Away up in Inverness, GM3IAA, amused your conductor greatly with his description of the operating in the CQ WW Contest — "What chicanery!" — an opinion with which your E. P. E. cannot but agree, albeit it has to be admitted that a lot of this occurs because chaps are stretched a little beyond the limits of their abilities and hence get short-tempered. Similar operating has been seen every year from the Top Band merchants in NFD in the small hours of the morning,

#### FIVE-BAND DX TABLE

(All Time)

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc
G13IVJ	331	192	268	327	104	84
G2DC	331	171	292	319	171	113
G3NOF	297	138	198	281	34	39
G3IGW	197	123	136	161	119	74
G3LZQ	214	79	129	177	57	29
G3UML	235	74	115	221	63	35
G8DI	167	71	113	145	74	44
G3IDG	108	63	77	54	27	18
G3MDW	88	44	57	60	8	10
G3UDR	165	31	87	134	4	38
G3PQF	100	26	25	46	75	46
VP8HJ	182	20	63	178	26	12
GM3RFR	164	15	111	126	79	18
GM3KLA	112	15	79	51	79	51
G3RJB	123	11	26	116	50	32
G3KMQ	237	10	99	212	101	55
G3UBI	115	10	32	93	13	44

Note: Placings this month are based on the "28 mc" column.

and that is probably the friendliest of all the contests in the calendar, F5, CP5, W's, VE's, PY's and the first-hop stuff were all worked by GM3IAA on 7 mc in the period under review.

The last mention of the band is one that cannot be allowed to pass—G3VPS, who emphasises that 40 metres is a band he enjoys. He analyses his reasons for his liking, which is the pleasure he gets in whipping the DX from under the noses of the QRM and the people with no receivers. To this end, G3VPS has worked CW with YV5 and 6, 9H1, MP4B, UAØ, EA8, KP4, SV, CT3AS and the usual run of W's and odd stuff.

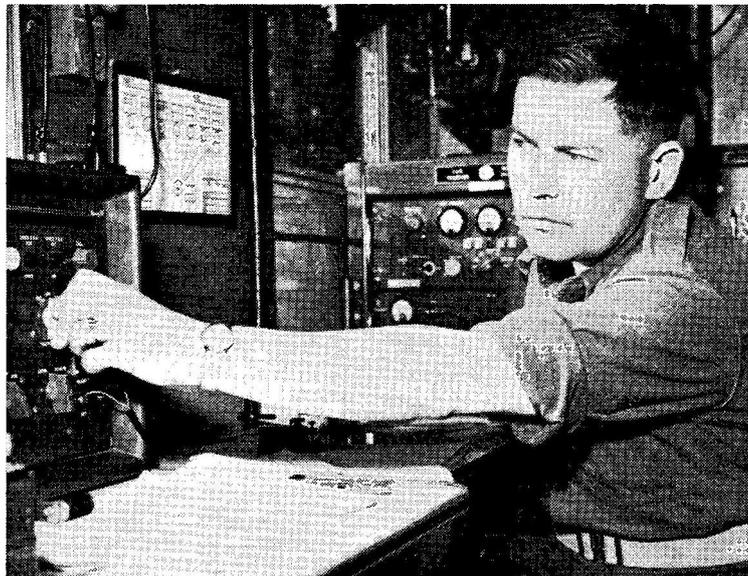
### Eighty Metres

If you want to start a riot, then say Eighty is either (a) The Best Band, or (b) The Worst Band, in a loud voice at any gathering of radio amateurs. Retire when the row is building up if it is desired to avoid personal injury . . . Those in favour would offer the entertainment value, the encyclopaedic anti-knowledge of the nets, the funny noises and things, as well as pointing out that the odd interesting signal may be found in the cracks if only you have the receiver to find it and hold it. The other fraction merely foam at the mouth whenever the band is mentioned!

One who is in favour is G3IGW, who operated in the Contest on this band only, hooking 366 stations in 45 countries to bring his score for 80m. to 81 countries. Among those worked were FP8CQ, HI8XAL, KP4BJM, KZ5TW, OY6FRA, UL7CG, UL7KFE, UO5KBR, 4L7A, 7XØAH, plus of course the run-of-the-mill such as the LX, UA, and EU stuff. Heard but not worked (new term for gotaway in polite circles!) include UD6, UF6, UWØ, and WØGTA/8F4. Heard being called include ZD8J, JA's, PY's—so the stuff is clearly there to be worked, on occasion at least.

GM3IAA does not spend a lot of time on the band, and, apart from the EY stations, and a VE1, seems to have preferred different bands.

A new country appeared on



Some six (or so) years ago, an Editorial suggestion that radio amateurs might find the Service communications reserve organisations worth their investigation as a spare-time outlet led Dennis Hayward, G3OHM, to 404 Sig. Sqdn., AER—which was formed almost entirely of licensed amateurs, from the C.O. downwards. G3OMH says "We are certainly able to combine business with pleasure in our Unit"—meaning that this year their training camp was in Lippstadt, Germany, with 22 Regt., Royal Signals, who gave them plenty of serious work to do—and a wonderful time in their off-duty hours.

40 metres for G2DC, who describes operations as a "grim struggle against monstrous noises"—but nevertheless he worked HI8XAL, ZD8J, W1-5, W8 to zero, VE1-3, and VO.

A thorough-going enthusiast for 7 mc is G3TLX, who says that as long as the band is improving he is happy—and to prove how he really does like it he offers most of W, VE1-3, VEØMD, TF3JA, TF3KB, ZL4IE, PY2CHM, UL7GW, UA9KCD, UA9EU, UA9KQA, and 4X4VO.

The last mention of the band on the clip at the time of writing is that from Fred of GM3SVK, who is still held up in the completion of his 7 mc aerial, and is evidently having to load up one of his other skywires. He has managed one contact of note, with UD6BW, and has heard lots of goodies such as WØGTA/8F4, some of which apparently have been worked by Bill, GM3KLA. As Fred says he may have to do without an aerial for this band for some time as there is not only the weather to overcome but

the lack of the necessary equipment.

### Top Band

Quite a pile of comments, reports and such on 160m. have accumulated during the month.

A new reporter, who has transferred his allegiance from the "SWL" feature for the best of all reasons, is G3VMW (Ossett). Steve has already managed to book in 72 counties and ten countries in his first three months of operating. He has a "reasonable location," about 700ft. a.s.l., with a clear take-off in all directions from his hill overlooking Wakefield. At the moment he has a 70-foot vertical and 14 quarter-wave radials, a 500ft. wire about 60 feet in the air and another of 320ft. at the 50ft. mark, fed through various series or parallel tuned aerial couplers. An interesting one heard by G3VMW (not mentioned by any other correspondent) was UO5KAA, who sounded the right sort of signal to be real. During the MDT, Steve was probably the most northerly station to log PAØPN, and also has managed to hear VO1FB,

W1JJS, W1HGT, and W0GTA /8F4—so it sounds as though the desired transatlantic QSO will not be all that long in coming for G3VMN.

GM3UVL got his half-wave up, with the help of no less than 400ft. of nylon line to attach it to a 60-foot tree—the only snag turned out to be that the reports were down on the old aerial, so it is back to the original hundred-and-fifty footer which was 30ft. high. The counties score is now 70, with only Rutland, Hereford Suffolk, and Westmorland still to go among the G counties, the remainder being the rarer GW, GM, and GC ones. Bill pleads that the “big boys” should tell him what they are using to get such colossal signals. As a tail-piece, he nominates OL4AFI as the “phantom of the band” because he seems always to be around.

G3UAN is after bigger game than counties nowadays but is struggling with adversity in the shape of a mediocre aerial system, although it was intended that part of the time over Christmas would be spent experimenting to see if matters could be improved. An interesting QSO occurred when G3UAN was calling an OK, and PA0PN chipped in to say that G3UAN was being called by OH9WV, who was 469 and gave him 559 for a pleasant surprise.

G3UVT (Newark) sends in a list for the G3U-/G3T- Table, which we are pleased to take in—but in this context, a later paragraph will amend this to be a G3U- and G3V- Table.

G3UJS (Snettisham) returns to the fold after a spell of QRT, (due to a budgie which nested in the VFO and would not go away) but now has a nice new rig with a 6AK5 VFO which is going like a bomb. The first night on the air with it was on November 10, and the pleasure was so great that Dave went round the clock. Dorset up to GM, then to OK, to PA, and back to GW, all in the space of an hour and all worked on the Vee-beam. The only snag (there is *always* a fly in the ointment!) is that while the stations 60 miles or more

away give 5 & 9+, the locals all say five-and-five. The other gripe is that it is too cold in the shack!

A rare bird on 160 metres is G2DC, who came on for an hour or so in the CQ affair, and acquired a few multipliers, with OE for a new one on this band, plus DL1FF, OH2KH, over a dozen OK's, and the usual G, GW, GI, and GM multipliers.

Sad little note from G3VLX (Sidcup) who was so sad he forgot to mention his call on the letter! Deryck has been handed a paint brush and hence radio has had to take a back seat for a while, and in any case the gremlins have been choosing him to annoy, so all he has been able to do is work OK1AQK, and G3UEP. Never mind, you will have a good excuse for operating after all that, if only to wear away the paint-stains from the fingers!

Slightly contradictory views are evident in GM3IAA's note, insofar as he remarks on VO1FB worked, W1HGT worked, W8ANO, W2EQS, K1JGD, and W5HWR/VP9 (who was apparently calling G3PQA on 1826 kc. Also worked include HB9, DL1, OE1, OK/OL, PA0, OH, and others. After saying this Jim continues by asking why his QTH is relatively poor for DX! As he says, up in Inverness the “thing” on 1800 kc, and the Lynby (OXZ) signal on 1806 kc are a real menace, although it seems that the stations down South are not troubled by them to any serious extent. As to why so few stations from the North are on Top Band in the DX-hunt, one would feel it is possibly just a question of the lack of activity, and the fact that, as Jim says, the rock formations are rather against the efficient operation of any system which relies on a physical earth for its working. On the other hand, around Inverness itself the rock must be fairly accommodating if the signal put out by GM3TKV and Jim himself is anything to go by.

Further North again, to the limit in the Top Band context, GM3SVK sits on the top of his hill cursing the elements which have managed to rub his aerial

out again. Nevertheless, Fred has had quite a little fun on the band as his scoring will show.

In the matter of workable countries on Top Band, 1966 has been rather a vintage year; and to round off the vintage comes the news that HI8XAL, who has been stirring things up on the other bands, is QRV on 160 metres expressly for the purpose of attempting to raise Europeans. At the time this lands on your mat, if you care for 1.8 mc DX, have a look out for VP1DX, who was to have been operational until December 30; he may be found at the 3503 kc or 3506 kc points on Eighty CW, but the greater part of his time was to be on Top Band.

#### Here and There

The callsign ZD3F has been allocated to G3BID, who is understood to be planning to go to Gambia in February.

One for the prefix-hunters: D12LE/MM is the callsign of the operator of the catamaran which is now sailing from W6 to ZL as part of a trip around the world.

The comments in a recent piece both by your conductor, and others, has provoked one correspondent to ask why we do not run a YL column—as he points out there are 47 licensed YL's in the U.K., if G3IDG's records are to be taken as a guide, and probably as many SWL's; some are quite keen on the HPX Table in the “SWL” feature. However, it would seem that a YL column

TOP BAND LADDER		
(G3T-- and G3U-- stations only)		
Starting Date, January 1, 1966		
Station	Counties	Countries
G3UAN	87	13
G3UTS	87	13
G3UBW	76	18
G3TXZ	55	11
GM3UVL	55	8
G3UVT	44	7
G3TTK	43	12
G3UJS	41	8
G3USE	40	8
G3UMK	39	7
G3UCS	36	?

would not have much support. However, if the ladies come forward now and again with news and views, for this column we would be delighted—and so would the silent YL's, too. Too many of them drop out of Amateur Radio because they are made to feel there is nothing in it for them and Clubs are closed to them because of their sex. In America, where there are enough to support YL Clubs in many towns, and a National society to bring them together, the YL aspect of Amateur Radio is booming.

### The Tabular Matter

This is the last roundup for the Five-Band Table (new cycle) for which we solicit a new starting list, from January 1, 1967. To make things nice and tidy, a final list for the 1966 Table, with scores taken up to the end, will be published in next month's piece, and the following month we will be on to the 1967 version; the two should make an interesting comparison.

It is time also for the G3T-- and G3U-- Top Band Table to become G3U-- and G3V---. However, in this case there does not seem to have been a great deal of support recently, and so if things do not perk up a bit it may be necessary to scrub it. So—let's have the entries in if you want this Table to keep going!

### Some More Odd Comments

G3UTS (Newcastle-on-Tyne) was on for the MDT, and for MCC, but was disappointed in his results. The point of interest is in the aerial used—a 450ft. wire at 75ft. up. The pole at the far end was, we gather, the ITA mast at Burnhope, and all one can say to that is to wonder why Reg did not go farther up the thing! He mentions a weirdie on Eighty, signing OV3KD, but suspects the "V" was probably a poor imitation of a "K."

G3IDG says that the problem of getting a BV1 (Formosa) licence is all but insuperable, and the U.S. nationals who were on from that area have had their calls withdrawn. The security



Heavy pressure on space has so far prevented us reporting in any detail the highly successful Amateur Convention at Knokke-le-Zoute, Ostend, way back in September. There was quite a strong U.K. contingent—one of whom, rather surprisingly, being chosen as convention chairman—and among those present were (left to right) SU1RO, G2H10 and G3MP. They look as if they were enjoying themselves. G2JF sent the picture. He was the U.K. contact man for the convention, and worked hard for its success.

check involved is so severe that it takes two or three years to go through!

Another comment from the same source—Allan remarks that he recently had a card in from KG6AQA, requesting the G3IDG QSL as part of the requirement for an award. Considering the KG6 was a new country in a new zone, Allan was only too pleased to oblige!

Back on the theme of odd aerial poles: After a telly-mast we find another of the big signals on Top Band using a lighthouse to hold the wire up. This is GW3UUZ, who is on from Llantwit Major which is about nine miles west of Barry on the Bridgend road. In spite of the superficially ideal location, quite a lot of thought and effort have had to be put into the question of making the best use of this monster pole, insofar as the earthing conditions are far from ideal.

