

# The SHORT WAVE Magazine

VOL. XXXI

OCTOBER, 1973

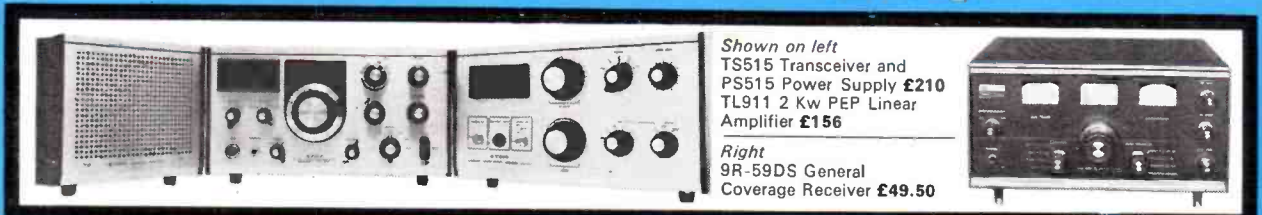
NUMBER 8

# TRIO



JR599  
 Amateur Band Receiver **£160**  
 Matching Transmitter TX599 **£160**

All prices  
 exclusive  
 of VAT



Shown on left  
 TS515 Transceiver and  
 PS515 Power Supply **£210**  
 TL911 2 Kw PEP Linear  
 Amplifier **£156**

Right  
 9R-59DS General  
 Coverage Receiver **£49.50**



**b.h.morris and co. (radio) limited**  
 Trio House, The Hyde, London NW9 6JP  
 Telephone: 01-205 6441



THE AMATEUR RADIO RETAILERS ASSOCIATION

**MIDLAND**

# NATIONAL AMATEUR RADIO

**AND ELECTRONICS**

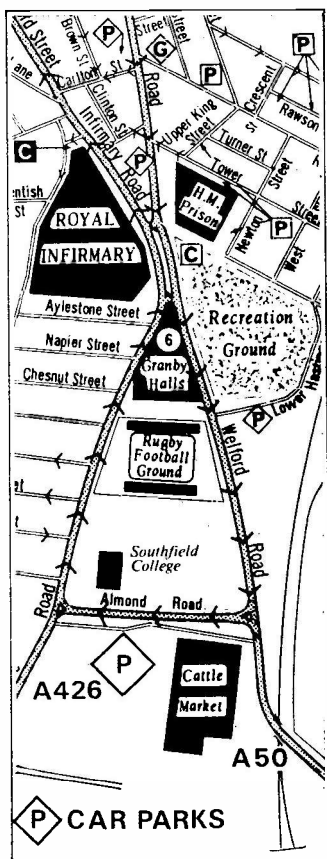
# EXHIBITION

**At the Granby Halls, Leicester, 25th, 26th, 27th October**

**Bigger and better  
than before**

Plenty of room to  
move around

**Talk-in stations**  
**All bands—all**  
**modes**  
**GB3ARE**



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Thursday and Friday  
12 noon to 8 p.m.

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10 a.m. to 6 p.m.

Easy access by rail or  
from the motorway  
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Large car parks  
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**ADMISSION 25p**

THIS INCLUDES A CHANCE TO WIN £100 WORTH OF EQUIPMENT  
OF YOUR CHOICE

# LOWE ELECTRONICS

MAIN DISTRIBUTOR FOR YAESU MUSEN EQUIPMENT

Head Office and Service Department (Bill G3UBO, Alan G3MME and John G3PCY))

**119 Cavendish Road, Matlock, Derbyshire, DE4 3HE**

Telephone 9 a.m. - 9 p.m. Matlock 2817 or 2430

**Southern Sales** (Dave G8FAY)  
Goring Road,  
Steyning, Sussex.

Telephone : Steyning 814466.  
Just off the A283 on the Shoreham side of the village.

**Midland Sales** (Peter G3XWX)  
Soho House,  
362 - 364 Soho Road,  
Handsworth, Birmingham.

Telephone : 021-554 0708

Just off Exit 1, M5—follow the A41 into town for 1½ miles to the Regal (Bingo Hall) Cinema. We are directly opposite. On the first floor. Within easy reach of the South-West or North-East by Motorway.