For the county-hunters, GM3JZK has dug out an old 160-metre rig built about ten years

and is ready to do battle as Argyll; however, George warns in advance that until he can lay hands on a suitable stabiliser—such things are not to be found quite so easily on Mull as they were at the old QTH!—the note is liable to be "not quite," and apologises in advance. Having said that, it is only to be expected that the rig will register its protest by putting out a perfectly T9 note—until the stabiliser is fitted.

And so to the sign-off. But before pulling the big switch, our thanks to you all for your support of the amateurish efforts of your E.P.E. during the year—and especially to all those kind folk who have sent us greetings for Christmas and the New Year. And so to wish each and every one of these good friends Health and Happiness in the Coming Year, with plenty to interest us all on the HF bands. Oh, and by the way—closing date for the February issue is **Monday, January 9**, addressed: *CDXN*, SHORT WAVE MAGAZINE, BUCKINGHAM.

# THE TWENTY-FIRST MCC

## *The Magazine Top-Band Club Contest November 12-13, 1966*

**T**HE proof of the pudding appears to be in the eating—at least insofar as the scoring system goes! In the Twenty-First MCC, the winner turns out to be a Scottish station, and that by a margin that can only be described as “handsome.” Runners-up **Newcastle University**, like the winners, made a rise of thirteen places, as compared with their positions last year, whilst the third place this year goes to a station also in Scotland; with **Kirkcaldy** winning and **Moray Firth “A”** third, this region has amply made up for its absence from the first three in the previous two years.

It is amusing to recall that a couple of years ago, the feeling in Scotland was that the present rules, which first came into force for the 1964 event, penalised the GM clubs out of the reckoning! It is interesting also to recall that in 1964, with a winning score of 708, the first fourteen places were held with scores of better than 500; in 1965, with a top score of 625, again 14 stations were over the 500 mark. This time, the top score is 841, but only eleven stations managed to get more than the 500 points, with Kirkcaldy out in front to the tune of nearly 150 points ahead of the runners-up. As for the distribution of places for the First Three in recent years' events, we find three Southern, three Northern, one from the Midlands, and two from Scotland.

### **What They Used**

*Kirkcaldy's* winning station ran ten watts to an unspecified transmitter (secret weapon?), with an Eddystone 750 receiver, a half-wave dipole, and a home-brew El-bug keyer—and we have a nice photograph here showing GM3PQF/A and operators.

Eddystone was also the name in receivers at the runners-up, this time an S.640. *Newcastle University* ran a home-brewed transmitter built by G3SKR, giving full break-in operation, and outside was an end-fed half-wave about sixty feet up.

As for the *Moray Firth* station, the transmitter was a VFO-BA-PA, with Franklin VFO and a TT11 in the PA; on the receiving side another Eddystone S.640, albeit somewhat modified, by providing a second IF at 85 kc, product detector, and a double-triode mixer. The aerial was a little unusual in being a folded di-ole, 260 feet from end-to-end, fed with 70-ohm coax.

For the rest, there was quite an assortment, from the old faithfuls, like the HRO in various forms; a lot of KW-2000 transceivers; a couple of Racal RA-17's, Heathkit SB-300's (two), and several Heath-

kit RA-1's. As for the transmitters, home-brew were well in evidence, backed up by several Codar AT-5's, and the odd Heathkit DX-100U modified.

### **The Log-Keeping**

This, as was only to be expected, was variable but on the whole they were extremely well presented. Many of the stations quite clearly were using more than one logger at a time, and in almost all cases the log sent in was a fair copy of the original rough log, carefully checked for possible errors; of the actually rough logs sent in, several carried apologies from the Club concerned and an explanation—but it has to be said that the only disqualification this year was under Rule 7, for a log that was virtually unreadable; the perpetrator thereof evidently thought he was doing *us* a favour by sending it in at all.

As to the errors found, there were quite a lot of cases of Clubs written-down to “non-Club” status, and nearly as many the other way. In one or two cases, incomplete contacts were written-off, and then claimed, due fairly obviously to perfunctory scanning through at the time the claim was being prepared.

### **The Non-Club Stations**

There were quite a few of these this time; but only a few seemed to be making a thing of working the Clubs other than the local one! Of those who appeared in several logs, G3BMY, GM3KMR, G6HD and OL4AFI seemed to be getting around the country most consistently. Other stations were on, and quite a few of the back-markers had the odd OK contact in the log, while a few of the Southerners managed to ring the bell with PA and HB stations.

### **The GI/GD Entry**

As far as the actual entries went, there was only one, that from GD3TNS, the Isle of Man Radio Society. As they looked at things from their location, all the desirable contacts with Clubs were in effect DX. In the event, they were able to cover virtually the whole country with quite a good signal, as their score testifies. As for the non-Club contacts in their log, they can boast the only QSO's with mobile stations, GD3HQR/M and G3PRO/M being worked in rapid succession immediately after a contact with OK3OAS.

**Check Log**

As usual, a log was received from SWL D. Law—this, as explained last year, being something of an institution. SWL Law, as well as your invigilators—who are, of course, dotted around the scenery to ensure all is noted down in the little black book—found the use of the netting procedure much more carefully done this year, and in most cases it was possible to find both ends of a QSO without retuning, even though the selectivity was wound up to the limit. It was also noted that there was less of a desire

to bunch up into a small area of the band, albeit there were several little knots of Clubs sheltering under the lee of Coast stations and obviously having trouble with the resulting QRM. The station specially singled out for praise by SWL Law (who obviously is himself a first-class operator) was G3JTW—as he puts it “If they are destined to be sea-going operators, the art of Morse will be well preserved.” On the other hand there were the odd characters heard by all the invigilators who seemed to be only just in control of their bug keys—shown up as mis-

**TABLE I**

**Positions and Scores, Twenty-First MCC**

PLACE	CLUB	REGION	POINTS	PLACE	CLUB	REGION	POINTS
1	Kirkcaldy (GM3PFQ/A)	GM	841	47	Leyland Hundred (G3RFN)	N	339
2	Newcastle University (G3OWM)	N	679		Burnham-on-Sea (G3NZA)	S	339
3	Moray Firth (GM3TKV)	GM	675	49	Echelford (G3UES/A)	S	334
4	Towcester (G3RVM)	M	619	50	Durham City (G3TAK/A)	N	326
5	Maidstone Y.M.C.A. (G3TRF)	S	608	51	74th Sheffield Scouts (G3KVG/A)	N	325
6	Govt. Comms. (Cheltenham) (G3SSO)	S	556		Loddon Valley (G3UAB)	S	325
7	Kings Norton (G3GVA)	M	549	53	Stevenage (G3SAD)	S	323
8	Burslem (G3UOK)	M	545	54	Harrow (G3EFX/A)	S	314
9	Surrey R.C.C. (G3SRC)	S	531	55	Reigate “B” (G3OVL)	S	312
10	Plessey (West Leigh) (G3JVL/A)	S	527	56	RAF Lindholme (G3VTX)	N	309
11	North Notts (G3RCW)	M	508		Silverthorn (G3SRA)	S	292
12	Hillingdon (G3RRJ)	S	494	57	Blackpool (G3NJA/A)	N	292
13	Chorley (G3GGS)	N	491		Bath Spa (G3IVL)	S	292
14	Coventry (G2ASF)	M	489	60	East Lancashire (G3NTJ)	N	290
15	Nottingham (G3EKW)	M	476	61	235 Sqn. A.T.C. (G3JGE/A)	M	288
16	Medway (G2FJA)	S	473	62	Worthing (G3KXF)	S	285
17	RAF Sealand (GW3ITZ)	GW	467		Ealing (G3UUP)	S	285
	South Manchester (G3FVA)	N	465	64	Cambridge University (G6UW)	M	283
18	Chester (G3GIZ/A)	M	465		Acton, Brentford and Chiswick (G3HU)	S	275
	Northern Poly. (G3HNR/A)	S	465	65	Newark (G3UEB)	M	275
21	Spen Valley (G3SVC)	N	464	67	South Shields (G3DDI)	N	263
22	Manchester University (G3VUM)	N	462	68	Northern Heights (G3MDW)	N	262
23	Leicester (G3LRS)	M	457	69	Wessex (G3FVU)	S	256
24	Cheltenham (G5BK)	S	446	70	Leeswood (GW3TMP)	GW	253
25	Reigate “A” (G3REI)	S	436	71	Southgate (G3SFG/A)	S	251
26	Verulam (G3VER)	S	433	72	Clifton “A” (G3GHN)	S	250
27	Cannock Chase (G3VCC)	M	429		Manchester (G3HOX)	N	249
28	Bristol (G3TAD/A)	S	421	73	Salisbury (G3FKF/A)	S	249
29	City and Guilds (G5YC)	S	420		Barnsley (G3LRP)	N	244
30	Stoke-on-Trent (G3GBU)	M	418	75	Cray Valley (G3RCV/A)	S	244
31	Edware (G3ASR)	S	415	77	Stockport (G6UQ/A)	M	241
32	Greenford (G3SGC)	S	410	78	North Kent (G3ENT/A)	S	239
33	Durham City “B” (G3LIV)	N	409	79	Cheshunt (G3TZZ)	S	237
34	Marconi Apprentices (G3JTW)	S	406	80	Conway Valley (GW3HGL)	GW	216
35	Henley-in-Arden (G3SIA)	S	404	81	Mid-Sussex (G3VMQ)	S	198
36	Albright & Wilson (Oldbury) (G3OXD)	M	400	82	Cornish (G3VCV)	SW	197
37	Crawley (G3TIR)	S	399	83	Mid-Herts (G3AAZ)	S	191
38	Macclesfield (G3LDT)	M	391	84	Salop (G3SRT)	M	162
39	Midland (G3MAR)	M	389	85	Speedbird (G3NAF)	S	160
40	R. Signals (G3CIO)	N	388	86	Ampfield (G3JFY)	S	141
41	Cardiff (GW3SQX)	GW	373	87	Scarborough (G4BP/A)	S	137
42	Clifton “B” (G3OYU)	S	364		Wimbledon (G3JBA)	S	137
43	Isle of Man (GD3TNS)	GD/GI	358	89	Reigate “C” (G3BER)	S	131
	Bristol (G3OLB/A)	S	358	90	Glenrothes (GM3ULG/A)	GM	123
45	Warton (G3NZH)	N	350	91	Morecambe (G3UCE)	N	119
46	Ainsdale (G2CUZ)	N	341	92	South London Mobile (G3SLM/A)	S	98
					Bromsgrove (G3VGG)	M	98

keying and, that most irritating of all auto-keying faults, dots running too fast to give the correct time spacing with the dashes. Too many operators—and it is a sign of inexperience—seem to imagine that fast dots alone mean snappy sending.

In this context, however, it is perhaps appropriate to comment that many Clubs use MCC to train their less experienced operators in the arts and crafts of Contest working; when such operators are given short shrift by other stations it can be a demoralising experience, to put it mildly. In any case, even in a Contest, a man who goes back to a station calling at, say, twelves, at a stuttering 25 w.p.m. is himself a lid—and probably loses the contact into the bargain!

### Conditions

These were not as good as they might have been, or so it appeared to the invigilators—but on the other hand the winning score seems to prove the reverse to have been the case, at least in the northern part of the U.K. One gets an impression from the logs that the Sunday session was generally the better of the two but, of course, this could have been partly due to stations doing some sorting-out of gear and aerials as a result of the Saturday experiences.

### The Comments

As always in this Contest, there are so many log comments that one can only give a selection of the funniest, the most erudite, and the most acid!

The under-dogs were *Bromsgrove*, who clearly foresaw their fate—"Somebody's got to hold the Table up!"—although after the log had been corrected there was, as can be seen, not much in it. "A one-man band . . . in the hopes of shaming 'em into some interest in CW" (*South London Mobile*) . . . "Not enough listening by Southern stations" (*Glenrothes*) . . . "Unable to gain access for the first hour due to business; going great guns on the second when—Bang!" (*Ampfield*) . . . "Very first attempt by this Society in any contest of any sort" (*Salop*).

"Wish the bugs didn't run away with themselves!" (*Cornish*) . . . "G3VMQ was forced to become chief engine driver as the only operator who could make the machinery go and get some much needed points" (*Mid-Sussex*).

"About the most ridiculous scoring system I have ever seen" (*Grimby*) . . . "Please put Cheshire back in the Northern Zone" (*Stockport*) . . . "Single operator G3LRP refugee from Two Metres!" (*Barnsley*).

"A most inopportune date for Cray Valley due to sickness and other causes—G3VLT saved the day by operating with a TCS rig from his home" (*Cray Valley*) . . . "Cloth-ears or our Tx???" (*Clifton A*) . . . "Contest was most enjoyable and of convenient duration" (*Southgate*) . . . "The station in use was my own, operating from the shop; while one of our members was on the key I was serving customers, and some of their remarks were not flattering—I think the CW must have hurt their ear-drums!" (*G3MÐW o/b/o Northern Heights*).

TABLE II

### Top Scorers in the Regions

<i>Southern</i>			
1.	Maidstone YMCA (G3TRF)	...	612
2.	Govt. Comms (Cheltenham) (G3SSO)	...	556
3.	Surrey R. C. C. (G3SRC)	...	531
	(42 entries)		
<i>Northern</i>			
1.	Newcastle University (G3OWM)	...	679
2.	Chorley (G3GGS)	...	491
3.	South Manchester (G3FVA)	...	465
	(20 entries)		
<i>Scotland</i>			
1.	Kirkcaldy (GM3PFQ/A)	...	841
2.	Moray Firth (GM3TKV)	...	675
	(3 entries)		
<i>Midland</i>			
1.	Towcester (G3RVM)	...	620
2.	Kings Norton (G3GVA)	...	549
3.	Burslem (G3UOK)	...	545
	(23 entries)		
<i>Wales</i>			
1.	RAF Sealand (GW3ITZ)	...	467
2.	Cardiff	...	373
	(3 entries)		

"The result was very disappointing to us; the HT line in the receiver went down on the Saturday evening, and it took some time to locate the fault" (*Acton, Brentford and Chiswick*) . . . "Everyone here thinks we should have a multiplier of six—to those who didn't answer us, 'Cloth Ears,' and to those we didn't answer, sorry, local QRM!" (*235 Squadron ATC*).

"Apologies for a small number of T8 reports on the Sunday—we found afterwards that the mike-shorting plug was making a rather intermittent contact" (*Radio Society of Harrow*) . . . "Only one comment—usual utter rat-race!" (*Loddon Valley*).

### Psychological Warfare

"One operator only—had to play my cards very carefully in order to obtain YL's permission to operate from her flat. Strange how all one's friends report 599 and those I don't know give me 559" (*G3OLB, for Bristol B*) . . . "A rather irate G6FO gave us ZF for our 'B' station by telephone on the Saturday morning, after a member had come out of the Infirmary with his arm in a sling and we just about got ready in time" (*Cardiff B*).

### Technical Matters

Various things were done or not done in the preparation stage which amused us, and there were one or two very terse descriptions of the gear or the trouble it gave. As an example, one modest competitor described his transmitter very succinctly as "a heap of rubbish" although he was putting out a fair old signal. On the other hand *Verulam* are keen on meticulous preparation; as last year, they operated from Nell Gwynnes Cottage, Salisbury Hall, London Colney, with a half-wave at 60ft. up in the air over the moat. This year, just to be on



Winners of the 1966 Magazine Club Contest (MCC)—GM3PFQ/A, Kirkcaldy, operated by GM3FXM (left), GM3PFQ and SWL Donaldson (standing). To make the resounding score of 841 points, putting them well ahead of all comers, they ran a 10-watt Tx into a half-wave aerial at 35 feet, their Rx being an Eddystone S.750, with automatic change-over. With the  $\times 2$  multiplier, the scoring system gives a very good chance to any GM station really able to sort out the GDX and work it—which is what these chaps did. It was their second attempt at MCC, and a considerable improvement on last year, when they were 13th.

Third in this year's MCC came the Moray Firth Amateur Radio Society, signing GM3TKV from Buckie, Banffshire, and making 675 points. The operators were, left to right, GM3KHH, GM30WG and SWL Phil Drummond. Their gear consisted of, for the Tx, a Franklin VFO driving a 5B/254M PA to 10w. through two stages, with a modified S.640 on the Rx side, incorporating automatic change-over. The boys remark that they were "particularly encouraged to operate in a Contest in which the points system freed us from the completely hopeless situation in which we otherwise sometimes find ourselves."



the safe side, they took the trouble to haul out the earth plate (which had been left in the moat since last year) and gave it a good clean down followed by a polishing as well, before slinging it back in for another tour of duty. An oddity was the aerial in use at *Cannock Chase*; this was an end-fed half-wave, all two hundred and fifty feet of it, *indoors*, being threaded through the roof-space of two schools adjacent to the G3ABG home QTH. It rather makes one wonder if the schools are in series or in parallel?

#### Time Factor

*Henley-in-Arden*, among others, mention the problem of the "other station" with the elastic time-piece. This is always a problem, but it is to be hoped that our spies spotted them all—out-of-time working is one of the lapses the invigilators watch for, though QSO's started before the closing hour are allowed. To the invigilators, and the log-checkers, it is quite obvious that some stations at least still rely on Auntie's old alarm-clock.

In a different sort of way, it is noticeable that opinions seem to differ considerably as to whether the time allotted for each leg of the Contest is too much, just right, or not enough. Four hours seems to be about the minimum time which allows enough for a good station in the Southern area to collect all the Clubs, while not giving the chaps with a high multiplier too much of an advantage.

TABLE III

#### Club Contacts made by the Top Ten

Kirkcaldy, GM3PFQ/A ... ..	138
Newcastle University, G3OWM ... ..	177
Moray Firth, GM3TKV... ..	111
Towcester, G3RVM ... ..	180
Maidstone, G3TRF ... ..	190
Govt. Comms. (Cheltenham), G3SSO ... ..	179
Kings Norton, G3GVA ... ..	162
Burslem, G3UOK ... ..	161
Surrey RCC, G3SRC ... ..	165
Plessey (West Leigh), G3JVL/A ... ..	171

#### Honesty Best Policy

It has already been implied that 95% of the logs were "clean," as was most of the operating. However, one group, *North Notts*, were faced with a rather difficult decision. The Club Hq. is in the Midland region, but close to the border. One member, who possessed the best Top Band location, lives over the boundary. Thus, they were faced with the decision as to whether to operate from the Club Hq. and



Battling for North Notts, and signing G3RCW were G3NHE (left) and G3PRD. Their gear consisted of G3NHE's home-built transmitter (left) running 10 watts to a PL81 as PA, the receiver being a CR-100 and the aerial "about 120 feet of wire," end-fed through an ATU. With this rig they made 508 points to put them into 11th place out of more than 90 entries.



The Plessey (West Leigh) Club signed G3JVL/A for MCC, the operators being G3IFF (nearest camera) and G3JVL himself. In their set-up, the Rx and Tx were mechanically linked, the whole functioning as a transceiver, since the linkage is, of course, also electrical. The Rx has three half-lattice filters and an additional 100-cycle audio filter for really close work on CW. The whole rig is fully transistorised and the PA on the transmitter side takes a pair of STC TK-203A's in push-pull. The G3JVL/A aerial system for MCC was specially contrived, and consisted of a pair of half-waves in parallel, fed with 300-ohm ribbon, and spaced 1/8th of a wavelength (about 68 feet) for maximum gain in the northerly direction. The centre of each dipole was 50ft. up, and the whole system was matched through an ATU. From a location on the South Coast, they went into 10th place with 527 points.

claim the Midlands multiplier; from the member's home with the Midland multiplier, or from the member's home and claim the Yorkshire advantage? A pretty problem indeed, which they solved by operating from the Clubroom. However, in this particular case, they were already well up the scale and among the Zone leaders—and after all they are, in the main, competing with the others in the same Zone, like everyone else. Just for the record, had North Notts made the same contacts from the Yorkshire QTH they would have come up to fifth from 11th place.

It is pleasant to be able to place on record the fact that conscience can sometimes be a more important factor than personal advantage.

#### The Rules

By and large, an effective weighting of the forces seems to have been achieved, although any such system is bound to produce the odd anomaly—like awkward boundary divisions, to make the scoring look “unfair,” at least for somebody. But this is something we just cannot help. Most people seem to feel that fairness *has* been achieved, and it is noticeable that the single-point contacts are becoming fewer and

of less consequence in the final analysis.

There were some infringements of the rules in various directions. For instance, Rule 6 was being “bent” quite a lot in the early stages although most stations seemed to have a copy of the Rules handy which was scanned *after* the first contact. No points have been deducted on this occasion for incorrect logging of the single-point QSO's but this will have to be watched next time round.

Another rule which must be obeyed is that nasty Rule 9. On this occasion we have managed to take all the late entries in (at the cost of much midnight oil and many strange cuss-words)—but, after all, the sending in of the entry is a major part of the game, and it is not much to ask everyone to meet a deadline for which at least seven working days are allowed.

Rule 7 also came in for a certain amount of abuse, although the content of the logs was so good; it has to be admitted that only long experience of our Editor's handwriting enabled your harassed conductor to decipher some of the “fair copies” for checking! The ploy here is surely to press one of the eager YL members or friends into service as *typist* if possible, or at least delegate the job to the *clerk*

Funny hats and fortifying libations are always features of Maidstone's entry for MCC. Nevertheless, signing G3TRF, they made 608 points to get into 6th place. Left to right are: G3REM, G3LXO, G3ORP paddling the key, and G3ORH whose function (it is stated) was to keep order. The aerial used by G3TRF for their very successful entry was an inverted-Vee with its centre point at a height of 50 feet, using a balun match.



with the best handwriting!

#### Training

It has been for long part of the role of MCC in the Amateur Radio scene to act as training-ground for the new generations of operators who, in their turn, will in a few year's time be doing the training. It follows that there will be people taking part during the Contest who are operating "beyond themselves," to the possible discomfort of others on the band. And so it has to be—after all how can one find the limits if one never approaches them? Bearing this in mind, the standard of procedure of the stations known to be training a few operators with an eye to the future was very good indeed. One gets the impression that the few cases of liddery reported—such as swinging the VFO about with HT on the PA. or sending with a bug key set too fast on the dot side—sprang from an entirely different cause, to wit, lack of familiarity of operators with the gear to be used, and, in some cases the sheer excitement of the chase. One supposes such manifestations are almost unavoidable, but nevertheless they should be curbed.

#### Final Comment

To us of SHORT WAVE MAGAZINE, this annual MCC affair is always an invigorating experience, looked forward to just as keenly as by any contestant. Not only for us, but also for those who wrote in let us sum up by saying that MCC 1966 was a most enjoyable and much enjoyed Contest despite all that Murphy's Law and the Dark Forces could do; and only goes to show why *you*, "unattached amateur" or SWL, should get in on the act next year by joining your local group—or if there isn't one, forming one!

Back to normal next month. Club Activity Reports for inclusion in the *February* issue must be

with us on or before **Friday, January 6**, addressed as usual: "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM.

To all Club Members everywhere, Secretaries and Committee members, a very Happy New Year, and may you all prosper in all you do, whether in Amateur Radio or otherwise.

#### "LOSSES IN THE MAIL"

Taking a little further that note on p.606, December, and assuming that in an average month we post about 20,000 separate items—we haven't counted but it must be something of that order—then a 6 per cent failure in the G.P.O. system would mean that more than 1,000 customers "would fail to be satisfied." As it happens, we do not get anything like this volume of complaints, though we do have more than enough to make mail-failure a worry, both outwards and inwards. What we do ask you to remember is that it is not necessarily the Editor's fault if your copy does not arrive on time, or if we do not acknowledge a book order we have never received.

#### SUBSCRIBER NOTE

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• • • SWL • • •

SHORT WAVE LISTENER  
FEATURECHOOSING A RECEIVER—OVERCOMING  
HURDLES—IDEAS AND GOSSIP, NEWS  
AND VIEWS—HPX LADDER

**A**MATEUR Radio is, without a shadow of doubt, a drug of addiction, and many a happy home has been wrecked by over-indulgence in it; however, a new and rather disturbing facet is the amount that is being spent of recent years by the SWL fraternity on receivers that will never hold any place in the shack when the owner graduates to transmitting. It has to be faced: A lot of the pretty-looking, cheap and so-called "Communications Receivers" are nothing more than BC sets in a tin box.

The point has been brought home forcibly to your conductor of late, insofar as he has recently had one of these receivers on loan. Your scribe, having come to certain conclusions, went out and spent a few bob on a rather unpopular surplus receiver, complete with its power supply and the raw materials to knock up a converter for the bands it did not cover.

The two receivers were then put to a direct comparison test, over a period of several weeks, using the 7 mc band for the comparison. Under the conditions of rather severe QRM that normally occur on this band, the surplus receiver outperformed its shiny brother in just about every respect, producing clear signals in places where there was only a confused noise on the new receiver. It was when the urge to transmit come over us that the difference was the most noticeable—a simple VFO-PA was knocked up using two old EF80 bottles, and a couple of watts pushed up the spout. Nothing exotic came of it, but at least on the old clunker we did stay around the desired frequency, give or take about twenty cycles an over, but the other beast drifted several hundred cycles, no matter what method was tried to mute the thing.

The moral is pretty obvious: If you are going to buy a receiver, and the pocket-book is somewhat short, look around and see what can be found before committing yourself to any receiver. If it is your first one, and you therefore have no idea what to look for, the best move—if you are not a member of a local Club, or cannot get such advice—is to go and see a reputable dealer (preferably one who has a licence and is on the air himself), tell him what you can spend, and listen to his advice. The better traders are not out to make one big sale and be done with it, but rather are keen to hang on to your business over a period of years, to the benefit of both sides.

\* \* \* \*

There are several letters from readers this month which say farewell, due of course to the fact that

they have got a little further along the road and are on the air. To all of these, from all of us, congratulations, and may it all be a pleasure.

The letter that opens the scoring this time is from *Andrew Marriott (Bishops Stortford)* who promises to send in his callsign as soon as he receives it.

*Andrew Niblick (Ilkeston)* was, of course, quite pleased to click in the SLP last time round, and has been spending a large proportion of his time expanding the filing-card system. Musing on the HPX, Andrew says how much more difficult it is to find new ones since his score has risen from the bottom to 650 in the thirteen months since he moved to his present spot. As a point of interest, it is surprising to notice that a lot of the ones *not heard* as yet are near-European signals, even to a few of the varieties of G call!

Another high scorer in the HPX game is *Stewart Foster (Lincoln)*, who has been putting in a lot of radio work since the pressure of academic studies eased; the result of his efforts will be visible in the HPX Table. As to the "countries" side of things, Stewart now has 244 confirmed, against a total of 259 heard, which is a fine effort.

From one who has just finished with the University to one who has just made a start—*A. McCudden (Glasgow)*, who has, as a result, only three to add to his score. It would seem that a certain amount of QRM has resulted from the fact that while Andrew was up in the loft last time he managed to put his foot through the neighbour's ceiling!

Continuing the generally southward trend, we come to the letter from *Colin Squires (Saltash)*, who mentions the CHC Service net, daily on 14340 kc, as being a useful channel on which to look for W mobiles—the net kicks off about 1800z and can go on for five hours, depending on the traffic and conditions.

One who was not immensely keen on the idea of an SLP on Boxing Day is *H. M. Graham*, who obviously expected to have domestic commitments on that day. However, it is only fair to say that very few voices were raised against the proposal—fewer, in fact, than were against the choice of time and frequency for the previous one. (In any event, it would be impossible to find a time, day and band to suit everybody.) H.M. has been using the receiver on the end of his Joystick to no mean effect, and has been receiving VK and all sorts of rare DX. One query is VEØMY, who said he was /MM, but was not using the suffix. This is probably OK, as the *Call Book* shows VEØMY as being the call of the m.v.



it is Brian's BC receiver they *don't* hear the DX on, due to the lack of a BFO or carrier insertion oscillator. As a result, they are reduced to listening to the W stuff on 21 mc AM. Never mind, the home rig will sound all the better when you get to it next.

*W. C. Torode (London, W.C.1)* mentions, in the course of a long and chatty letter, an interesting QSO between G3UFO/MM on the *Clan Malcolm* and G4XF, G3PRS, and GI6TK, on Forty. It will be remembered that a fine picture of this ship graced our pages a few months back.

*C. R. Cooper (West Garforth, nr. Leeds)* wants to get in touch with Trevor Lucas, also of Leeds, or any other SWL who has an Eagle SR550 receiver, as he is seriously thinking of acquiring one himself; anyone with any views on the subject should drop him a line, the address being 82 Ringway.

*E. Parker* has been putting the final touches to his version of the G3HTA receiver (as described in *Short Wave Magazine* some little time ago) in the form of the specified Eddystone dial. The snag here has been that the entire front panel has been replaced but no doubt Ernie feels it is all worth while now the job is done. He mentions an interesting one heard in WA9SUB/MM, in a hospital ship near Vietnam.

A new reader of the piece is *A. Grove (Hayes)* who uses an Eagle RX60N in conjunction with a PR30 preselector. The aerial in use at the time of writing is a 120ft. wire, but it is hoped to acquire a Joystick ere long. Alan is studying for the RAE at the moment and would like to hear from any other SWL's in the Bromley area. (His address is 39 Baston Road, Hayes.)

*Geoff Bowden (Crawley)* and son Philip had a good old ragchew with your scribe at the Exhibition, and, as a result of the suggestions in our last piece, seem to be well and truly getting in amongst the SSB signals. Here again, Christmas expectations were were that a ten-metre converter plus a BC-453 as Q-5'er would be in use by the time we have the next crop of reports. Geoff says he would like to acquire a pre-selector as well, but your scribe would rather be given, in similar circumstances, a suitable Aerial Tuning Unit, or at least the raw materials therefor!

It seems to be the thing at this time of the year to move house—it certainly seems to work out to the advantage of *S. Hardisty (Accrington)*, who says he now has an area 42ft. by 29ft. over an old garage; this ought to give him enough room for a station,

#### WHAT ABOUT YOURS ?

We should like to see more good photographs of SWL stations for reproduction in this feature. QTH and the necessary descriptive notes must be given on a separate sheet, not on the back of the print itself. We pay for any that can be used—but remember that the picture must be bright, sharp and clear to be of interest for publication. Send to: "SWL," Short Wave Magazine, Buckingham.



The gear shown here, consisting of a Heathkit RA-1, a two-metre converter and a Grundig tape recorder, is the SWL set-up of Christopher Cooper, 82 Ringway, West Garforth, Lincs.—who also does quite a lot of professional photography.

which it was hoped to have on the air by Christmas time. Once again it seems that congratulations from us all are in order, and we hope to hear how the new callsign gets on from time to time.

*P. Coull (New Romney)* has been an SWL for 2½ years, but has only reported once before to this piece. He uses the "old faithful" in the form of an HRO, but there are signs of a Geloso G209R in the offing.

Sad Story is the report from *R. Baron (Thetford)*; as a result of a modification programme, the receiver took off and proved to be a fine TVI generator. After attempts to tame it proved fruitless and the neighbours started to become restive, peace was restored by putting it back to its original state. However, we are pleased to hear that SWL Baron is tackling the CW side, and is already up to the test speed.

Our old friend *A. W. Nielson (Glasgow)* has only been able to put in a total of 18 hours at the receiver in the period since May, but hopes to get a little more activity in during the winter. Another letter from *John Singleton* and *Pat Longbone* implies that their total is not as good as usual due to QRM from

G3PQY, and work. Sad story indeed, but there is only one cure—give up work!

### Some DX/TV Notes

On the DX/TV front, we hear from *D. Boniface (Ripon)* who has had a pretty blank month, albeit the evening of October 26 was very good, with reception of a Spanish station, T.V.E., on Channels E3, E4, and E5, plus an unknown test card on Channel E3. Dennis points out that his identification of Belmont BBC-2 on Channel 28 was almost certainly wrong, as this station commenced trade transmissions on QPR prior to the opening on November 19, which are always receivable. Dennis has made contact with *Barrie Stephenson*, late of *Walsall*; has got himself a new shack; and is pressing on with RAE and Morse as well.

Barrie Stephenson himself reports that he has also made contact with G3FTV and G3JOM, who made him welcome indeed. The new Stephenson QTH is fine for aerials, with space for a full 264-foot run. Barrie mentions also that he has a Grundig TK14 tape-recorder, and would like to exchange tapes with any other reader of this piece; all tapes will be answered. The form here is to record at 3¼ i.p.s., 2-track, and Barrie's address is Asminderby Close, Ripon.

Information sought and offered is the theme of the letter from *D. Walsh (Ballylynch, Co. Tipperary)*; he has problems with an R.220 he is trying to convert for 4-metre reception, and would welcome any information on the RF and mixer stages, and whether it is double or single conversion, to Ballylynch, Carrick-on-Suir, Co. Tipperary. As for the proffered information, it is a useful tip for any owner of a BC receiver that will not take 14 or 28 mc, although the principle is good for any band: To take 20m., Des uses the 19-metre band, with an extra trimmer across each section of the tuning gang. For 10 metres the ploy is to add parallel coils across the tuning gang, with the receiver set to the 11-metre band. By wiring the trimmers and inductors to the appropriate tags of a 3-pole 3-way wafer switch, Ten and Twenty can be brought in without modifying the receiver other than tying the switch into place somehow.

Odd form of trouble is the story from *J. Hodgson (Gainsborough, Lincs.)*, who is bothered by the rectifier valve in his AR88LF refusing to stay in its socket, so that he has to put his hands inside the receiver each time he wants to switch on. Your conductor has been playing around with the types of valve used here for years and has never heard of that one before—it would seem the cure would be either to replace the valve or, more likely, the valve holder, John is another of the types who can claim a high QSL return; in his case as high as 80 per cent.

With the early closing of the HF bands at this time of year, quite a few of the troops have shifted their affections to 80 metres, at least during the week; one of these is *W. Felton (Welton, Lincoln)*, who reports no new countries but quite a bit of interesting DX heard on the band, and in particular VS9AJC, using an NCX-5 to an 80-metre dipole

30ft. above the desert.

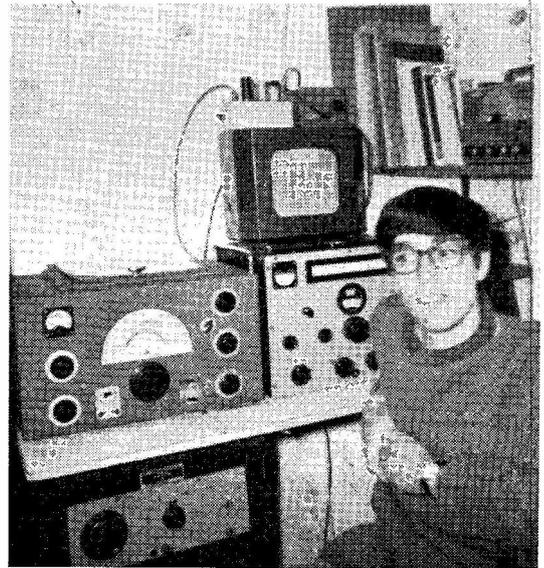
In the same district as Bill Felton is *D. Rollitt (Lincoln)*, who comments on the RAE class which was first mooted through these columns—seems they now have fourteen takers, including the XYL's of G3SXP and G3TJO, which should be enough to see them through to the end of the session, even allowing for the odd backslider.

*L. H. Cox (Pevensley)* writes in for the first time for eight years, with a long list of DX which not only indicates the skill of long experience but also tells your conductor that a very old friend, now in VK-land is still around even though not writing much! Incidentally, Laurie has written in because of his increased activity, which in turn has been provoked by three weeks in the horizontal plane due to a slipped disc. Let us hope he will soon be up and about again.

A puzzler from *S. Swain (Hayling Island)* who mentions a station signing 4Z4HQ—a definite identification—on the weekend of the Jamboree-on-the-air. This sounds like a new prefix for Israel but, in the absence of a card, it is not possible to say whether in fact the call was connected directly with JOTA.

### Tackling the RAE

*Glyn Watson (Sheffield)* is a bit down-in-the-dumps about his RAE course, and wonders if some folk have serious difficulties in this respect; all we can say, Glyn, is that a fair whack at the constructional side is often the way to clear problems on the



Graham Gaunt, of 28 Laurel Street, Middlesbrough, Yorkshire runs a CR-100 with numerous modifications, and also an Eddystone 358X, altered for more spread over the amateur bands and incorporating a 100 kc calibrator. He also has a Heathkit signal generator and a two-metre converter. Graham has cards from 78 countries and, naturally enough, is working up for the R.A.E. which he hopes to take in May.

theoretical side—and in any case the first few weeks on AC and DC theory which are so off-putting seem to clear up as the course continues if typical examples from the *Radio Examination Manual* are worked regularly.

Very little activity is reported from *D. J. Mortimer* this time, due to his being away in Cheshire while most of the gear has been in the home QTH in *Gloucester*. The time has not been wasted, though, as a preselector for the CR-100 has been dreamed up, albeit the bugs are not entirely exorcised from the beast as yet.

Another one who has been away on a training course is *L. Case (Widnes)* who has made contact with another local SWL and G3VTM as a result of the remarks in this piece last time round.

Oddly enough, the next letter in the pile is from G3VTM himself, who recounts how, in his professional capacity, he has been calling *chez Case* for years, but did not know he was an SWL until he saw the note in this piece! G3VTM, who is *E. Ridgway (Widnes)*, also says he is using a receiver based on the G3HTA design, and is operational on Top Band and Two—so doubtless he would welcome some news as to how well he is getting out, the address being all-same “New QTH’s” in the December issue.

An AR88 is the receiver in use at *J. Miller (Cheltenham)*, currently coupled to dipoles as the long-wire fell down in the autumn breezes. John has only one pole for his VHF aerials, so the TV has to share with the two-metre aerial; thus the TV aerial is handy for the TV/DX game, and doubtless makes the neighbours doubt their eyes when they see it going round!

From *R. A. Gape (Leigh-on-Sea)* a letter full of queries, coupled with a certain amount of mickey-taking. To take the queries first, the prefixes WA and WB, used by the Stateside stations: W and WA mean the same thing, covering the holders of the Conditional, General or Extra Class licences, while the WB and WN calls are held by Novices, having limited privileges, and not renewable except by advancing to one of the higher grades. The second one concerns the status of “NSI” stations; we assume, judging from SWL Gape’s location, that he is talking about the pirates that used to come up on Top Band from one of those controlled commercial-pirate ether-pollutors, in which case the answer is quite clear—no good!

*A. P. Ashton (Stowmarket)* has been delving into his CR-100, chasing an elusive gremlin that required the aid of G3TAQ to remove; however, as Phil comments, he knows more now about the innards of a CR-100 than he did before! Your scribe can sympathise, having suffered from a similar trouble in one of these receivers which eluded him for months.

A first list from *J. Tring (Sutton, Surrey)*, who uses the AR88D receiver, modified as per the articles in *SHORT WAVE MAGAZINE* for October and November, 1965, which give him improved SSB reception. For aerial, John uses a 14 mc dipole at 33ft.—which also produces surprisingly good results on the other bands when used with a preselector.

*E. R. Chilvers (Lydney)* has a young aerial farm,

with a Mosley RD-5, a 14 mc dipole, and a 150ft. length of wire, all of which seem to be doing their job, if the list for the Ladder is anything to go by. *P. Cayless (Exeter)* has his usual long and thoughtful epistle this month, from which we can only cull a short comment “How nice to see the Boxing Day SLP is on 21 mc and not on that horrid 14 mc.” It is your scribe’s firm belief that *someone* is grinding axes!

Another first entry to the Table from *A. Hydes (Enfield)* who is at the ripe old age of fourteen. Alan has a ten-transistor receiver going on 40 and 15 metres, and has been at it for seven months now, using a 70ft. wire as the aerial, best DX being ZL. Alan queries the status of the /A suffix; this is the indication of operation from an alternative address, but is not another one for the purposes of HPX.

*M. G. Allen (Heston)* has not reported in for 18 months, thanks to the small matter of University Finals; but even that was not enough—Mike was then caught up in the decorating game, followed by a QTR due to a silicon rectifier handing in its notice. To make up, an entry for the Clown of the Year Contest: W2, working a UA3 “FB QSO, OM, ur sigs 59” given both ways. The UA3 got the W call right at the third attempt, but the W was still trying when Mike gave up in disgust!

*C. K. Skelcher (Larkhill)* uses an aerial device called a “Window” (single wire, with a single-wire feeder tapped off centre) to feed an Eagle RX60N which Chris uses in the main on Fifteen.

*Iain Paterson (Carstairs Hospital)* writes in to say how surprised he was to find his claimed HPX score had gone up in the Table by five. What you didn’t know, Iain, is the way the grapevine operates, and tells your scribe to look a bit more carefully! Iain says he is using the Eddystone EC-10, and has it hitched to 50ft. of wire and earthed to the central heating system. Incidentally, he suggests T. R. Popham and Pete Cayless must have “Lugs like a Pottaloch Terrier” which could be near the truth, maybe!

This month’s entry from overseas comes from *Jim Dunnnett (Singapore)* who is taking the RAE in May next year, for which we hope all goes well, both in the event and the preparation; we do not see Jim having any problems with the CW end as his list for

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#### SWL’s TO NOTE

The next appearance of “SWL” will be in our issue dated March, due out on February 24, 1967. All listener reports, HPX claims and pictures should reach us by Friday, January 20. Readers interested should note that, in general, it is not possible to take in reports received after the deadline—so please post in good time. The address is simply: “SWL,” Short Wave Magazine, Buckingham.

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this mode includes several stations who are by no means to be described as "slow senders."

From *R. Burrows (Keighley)* we have a card and a list heard on 14 mc on October 22, from 0020 till 0045, which makes interesting reading for that time of year. Incidentally, Richard has an R.107 at the moment, working into a 12-foot whip about 100ft. up in the air. Activity is rather low at the moment, for the best of all reasons—preparation for the RAE—and so we hope in due course to hear of yet another new call on the air.

*V. Cox (Hayes, Middx.)* mentions that he would like to get in touch with Stephen Beal, of London, N.10, who mentioned his TRF receiver in the issue for January, 1966. Perhaps SWL Beal would drop him a line, at 33 Ashford Avenue, Hayes Bridge Estate.

Another of the Plymouth lads is at us again—

this time it is John Tozer, commenting on the letter from Trevor Pinch regarding the use of Ten for local nets. The point is that the commercials will creep on to the band at all sorts of odd times when no amateur activity is manifest, and anyone who works Ten knows how often the band *seems* dead but a CQ will prove otherwise.

RAE in the bag, Morse to come rather easily, says *A. Jones (Newport, Mon.)* who is filling in the time by building up the parts needed to complete the station, and by HPX-ing.

And that, to your conductor's surprise, is the last letter on the pile; it only remains to say that the deadline for the March "SWL" is **Friday, January 20, 1967**, addressed to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM. And may we wish you all a Very Happy New Year.



This impressive and very professional-looking layout is for amateur TV working, and is operated under G6OTA/T, Blackburn, Lancs., the particular occasion being the November meeting of the East Lancs Amateur Radio Club. Sound and live pictures were transmitted to an audience of 60 about a mile away, reproduction of the G6OTA/T pictures being on a 14in. 405-line Rx tuned to Ch.I with a BBC-2 TV tuner as a converter. The G6OTA/T transmitter gives about 10 watts of peak-white output video on the 70-centimetre band, sharply directional Yagi arrays being used for transmission and reception. For the demonstration, sound was transmitted using a KW-160 on Top Band and in the picture here we see G4JK operating the camera and G6OTA/T (who is also G3OTA) providing the glamour! Note the monitor Rx at left. Our congratulations to him on such an interesting and effective A/TV set-up, away up there in Lancashire.

## QUESTIONS AND ANSWERS

### SOME GUIDANCE FOR THE NEWCOMER TO AMATEUR RADIO

*This article contains a good deal of basic information and much that is of practical value and interest for the beginner in Amateur Radio. It is, in fact, a treatment of the last Radio Amateurs' Examination paper set by the City & Guilds (and will be recognised as such by many readers). While our attempt has been to give "model answers" to all questions in both parts of the Paper, it is neither required nor expected that the average candidate should spread himself to the same extent. In fact, we have answered two questions too many, in that while the first*

*two questions in the Paper are always compulsory, only six out of the next eight have to be tackled. Because they call for correct calculation, only (7) and (8) are strictly factual. The other eight questions require merely the sort of answers that show the Examiner they are fully understood and could be expanded to considerable length if it were necessary. From these questions and their suggested answers it will be seen how the R.A.E. itself (Subject No.55 in the City & Guilds Examination Syllabus) is in conformity with amateur practice. The R.A.E. pass-certificate is not only the basic qualification for amateurs in the U.K. but is also the open-sesame for an amateur licence in many other countries of the world.—Editor.*

(1) For what purpose may an amateur sending and receiving station be used? What are the conditions of the Amateur (Sound) Licence "A" as regards the keeping of the Log? What details must be entered in the Log.

#### Answer (1)

The station may be used, as part of the self-training of the operator in Wireless Telegraphy (and Telephony), for sending and receiving messages to and from other licensed amateur stations, which are of a personal nature, pertaining to the licensee or the person with whom he is in contact; for sending and receiving signals of procedure forming part of, or relating to, the messages; and to send and receive messages as part of disaster relief operations conducted by the Red Cross, St. John Ambulance Brigade, or the Police, to and from other amateur stations. The station may also be used for the reception of standard frequency transmissions.

The log is to be kept in a book (not loose-leaf), in indelible form, with no gaps, all entries to be made at the time of sending and receiving.

The entries to be made in the log are to comprise the following: Date, time of commencement of every call, (including TVI test calls), callsign of the station from which messages are received or to which they are sent, precise frequency, type or types of emission, time of closing down the station. In addition a /P or /A location address should be entered where appropriate, and calls should be shown with times in GMT. It is also necessary, if another amateur operates the station in accordance with the terms of the licence, for that person to enter his callsign, or the number of his Amateur Radio Certificate, and his signature, in the log.

\* \* \*

(2) What are the causes of key-clicks or thumps in a CW transmission? What are the effects of such emissions on nearby receivers, and what measures can be taken to reduce these effects?

#### Answer (2)

Key-clicks and thumps can be divided into two categories—those due purely to sparking at the keying contacts, and hence having only local effects, and those caused by the transmitter, which appear on the signal and may cause world-wide interference. The former type are best dealt with by arranging to key an extremely low-current circuit, *i.e.*, grid-blocking, and in addition preventing the spark at the contacts from radiating *via* the connecting key-leads by means of a key-click filter, such as that shown in Fig. 1. Exact values normally need to be found by experiment, those shown being typical. As for the clicks radiated on the carrier-wave, these are the result of the very sudden change of state when the transmitter is keyed causing large amounts of harmonic energy to be radiated momentarily which interfere with transmissions on widely differing frequencies as well as close to the offending signal. The first, and essential, part of the cure is to ensure that the transmitter stages are stable, neutralising being resorted to where necessary. When the transmitter

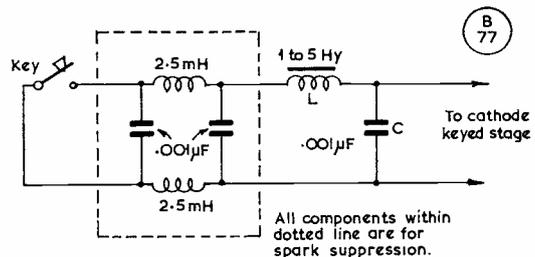


Fig. 1

Fig. 1. Circuit to eliminate key clicks on CW transmission, the general effect of the network being to remove transients ("spikes") and to prevent sparking at the key contacts.



*interference and adjacent channel interference?*

**Answer (4)**

The circuit and approximate values for such a frequency changer are shown in Fig. 3, it being understood that the values for the inductance and capacitance of the tuned circuits are chosen for the various frequencies involved.

Second channel interference is peculiar to the super-heterodyne method of reception and is best considered in terms of a numerical example. Let the receiver have an intermediate frequency (IF) of 500 kc, and be receiving a signal at, say, 1 mc. The oscillator will be assumed to be tuned higher in frequency than the signal, as is usual practice. Then, the oscillator frequency will be 1.5 mc, and the difference between the oscillator frequency and the signal frequency will be the IF of 500 kc. If now a strong signal at a frequency of 2 mc appears on the aerial and rides through the signal grid tuned circuit, as may well happen, then the difference between this signal and the oscillator frequency will also be 500 kc and will be passed by the IF tuned circuit to the succeeding stages. The only cure for this is to prevent the unwanted "image" signal at 2 mc from reaching the mixer grid by increasing the effectiveness of the aerial tuned circuit or by increasing the IF so that the image becomes farther away from the signal frequency when the aerial circuit is better able to effect rejection.

Adjacent-channel interference is that caused by signals close to the frequency of the wanted signal and is eliminated by making the IF response in terms of frequency sharper, so as to improve the discrimination; this is done by the use of high-Q tuned circuits and of the crystal-filter or Q-multiplier technique. The use of a low IF tends to improve adjacent-channel rejection if only LC tuned circuits are to be used, which is not the case with image interference. Hence, the use of any IF is a compromise between the two types of interference unless other means are adopted to improve the situation, such as double-conversion.

\* \* \*

*(5) State the functions of the various electrodes in a pentode thermionic valve. Describe the method of taking readings for for a family of anode volts/anode current curves.*

**Answer (5)**

The pentode valve consists of a heater, to activate a cathode, which emits electrons when heated, three grids, and an anode, as shown in Fig 4. The heater is usually within the cathode which is tubular in form, and the remaining electrodes are disposed concentrically around the cathode with the anode outermost. If only the innermost grid is considered to be present, at a slightly negative potential with respect to the cathode, and the anode is positive to a larger extent with respect to the cathode, then, when the cathode is heated electrons will be emitted, which

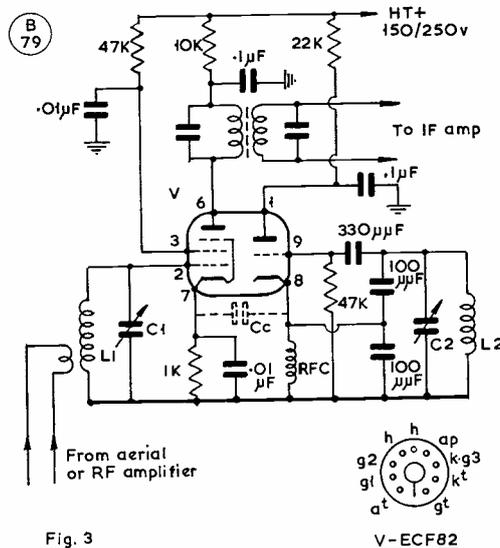


Fig. 3

Fig. 3. Frequency changer stage for a superhet receiver. L1, C1 tune the signal frequency range, while L2, C2 cover a range suitable to give the correct oscillator tuning for the IF in use. Though enough injection may be obtained by stray capacity, more may be needed, in which case eliminate the .01 μF pentode cathode decoupler and join in the condenser Cc, as shown dotted in the circuit.

flow through the grid to the anode; in the absence of potential on the anode and grid they will cluster round the cathode and form a "space charge." If electrons are flowing to the anode by virtue of the anode potential, it will be found that the negative grid volts give a very sensitive control over the anode current, high negative volts causing the flow to cease, and zero, or even slightly positive grid volts causing increase in anode current to a maximum, albeit as soon as the grid goes positive it attracts some of the electrons to itself and hence grid current flows. These figures can be plotted.

The drawback to the scheme, as far as the higher frequencies are concerned, is the capacity between the grid and anode, to form a path of positive feedback which will cause the circuit to oscillate and change its grid and anode impedances (The Miller Effect). To reduce the grid-anode capacitance a second grid is used, called the screen, to distinguish it from the first, control, grid. This grid is earthed as far as AC is concerned but to make the valve work it becomes necessary to connect it to a positive DC potential. Thus the valve is relatively free from the Miller effect, and can be used for RF amplification. However, when the signal on the grid is large, the positive-going signal on the grid may be enough to cause the anode volts to fall momentarily below the screen volts; when this happens screen current rises and anode current falls by a like amount, so a condition of negative resistance occurs and electrons are diverted from anode to screen. To combat this

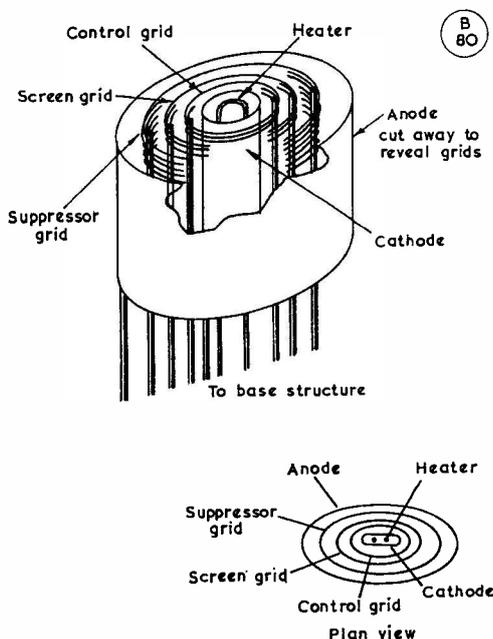


Fig. 4. To illustrate the construction of a pentode valve.

the third grid, between anode and screen, is added and earthed or cathode-connected. The effect of this grid is to stop the negative-resistance effect by diverting electrons attempting to leave the anode area for the screen and repel them back to the anode.

\* \* \*

(6) What is meant by an end-fed aerial? Describe an aerial coupling arrangement which will permit such an aerial to be used for multiband working and explain the principles of operation.

**Answer (6)**

An end-fed aerial may be defined as one which receives or gives up its power by a connection made to one end, and, while it may be used to refer to such a device as for instance an "end-fed Zepp" aerial, it is usually taken to mean the case where the end of the aerial is brought right into the operating room and connected to a terminal of the aerial coupling unit, and this is the arrangement discussed.

Such a wire may be of random length, and will appear almost certainly to be of different electrical length on each band; thus it will present a different impedance on each band. The transmitter may be designed (and probably is) for matching into a small range of substantially resistive impedances centred at 75 ohms. Bearing in mind that maximum transfer of power will occur when the source and the load are of equal resistance and any reactive components

are equal and of opposite sign, we have to design a network that will transform the 75 ohms into whatever the aerial cares to offer.

Perhaps the simplest network that can effect the transformation is that shown in Fig. 5. It will be seen to be, in essence, a tuned circuit with the aerial and the transmitter connections tapped on, auto-transformer fashion. A reasonable rule-of-thumb approach in designing such a circuit is to arrange the coil such that it resonates at the operating frequency when the capacitance is of the order of  $1\frac{1}{2} \mu\text{F}$  per metre of wavelength—say, for 40 metres a capacity of about  $60 \mu\text{F}$ , with neither the transmitter nor the aerial connected. To set up the device on a particular band, the transmitter should first of all be loaded up to give the correct DC input into a 75-ohm dummy load, the tuning and loading settings being noted for future reference. The dummy load is then removed and the transmitter connected through 75-ohm coax to the aerial coupler, and the aerial tapped on. The tapping points are adjusted so that, with the aerial coupler resonant, the same setting of the transmitter indicates maximum field strength

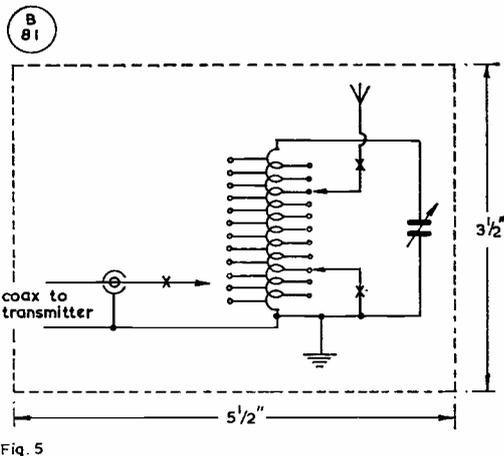


Fig. 5. Coupling an end-fed aerial, as explained in the reply to Question 6.

on a field-strength meter placed suitably for pick-up. If the aerial is highly reactive the aerial coupler tuning will move considerably from the original setting, before resonance is re-established. The final tapping point for the aerial should be as near as can be to the top of the coil without making the ATU tuning too sharp. Connections can be made by crocodile clips but a far better method is to put in a wafer switch contact at the points marked X in the sketch, all three being ganged together so that switching to, say, the 7 mc position of the switch connects the aerial and the transmitter to the appropriate turns on the coil, while the third wafer

may be used to short-circuit any turns as may be necessary to adjust the inductance of the coil for the band in use.

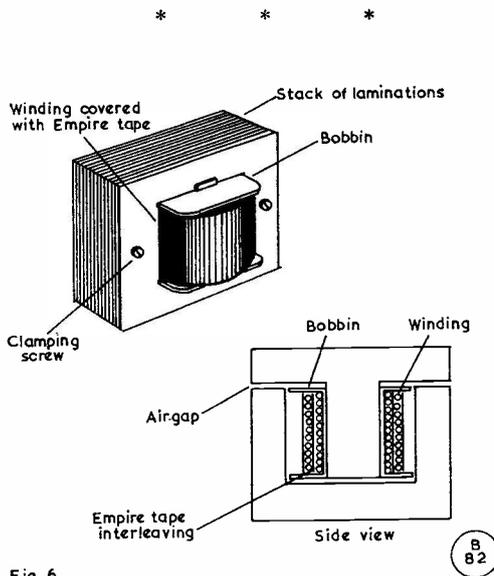


Fig. 6

Fig. 6. Construction of an iron-cored smoothing choke—answer Question 7.

(7) Describe the construction of a smoothing choke suitable for a receiver power pack. A coil has an inductance of 2 Hy. Calculate its reactance at frequencies of (a) 3.18 cycles, and (b) 3.18 kc. Determine the impedance in each case if the resistance of the coil is 60 ohms.

**Answer (7)**

The construction of a suitable choke is shown at Fig. 6. The iron core is usually of laminations of a selected grade of transformer iron; typically a few thousandths of an inch thick, the laminations lie side by side, rather like the leaves of a book. The laminations may be alternately T-shaped and U-shaped, so that when they are interleaved and clamped up, the shape of the resulting core is as shown. Note the presence of the air-gap, this being extremely important in a choke. A bobbin is introduced around the centre leg of the stack of laminations, and is used as a support from the core for the windings, and as insulation. The wire is wound on to the bobbin in a regular fashion and each layer as it is complete is covered with a layer of so-called *Empire Tape* before commencing the next. It is convenient to wind the bobbin to completion first and introduce the laminations afterwards. The whole may be finished off by impregnation in varnish or some other suitable impregnant as a protection

against atmospheric contamination of one sort and another.

*Calculation :*

(a) Reactance =  $2\mu fL$ , where  $\mu = 3.4$ ,  $f = 3.18$  and  $L = 2$  Henrys. Hence, we get  $2 \times 3.14 \times 3.18 \times 2 =$  Reactance.

i.e.  $X = 40$  ohms.

(b) In this case the figures are the same except that  $f$  now =  $3.18 \times 10^3$ , not 3.18.

Thus now Reactance =  $2 \times 3.14 \times 3.18 \times 10^3 \times 2$

$\therefore X = 40,000$  ohms.

If we assume the resistance of the choke to be 60 ohms then  $Z = \sqrt{R^2 + X^2}$

Hence, inserting figures, we get

$$Z = \sqrt{60^2 + 40^2} \quad \text{at } f = 3.18 \text{ cycles/sec.}$$

i.e.  $Z = \sqrt{3600 + 1600}$

whence  $Z = 72$  ohms

At frequency 3.18 kc, applying the same formula, we get

$$Z = \sqrt{60^2 + 40,000^2}$$

$$Z = \sqrt{3600 + 1,600,000,000}$$

$\therefore Z = 40,000$  ohms to the accuracy of the log tables.

\* \* \*

(8) Two resistors are connected as a potential divider across a 12v. battery to enable a transistor to be operated with its emitter earthed and its base at a potential of 1v. negative. The potential divider passes a standing current of 1 mA. Assuming the emitter current to be negligible, calculate the values of the two resistors and their wattage rating.

**Answer (8)**

Since the emitter is stated to be passing negligible current the base of the transistor will also be passing negligible current. Thus the circuit simplifies down to that shown in Fig. 7, and the transistor connections may be neglected totally.

Consider Fig. 7. Both resistors are carrying a current of 1 mA; 1 volt is dropped across R2 and the remaining 11 volts must therefore drop across R1. Ohms Law states that  $E/I=R$

Thus for R1,  $11/001 = 11,000$  ohms

and for R2,  $1/001 = 1,000$  ohms

Now to consider the wattage rating of R1, using the rule that  $E \times I = W$  (E volts, I current, W watts)

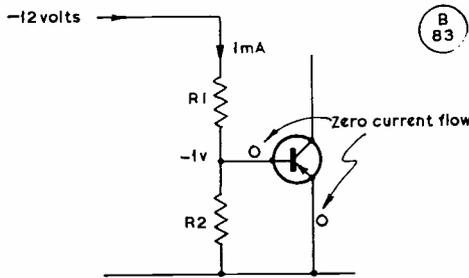


Fig. 7

Fig. 7. To illustrate the answer to Question 8-- the calculation of resistance values.

$$\text{Hence } \frac{11 \times 1}{1000} = W = .011 \text{ watt}$$

In the case of R2, following the same reasoning, we get

$$\frac{1 \times 1}{1000} = W = .001 \text{ watt.}$$

\* \* \*

(9) Draw the circuit diagram of a CW transmitter, consisting of oscillator, buffer amplifier, frequency multiplier, and PA stages. Indicate the points at which metering may be incorporated, and explain carefully the use of meters in tuning and adjusting the transmitter.

**Answer (9)**

A suitable circuit with approximate values is given in Fig. 8. It will be noted that metering is provided in the multiplier grid, the PA grid, and the PA anode. Let us assume the transmitter is to be tuned to radiate on 7 mc, and that the oscillator is set up in the 3.5 mc band by intention, and is known to be oscillating correctly. Thus the multiplier grid will be tuned to 3.5 mc, the PA grid to 7 mc, and the PA anode likewise. Plug in the appropriate coils, and connect the aerial terminals to a suitable dummy load. Rotation of the multiplier grid tuning condenser will, at some point, show a reading of grid current, and careful adjustment with maximise it; the coil may then be checked with an absorption wavemeter, which should indicate when it is tuned to 3.5 mc and brought close to the coil in question. The PA grid coil is then tuned, by its tuning capacitor, for maximum

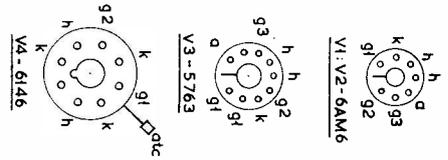
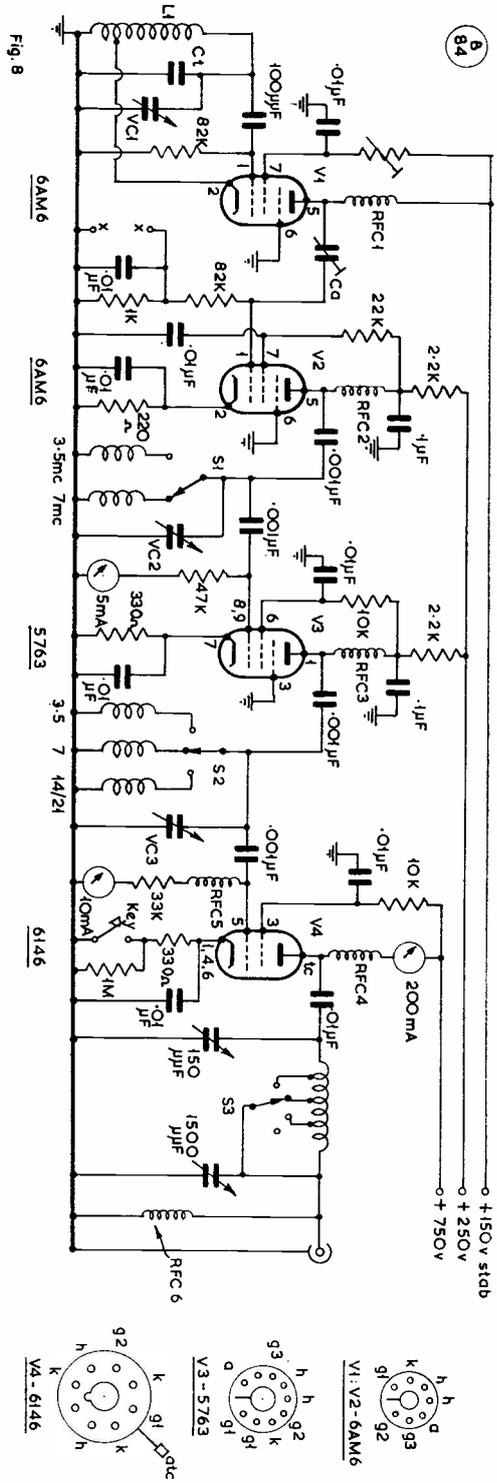


Fig. 8. Circuit for a CW transmitter. Following points should be noted: Ct is a trimmer set to ensure that HF band-edge is covered when VC1 is at minimum; Ca is adjusted for zero grid-current reading between points x-x; the coils associated with VC2, VC3 are proportioned to give highest convenient L/C ratio; the tap on L1 should be about one-third the way up from the earthy end.

grid current in the PA. At this stage the absorption wavemeter should be used again to check that the PA grid is indeed tuned to 7 mc. HT may now be applied to the PA anode and screen, but first the PA "loading" condenser should be set to its maximum value. With HT connected, rotate the "tuning" condenser till a sharp dip in anode current is noted. Tune for lowest anode current, note the value, and if this indicates the PA is not taking the input current required, adjust the "loading" capacitor a little and re-dip with the "tuning" control. Repeat this process of dipping and checking loading, followed by readjustment of the loading control and redipping, until the transmitter is drawing the correct anode current at the bottom of the dip. This being done, with HT off the PA, sweep the tuning control *only* through the dip position, and observe the behaviour of the grid current meter. If this varies smoothly as the PA anode is tuned through the resonant point, with no sudden leaps or starts, it is fairly safe to assume the PA is not unstable. If the transmitter were to be loaded up on the 3.5 mc band, clearly the multiplier would in fact be running with its grid and anode circuits at the same frequency, and a check on the stability would be made by sweeping the PA grid capacitor while watching for any sudden movements on the multiplier grid meter.

In order to determine the anode input to the PA it will also be necessary to read the PA anode voltage when the PA is correctly loaded up; to place a meter on the anode and attempt to read the voltage to earth is not practical as the meter will upset the PA operating conditions, so it is usual to provide a meter connected from the positive side of the PA anode RF choke to earth. As this is only done occasionally, it is more convenient to do this by means of an "outboard" meter of the multi-range type, set to the appropriate range. With the HT voltage known, the anode current for a given input can then be calculated; on subsequent occasions it is sufficient to tune up and load the PA until it draws the calculated anode current.

(10) Explain why it is necessary to be able to vary the frequency of a transmitter in order to be able to maintain continuous contact between two stations which are several thousands of miles apart,

- (a) Between day and night;
- (b) Between winter and summer.

#### Answer (10)

Propagation between two stations several thousand miles apart must be achieved by reflecting a signal off the ionosphere, due to the curvature of the earth. As the ionosphere characteristics are changed by the presence or absence of the sun (which is the agent by which the gases in the air are ionised) being strongest in the day-time and tending to disappear in the night, allowance must be made for this.

The D-layer is an absorber of signals in the main, and in fact is almost a complete absorbent to waves in the lower frequency amateur bands during the day; it has less effect on the higher frequencies which pass through to the F-layer and are refracted back to earth. At night the F-layer becomes less strong and the maximum usable frequency ("MUF") falls for this reason; but on the other hand the D-layer ceases to be very strong also, and hence ceases to be absorbent to the same degree, enabling the lower frequency to be used through the hours of darkness.

As for the difference in the allocation of suitable frequencies as between winter and summer, while the above arguments hold good in general, the amount of ultra-violet radiation from the sun, which is the mechanism causing the ionisation to occur, will clearly be affected by the angle at which the sun's light strikes the earth; thus, there will be, in general, more ionisation, and hence a higher MUF, the higher the sun climbs in the sky at noon. Hence, higher day-time frequencies may be used in summer. However, at low frequencies at night, it is often found that static interference may cause a shift to a frequency different from the optimum.

#### DIARY FOR 1967

We can now offer the well-known *Wireless World* diary for 1967, which not only gives the basic day-to-day information (week at an opening) in a handy pocket form, but also includes many pages of essential radio data—including frequency allocation tables, world TV standards and associated details, AT-station frequency bands and types of emission permitted, radio alphabets and the binary scale, symbols and useful formulae, some basic circuit diagrams, a useful list of transistor equivalents and near-equivalents, and valve base connections. And all this for 6s. 7d. post free, of our Publications Dept. at 55 Victoria Street, London, S.W.1.

#### ELECTRONIQUES/STC MANAGEMENT

As is by now well known—see p.553, November and p.605, December, issues *SHORT WAVE MAGAZINE*—the *Electroniques* interests are now under the control of Standard Telephones & Cables, Ltd., with Ron Wilson, G4RW, retained as technical manager of the *Electroniques/STC* merger. Mr. David Little comes in from the S.T.C. side as sales manager of the undertaking. And we have just seen their new *Catalogue/Manual*, a magnificent compendium of some 600 pages, full of illustrated detail covering an enormous range of parts and equipment. Even if you are not immediately intending to buy anything, the *Electroniques Hobbies Manual* makes interesting and instructive reading. It costs 10s. 6d. post free, from *Electroniques* (Prop. STC, Ltd.), Edinburgh Way, Harlow, Essex.



## THE OTHER MAN'S STATION

G 3 B D Q

THIS month we show the station of a very well-known contributor to *SHORT WAVE MAGAZINE*—John Heys, G3BDQ, now of 418 The Ridge, St. Leonards-on-Sea, Sussex. And he is on a ridge, being on high ground to the north of Hastings, with a clear take-off in all directions. Previously, the QTH was right down in the town of St. Leonards, with indifferent antenna facilities, to say the least—now, G3BDQ can lay out aerials almost at will.

Naturally, the move involved a complete rebuild of the station, which was replanned with new equipment. Now, it consists essentially of two completely separate sets of equipment, one for the HF bands and the other for VHF. At left in our picture is the entirely home-built 150-watt CW/SSB transmitter running a 4X150A in the PA, and covering 15-20-80 metres. (As described in the *Magazine*.) Next is the R.C.A. AR-8516L triple conversion Rx, with a coverage of 80 kc to 30 mc in two-megacycle bands, and giving a CW bandwidth of 100 cycles (when that sort of selectivity is required). This receiver has also been described in the *Magazine*. Then we see a KW-2000 transceiver with an American P. & H. Linear, capable of running the full legal power limit on all bands 10 to 80 metres. Also visible are items such as ATU and Heathkit reflected power meter. Above these are two of the Heys oil-paintings, another of the hobby-interests to which the owner-operator of G3BDQ modestly admits. Not in view in this photograph is a large amount of VHF gear, including a home-built nuvistor converter for two metres, transmitting equipment for the two-metre band, an exten-

sive tool set and various items of test apparatus.

The aerial system consists of a 220ft. long-wire, a ground-plane for 20 metres (which has proved most successful) a 15-metre dipole and, for the same band, a "ZL-Special" aimed north; the two-metre array consists of a 16-element slot-fed stack at a mean height of about 35 feet, for which the take-off is particularly good, being in the clear all round the clock, and 420ft. a.s.l. to boot! G3BDQ has already been making himself well heard on the two-metre band even when conditions appear pretty flat, and once again the advantage of height a.s.l. is made evident.

As regards personal history (which we always like to discuss in these "Other Man's Station" stories) John Heys, now a busy school-master whose wife is also a teacher, started by building simple receivers in the period before Hitler's War, when it was the ambition of all right-thinking SWL's to find the exotic DX (like VR6AY on 20m.), on home-built gear, and to learn Morse. Before he could go for his ticket, John was swept up by the War and into the R.A.F., spending five years in Bomber Command on the airborne radar equipment which caused us so many problems of installation, maintenance and operation. With release back into civilian life in 1946, John wasted no time in going through the necessary motions to acquire G3BDQ—and has remained healthily active and interested ever since, even if there have been periods when Amateur Radio took second or even third place to other interests.

# 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.

- DL5XY**, P. D. Smith (*G3PNM*), 4 Div. Hq. and Signal Regt., B.F.P.O.15.
- G3UJJ**, J. S. Varley, 341 Baker Street, Alvaston, Derby.
- G3UJJ/A**, J. S. Varley, 90 Ford Hill, Ambler Thorn, Queensbury, Bradford, Yorkshire.
- G3VAG**, R. C. Greenleaf, 27 Ernest Road, Wivenhoe, Essex.
- G3VGW**, R. I. Buckby (*ZD8RB*), 62 Wheatley Avenue, Corby, Northants. (Tel. Corby 3692.)
- G3VID**, T. A. Howe, Rookstone, Empire Terrace, College Road, Margate, Kent.
- G3VLD**, T. Denney, 3 Atridge Chase, Perry Street, Billericay, Essex.
- G3VLL**, G. R. Gauntlett (*ex-VU2GG*), 36 Muston Road, Filey, Yorkshire, E.R.
- G3VPH**, J. Mayall, 9 Alexander Avenue, Droitwich, Worcs. (Tel. Droitwich 3089.)
- G3VPT**, P. Burgess, 40 Victoria Street, Norwich, Norfolk.
- G3VRG**, C. A. Corrigan, 14 Tollington Road, Holloway, London, N.7.
- G3VSD**, J. Rimmer, 60 Willows Lane, Accrington, Lancs.
- G3VSU**, A. R. F. Moore, Dehra Dun, The Droveaway, St. Margarets Bay, Dover, Kent. (Tel. St. Margarets Bay 3248.)
- GW3VTW**, T. P. Jenkins, 17 Royal Crescent, Penydarren, Merthyr Tydfil, Glam.
- G3VTX**, Amateur Radio Club, R.A.F. Lindholme, Doncaster, Yorkshire.
- G3VUF**, G. Wright, 12 The Kylins, Morpeth, Northumberland.
- G3VUP**, T. J. Credland, 2 Queen Street, Winterton, Lincs.
- G3VVA**, E. J. B. McArthur, M.B., Ch.B., (V.U.Manc.), D.R.C.O.G., 4 Welton Avenue, Upton, Wirral, Cheshire.
- GW3VVC**, J. E. Parry, Bwlch Farm, Llanfechell, Rhosgoch, Anglesey.
- G3VVK**, R. L. Davis, 8 Shaftesbury Road, Oldfield Park, Bath, Somerset.
- G3VVN**, Hertfordshire R.A.E.N. Group. (*Pse QSL via G3NRB*.)
- G3VVS**, S. A. Fox, 18 Eversley Crescent, Winchmore Hill, London, N.21.
- G3VVU**, I. W. King, 21 Chadwick Hill, Bobbers Mill, Nottingham.
- G3VWC**, A. Marriott, 21 Thorley Hill, Bishops Stortford, Herts. (Tel. Bishops Stortford 4796.)
- GM8AOW**, D. L. Wright, Electronics Centre, R.A.F. Leuchars, Fife.
- G8ARS**, J. C. R. Oliver, 50 Queensway Drive, Bridgnorth, Shropshire.
- G8ATA**, J. P. Chettle, Winter Hill, Lostock Avenue, Poynton, Cheshire.
- G8ATB**, S. A. Chettle, Winter Hill, Lostock Avenue, Poynton, Cheshire.
- G8ATR**, J. Wood, 14 Arncliffe Avenue, Accrington, Lancs.
- G8AUE**, M. I. Sneap, Harlestone, The Birches, Beggarswell Wood, Ambergate, Derbyshire.
- G8AUF**, R. J. Alton, 49 Cemetery Road, Belper, Derbyshire.
- G8AUN**, R. H. A. Chiddick, 87 Aylsham Road, Norwich, Norfolk. *NOR 10-N*.
- G8AVO**, J. I. Wainwright, 167 Holland Street, Crewe, Cheshire.
- CHANGE OF ADDRESS**
- G2CLP**, H. R. Boutle, 14 Queens Drive, Putnoe, Bedford.
- GM3CCK**, J. L. Twatt, 37 Albert Street, Kirkwall, Orkney.
- G3DLD**, A. E. Lawson, 2 Harlem Green, Leeds 13, Yorkshire.
- G3DM**, E. C. McLoughlin, 8 Garth Court, Haigh Road, Waterloo, Liverpool 22.
- G3DFD**, D. W. Lilley, C.Eng., A.M.I.E.E., 89 Sandy Lane, Melton Mowbray, Leics. (Tel. Melton Mowbray 3519.)
- G3JZG**, R. J. Riding, 17 Cantreyn Drive, Bridgnorth, Shropshire.
- G3KMA**, R. Balister, La Quinta, Mimbridge, Woking, Surrey. (Tel. Chobham 8224.)
- G3LCB**, R. E. Wolpers, 20 Langdon Shaw, Upperton Road, Sidcup, Kent.
- G3MDD**, B. S. Mudge (*ex-VS6ED /VS6DV*), 38 Farm Road, Dunmore Estate, Abingdon, Berks.
- G3MHW**, J. R. R. Baker, Springvale, Foxlydiate, Redditch, Worcs. (Tel. Redditch 3338.)
- G3NFQ**, J. A. Cawley, 62 The Beeches, Rugeley, Staffs.
- G3OOI**, D. Yeo, Cotuit Hall, Pullens Lane, Oxford.
- G3OQT**, R. F. McLachlan, Dee-Ex, Elm Grove, Hullbridge, Essex.
- G3PVL**, C. F. Beech, 45 Blackgate Lane, Tarleton, Preston, Lancs.
- G3REI**, Reigate Amateur Transmitting Society, c/o D. M. Norman, 44 Allingham Road, Reigate, Surrey.
- GW3RIY**, A. Chapman, 2 Charles Street, Trealaw, Rhondda, Glam.
- G3RVY**, P. Colegate, 56 Bath Road, Atworth, Melksham, Wilts.
- G3SVG**, V. R. Gough, R.A.F. Locking, Weston-super-Mare, Somerset.
- G3UNW**, F. R. Stoodley, East Street Farmhouse, East Street, Ash, Canterbury, Kent. (Tel. Ash 509.)
- GW3UDO**, D. Rogers, No. 18 Ty Wesley, Heol Awstralia, Ponciau, Wrexham, Denbighshire.
- G3UYA**, Amateur Radio Society, King Edward VI Grammar School, Stafford. (*QSL via R. L. Godwin, 22 Bideford Avenue, Weeping Cross, Stafford*.)
- G3VGN**, W. Easton (*ex-D2GN*), 24 Castle Road, Whitby, Yorkshire. (Tel. Whitby 2332.)
- G3VHL**, G. S. Boulton, 1 Ashfield Avenue, Chaddesden, Derby. (Tel. Derby 44169.)
- G5UM**, J. Hum, 27 Ingarsby Lane, Houghton-on-the-Hill, Leicester. (Tel. Thurnby 6473.)

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15th Edition

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The information given in this fifteenth edition of **GUIDE TO BROADCASTING STATIONS** has been completely revised and brought up to date although it must be remembered that some stations make frequent changes in operating characteristics.

Authorized and unauthorized long- and medium-wave stations operating in the European Broadcasting Area, which includes the Western part of the U.S.S.R. and territories bordering the Mediterranean Sea, are listed both in order of frequency and geographically. The details have been checked against the latest information available from the European Broadcasting Union. Also included is a list of the stations outside Europe which can be heard under favourable conditions.

There are nearly 4,000 entries in the list giving frequencies, wavelengths and power of the world's broadcasting stations operating the short-wave bands.

In this edition are included lists giving a selection of the more powerful European television stations and VHF sound broadcasting stations. All British stations, are included in both these lists.

### CONTENTS:

Long- and Medium-Wave European Stations: Some L.W. and M.W. Stations outside Europe: Short-Wave Stations of the World: Map of Broadcasting Regions: European Standard Frequency Transmitters: Short Wave Broadcasting Bands: Wavelength and Frequency Conversion: European Television Stations: European VHF Sound Broadcasting Stations: Internationally Allocated Call Signs.

Available from—Publications Department

**SHORT WAVE MAGAZINE**  
55, Victoria Street, London, S.W.1

### SMALL ADVERTISEMENTS, READERS—continued

**SALE:** Labgear LG.50 Transmitter, in mint condition, asking £27 10s., or near offer? Delivered to 50 miles or within London area.—Grainge, G3JPM, Wyatt Cottage, Little Thurlow, Haverhill, Suffolk.

**SALE:** Gelo G.209 double-conversion Rx, for amateur bands only, coverage 10 to 160m., in good condition, price £35. Also BC-221, mains PSU, £12.—Scott, 170 Bramerton Road, Bilborough, Nottingham (212898).

**WANTED:** Manual for Super-Pro Rx (BC-779A). Would be prepared to pay deposit for loan.—Neyland, G3RPL, 22 Pax Hill, Hillyfields, Bedford (61519).

**FOR SALE:** B.44 with microphone and manual, in perfect condition, £7—or Part Exchange on Tape Transcription Deck and Pick-Up.—Tobias, 108 Baysdale Road, Scunthorpe, Lincs.

**WANTED:** Manual for the National HRO and any information on the W.D. 'scope Type WY-0212. **FOR SALE:** R.107 Rx, in good working order, with notes, price £10. Buyer collects.—Tong, 1 Alderton Crescent, Leeds, 17, Yorkshire.

**SALE:** Frequency Meter Type BC-221, in as-new condition, with calibration charts, price £18. Also Spink Tx with Delta Control Unit, £60. Olympic Z-match, rated 250 watts, £8. G2DAF-type Rx, with 2.1 kc mechanical filter and QCC C10 xtals, in Lmhof cabinet, price £30. Will deliver reasonable distance.—Poole, G3IMP, QTHR (Tel. Leire 478).

**WANTED:** An R.C.A. AR-8516L receiver, in good condition; cash waiting. Or Part Exchange for quantity of Hornby electric railway equipment.—Box No. 4408, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**OFFERING:** At £18, a Super-Pro receiver, in FB condition, with many modifications, carriage paid and open to offer; s.a.e. details.—Cobb, 27 Moorlands Crescent, Cousin Lane, Halifax, Yorkshire.

**WANTED:** Eddystone S.750 receiver, unmodified; full details, pse. **SALE:** Heathkit RA-1 Rx, coverage 10 to 160 metres, factory built, with 100 kc calibrator and matching speaker, in as-new condition, cost over £60, price £35 10s.—Gower, 2 Queens Avenue, Subway Street, Hesse Road, Hull, Yorkshire.

**FOR SALE:** Withers Electronics 160m. "Communicator" with speaker box and cables, £37 or offer? Command Rx, 6.0 to 9.0 mc, 30s.—Kidder, G3NZO, 44 Ingatstone Road, Woodford Green, Essex.

**SALE:** Hundreds copies "Short Wave Magazine" and "Bulletin," dating from 1940. Many complete volumes. Offers, please? Leak Hi-Fi TL-12 Plus unit, with pre-amplifier, in mint condition and guaranteed, £28.—Johnson, G2BJY, 105 Weston Street, Walsall, Staffs.

**FOR SALE:** National One-Ninety, with crystal calibrator and matching speaker, as new, £65. Buyer collects.—Purdy, 416 Broxtowe Lane, Aspley, Nottingham (292613).

**SELLING:** R.206, Mk. II model, in excellent condition, with PSU, price £25. Will deliver any reasonable distance.—Douthwaite, G2AFB, 25 Parkwood Avenue, Esher, Surrey. (Tel. 01-398-4490.)

**WANTED:** R.220 receiver, preferably modified for 4-metre band, with circuit and all necessary details. Please quote price, delivered in London area.—Box No. 4411, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**WANTED:** Vibroplex Bug Key. Please state precise model and price. Must be in mint condition.—Box No. 4410, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**WANTED:** Mains transformer, 650-volt 250 mA off secondary, heater windings immaterial; state size overall.—Parker, G3OV, 133 Station Road, Cropston, Leicester.

**WANTED:** Mosley vertical aerial assembly; also a G3FIF-type whip for 160m.—Brown, G3NXX, 21 Princess Street, Leyland, Lancs.

**SMALL ADVERTISEMENTS, READERS—continued**

**SALE:** National HRO Senior, table model, with miniature-valve RF and mixer stages, stabiliser and PSU, with nine GC coil packs and including speaker, the whole Rx accurately aligned, price £17.—Russell, G3KLD, 43 Ingestre Road, Hall Green, Birmingham, 28.

**FOR SALE:** Three-band Minibeam, G4ZU type, on twin boom, 109ft. 300-ohm feeder, with instructions; TR-44 rotator control unit, not used since overhaul by K.W. Electronics; TR-44 and Minibeam together, £37. Prop-pitch motor, twin Selsyns, part built control unit, £5. Dynamotor, 12v. input, giving 275v. at 110 mA, or 500v. at 50 mA, price 40s. Two 813's, 40s. My junk-box is worth a visit for a sort-over.—Brooke, G3JEC, 11 Astley Crescent, Hunstanton (2378), Norfolk.

**WANTED:** Commercial two-metre and 70-centimetre gear, fixed and mobile. Also a Variac transformer.—Hodgkinson, G3NZT, 794 Bury Road, Bolton (24046), Lancs.

**SALE:** Hammarlund HQ-100A Rx, in as-new condition, for 250v. AC, price £60. Also a self-contained Top Band Tx, with mod. and PSU, grey hammer front panel and cabinet, £10.—Ball, 56 Wistaston Green Road, Wistaston, Nr. Crewe, Cheshire.

**WANTED:** Type 360 PSU for R.1475 Rx. State condition and price.—Tickle, 203 Storeton Road, Prenton, Birkenhead, Cheshire.

**FOR SALE:** Eddystone 840A receiver, with S-meter; also Trio 9R-59 receiver, purchased new 1965, hardly used; both in immaculate condition, £25 each. Also B.44 transceiver, modified for 4 metres, with xtals, price £8; Taylor 13A Valve Tester, in working order and with manuals, £8. **WANTED:** Instruction manual and circuit diagram for the G.E.C. BRT-400 receiver.—Hayes, 78 Hawthylands Road, Hailsham, Sussex.

**SELLING:** Two SCR-522 2m. transmitters, with PSU; 30-watt modulator; two-metre converter; 6/over/6 slot J-Beam—the lot for £15 10s. Tx for 80/160m., separate VFO, in matching cabinets, with PSU. £9 10s. Rogers Mk. II Hi-Fi control unit and amplifier, new, with all leads and PSU, £7 10s. Heathkit mobile Tx, MT-1; Rx, MR-1; PSU, MP-1; 12-volt transistorised /M rig, with all connecting leads and PSU for AC mains, price £80 10s. complete. Heathkit SB-10U Sideband adaptor, in FB condition, price £20.—White, G3HCU, Timbers Ridge, Peaslake, Nr. Guildford, Surrey.

**QUICK Sale:** One AR88LF, needs slight attention, otherwise FB; also R.206, less connectors but with AC/PSU. First £30 takes both.—Oliver, G8ANJ, QTHR. (Tel. 018 88 8729.)

**WANTED:** An AR88D. **FOR SALE:** A Marconi CR-100, with miniature-valved front end, product detector, gated AVC, S-meter, voltage stabiliser, send/receive muting, complete with 10-15m. converter, official spares box and manual, price £20.—Hart, G3SJX, 42 Gravel Hill, Addington, Croydon, Surrey.

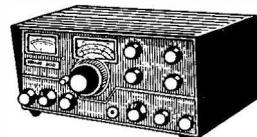
**SELLING:** Six-foot rack containing BC-640A, a 90-watt two-metre transmitter; not working but manual available. Prefer to sell complete but in sections if no acceptable offers received by January 21. Enquiries:—Doran, Radio Society, Students' Union, The University, Nottingham.

**PROPERTY of the late G4LM:** AR88D, in excellent condition, price £40. Labgear LG.300 Tx, complete with VFO, Modulator and PSU, in 6ft. rack assembly, £25. Mobile Tx for 160m., complete with Valradio transistor PSU and Minimitter control unit, £15. Two-metre Tx, 832 PA, complete with modulator and PSU, rack mounted, £15. Elpico 5-watt amplifier, Eql-Treble-Bass, complete with power unit, £5. TW two-metre nuvistor converter, four valves, £4. Prefer sale as one lot. All reasonable offers considered.—Contact G3VET, QTHR. or Mrs. Bradshaw, Hall Lane, West Winch, King's Lynn, Norfolk. (Tel. Middleton 366.)

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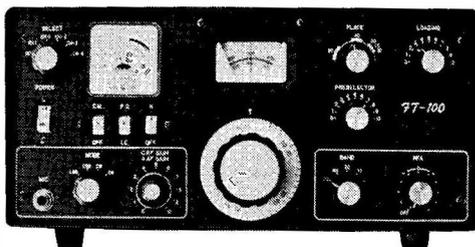
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SMALL ADVERTISEMENTS, READERS—continued

**DON'T FORGET** That For the February Issue we should have your single-copy order in time for delivery by January 27—this means posting your P.O. for four shillings (with a chit saying "February issue, pse") to arrive with us by Wednesday 25th. Compliments of the Season from:—Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. (And do please write your full QTH in block letters.)

**SURPLUS** Since Going Transceiver. Two-metre Tx, running 70w. AM or 90w. CW, £15. Converter for two metres, tuning 24-26 mc IF, £6. Lafayette HE-40 Rx, £22. Generating Set, 12/24v. DC, 350-watt output, £18. Rotary converter, input 24v. DC, output 230v. AC, 50-cycle 250-watt (will run off the generating set), £10. Stuart-Turner P-E lighting set, output 230v. AC 50-cycle, at 2,500 watts, mounted on trailer with waterproof covers, electric starting, in very good condition with suitable towing attachment, price £80. Some R.C.A. AR88LF's, used finish, but in very good electrical condition, re-calibrated and tested prior to despatch, £38, carriage extra.—Dodson, GW3PPD, 75 Queen Street, Pembroke Dock, Pembro., West Wales. (Tel. Pembroke 3232.)

**SALE:** Month-old amateur band double conversion superhet, Type SR-550, with product detector, xtal calibrator, etc., price £45 or near offer. Also a six-month old National stereo tape recorder, complete and little used, £60 or offer? Both these items are absolutely as new.—Lindsay, Laigh Glengarth, By Kilbirnie (2381), Ayrshire, Scotland.

**FOR SALE:** Heathkit DX-100U with SB-10U Side-band Adaptor, price £70. Hammarlund Super-Pro receiver, with its PSU, £27. Marconi CR-100 receiver, £12. Top Band transmitter, home built, £10.—Maclachlan, The Lowlands, St. Michaels Road, Penkridge (464), Stafford, Staffs.

**SELLING,** As One Lot: Heathkit VF-1U VFO; home-built Top Band mobile Tx/PSU, suitable fixed use; unmodified 19 Set; Command Rx, 1.5-3.0 mc; large PSU; books "Radio & TV Engineer's Reference Book," 2nd edn., and "Foundations of Wireless"; plus some possible extras. The Lot for £25.—Hooper, G3PCA, 50 Mortlake Road, Ilford (3741), Essex.

**SALE:** Withers TW2 Twomobile Rx. with TW DC/PSU, price £45. Also a B.44 Mk. II with variable tuning, £5.—Short, G3GNR, 3 Park Meadow, Princes Risborough, Bucks.

**SELLING:** An immaculate National NCX-3, £115. SA G.E.C. Miniscope, £8. Eddystone 250 mmF 2 kV variable condensers, 12s. 6d. Geloso 4/102 VFO, complete, £6. Valves: 813, 30s.; 829B, 20s.; 12AT7, EF91, 2s. 6d. FT-241A 465 kc IF xtals, 10s.—G3MGT, OTHR.

**FOR SALE:** Trio Model Tx 388S SSB transmitter, coverage 15 to 80 metres, brand new and complete, for 230v. AC, price £50 or near offer.—Ambrose, 3 Guest Road, Cambridge.

**WANTED:** Instruction Manual for HRO-MX, and Bandspread Coil Packs.—Creene, 29 Oxford Road, Calne, Wiltshire.

**WANTED:** K.W. Geloso Converter, in good condition. For SALE: Hallicrafters S-108 receiver, good order, price £15 or near offer. — Legg, 12 Orchard Way, Sutton, Surrey.

**WANTED:** R.216 Receiver, complete and with PSU. Price of secondary importance if in first-class condition.—Box No. 4417, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**SELLING:** Triple-conversion bandspread receiver, 1965 design for home construction, 99 per cent completed, incorporating 21 valves, with Eddystone 898 dial, in 15in. x 7in. x 12in. wrap-round cabinet, a neat and solid job, with plans and extra components, price £60 or offer? Send for details and photograph.—Tetley, G3R1X, 18 Alexandra Park, Scarborough, Yorkshire.

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**SALE:** Eddystone S.740 Rx, four bands, coverage 620 metres to 30.6 mc, with matching speaker and its manual, price £26.—Dunstable, 10 Park Close, Portslade, Sussex. (Tel. Brighton 47205.)

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**WANTED:** A K.W. Viceroy Tx, in good condition and reasonably priced; full details, please.—Lloyd, 14 Bramley Avenue, Fleetwood, Lancs.

**SELLING:** K.W. Valiant Tx, coverage 10 to 160m., in excellent condition and complete with aerial relay, £25.—Porter, 11 Cranmore Avenue, Liverpool, 23. (Tel. Waterloo 1610.)

**SALE:** American Converters, Type AM-913/TRC, 100-225 mc, one off; AM-914/TRC, 225-400 mc, two off; continuous tuning, IF out 30 mc; price £15 each or near offer; add post/packing.—Wardle, 31 Greenbank Road, Hoole, Chester.

**FOR SALE:** K.W. Viceroy, Mk. III, with built-in solid-state PSU, hardly used, at bargain price of £110. Free delivery to 100 miles.—Randall, G3RFH, 6 Mortimer Close, Woolavington, Bridgwater, Somerset.

**WANTED:** Graticule and support for screen of VCR-97 CRT. Also transformer, primary 6.3v. or 240v., secondary 4v 1A at 2 kV insulation; and Morse code on records. State price and condition.—Lewis, 1 Western Road, Pontardawe, Swansea, Glam.

**SALE:** Heathkit DX-40U transmitter kit, in as-new condition, price £22.—Martin, 18 Thornfield Way, Hinckley (4022), Leics.

**FOR SALE:** Belonging to the late G3SDE, Minimitter Top 2-7, in good condition, with circuit, etc., price £18 or near offer. Also Casie Multimeter Model NH-400, in new condition, £4 or offer.—Price, G3TQV, 23 Elmwood Grove, Horbury, Wakefield, Yorkshire.

**WANTED:** Filter-type SSB Tx, and Rx; or Transceiver, W.H.Y.? No rubbish, please. **SELLING:** First-class outfit, 35mm. Edixa Pentaprism Reflex, 2.8f Makro Kilar (cost £148); M.P.P. precision enlarger, 3.5f Dallmeyer de luxe (cost £50); also dishes, tanks, filters, etc.—Frith, G3FRE, 56 Ring-leas, Cotgrave, Notts.

**SALE:** BC-221 Frequency Meter, in working order, with manual but less charts, price £10 or offer.—Wuille, 18 Patricia Avenue, Goring-by-Sea, Worthing (41810), Sussex.

**WANTED:** Eddystone speaker, round die-cast pattern, Cat. No. 688, also receiver mounting blocks, Cat. No. 774. Must be in good condition.—Bach, 27 Greville Hall, London, N.W.6.

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**FOR SALE:** National HRO receiver, with four GC coils and PSU, overhauled and perfect, £13 10s. Two-metre Tx (CTX-2), complete PSU and modulator, with G. & D. Mk. V converter, IF 2.0 to 4.0 mc, price £16. Valves offered, few of each: 100TH, 805, 866A. Meters, 2-in. square, 0.50 mA and 0.200 mA, 10s. each; 0.3.5 amp RF, 7s. 6d. All new, ex-Govt. equipment. Also transformers, send s.a.e. for list.—Fish, G4MH, 18 Town End, Golcar, Huddersfield (52653), Yorkshire.

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Eddystone 840C, 550 kc/s.-30 mc/s.	£48 (25/-)
R.C.A. AR88LF, 75-550 kc/s. and 1.5-30 mc/s.	£42 (40/-)
Heathkit RA-1, bandsread receiver	£35 (30/-)
Eagle RX80, 550 kc/s.-30 mc/s., with bandsread	£35 (20/-)
Heathkit RG-1, 600 kc/s.-32 mc/s.	£33 (25/-)
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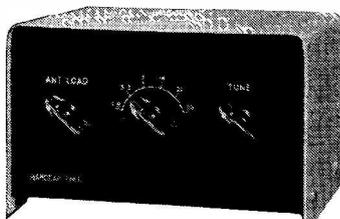
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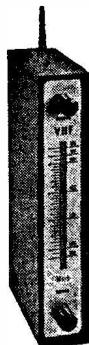
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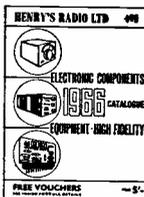
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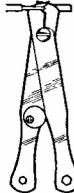
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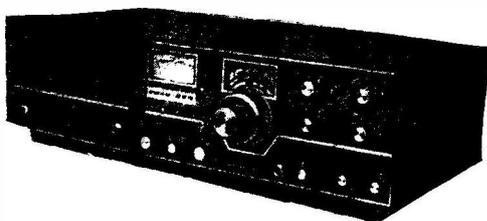
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