**NO PROBLEM PARKING AT ANY BRANCH**

In addition to the above shops, which are open 9 to 5.30 Tuesday to Saturday, we have part-time Agents who are available evenings and weekends:—

**John G3JYG** 16 Harvard Road, Ringmer, Lewes,  
Sussex.

**Sim GM3SAN** Telephone Ringmer 812071  
19 Ellismuir Road, Baillieston,  
Nr. Glasgow.

**Alan GW3YSA** Telephone 041-771-0364  
35 Pen Y Waun, Efail Isaf,  
Nr. Pontypridd, Glam.  
Telephone Newton Llantwit 3809

So, wherever you are, we have a branch or a part-time Agent not too far away. At Matlock, the Branches, or our Agents you will see and can try out the best in both new and second hand, H.F. or V.H.F., along with every conceivable accessory for the complete station.

Our most important asset, however, is the Service Department at Matlock. Equipped with the finest test gear, the most experienced personnel, and backed up with a comprehensive stock of spares, it provides our customers with the fastest and best service possible.

Apart from the Service Department we confess that we cannot offer anything more than anyone else—so if you are positive your rig will never go wrong or require spares, then there is no advantage in buying from us. If, on the other hand, you admit the possibility that you may require a spare in a hurry, or need a "while-you-wait" repair (by appointment of course) or require your rig collecting by Securicor, repairing and returning in a couple of days, then why gamble. If it ever goes wrong (and what piece of electronic equipment doesn't ?) it is a comforting thought that you got it from LOWE ELECTRONICS.

**SEE YOU AT LEICESTER**

## PRICE LIST

Price including VAT

### YAESU MUSEN

FR400SD ... ..	£192.50	FV200 ... ..	£46.20
FL400 ... ..	£181.50	FL2000B ... ..	£181.50
SP400 ... ..	£12.10	FL2100 ... ..	£181.50
FT401 ... ..	£291.50	FR50B ... ..	£71.50
FV401 ... ..	£46.20	FL50B ... ..	£82.50
SP401 ... ..	£12.10	FV50B ... ..	£30.80
FT101 ... ..	£308.00	FT501D ... ..	£319.00
FV101 ... ..	£46.20	FP501 ... ..	£49.50
SP101 ... ..	£12.10	SIGMASIZER ... ..	£198.00
FT75 ... ..	£126.50	YC355D ... ..	£132.00
FP75 ... ..	£27.50	FT2FB ... ..	£107.80
DC75 ... ..	£27.50	*FT2AUTO ... ..	£172.70
VC75 ... ..	£24.20	FT101 FAN ... ..	£9.90
FV50C ... ..	£30.80	FT101 CW FILTER ... ..	£17.60
SP200 ... ..	£159.50	YD844 ... ..	£14.30
FP200 ... ..	£49.50	YD846 ... ..	£5.50
DC200 ... ..	£59.40		

\* FT2AUTO Fitted 5 Channels. Extra Channels £3.52

Prices include carriage by Securicor except speakers and micro-phones which are mailed.

### FILTERS

Mechanical

Kokusai MF455 3AZ CW Filter ... ..	£15.00
Kokusai MF455 10AZ SSB Filter ... ..	£15.00
Carrier Crystals for the above filters, ... ..	each £2.50

Remember that all prices include VAT and postage, so you do not have to send extra.

### ANTENNAS

2m "J" Beams 50 or 75 ohms specify which.

2/4Y 4 element folded dipole Yagi with lin. boom ... ..	£3.74
2/6Y 6 element folded dipole Yagi with lin. boom ... ..	£4.40
2/8Y 8 element folded dipole Yagi with lin. boom ... ..	£5.17
2/10Y 10 element folded dipole Yagi with 1¼in. boom and 45 braces ... ..	£10.45
2/10XY Crossed 10 element Yagi with 1¼in. boom ... ..	£13.86
2/14P 14 element Parabeam ... ..	£16.28
2/12 6 over 6 with lin. booms ... ..	£7.97
2/16 8 over 8 with lin. booms ... ..	£9.79

### 2m Mobile Whips

Diamond DP-25 gutter mounting ¾ vertical ... ..	£11.55
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**G-Whips**

Tribander (20, 15 and 10m.) ... ..	£12.10
Multimobile 20, 15 and 10m. ... ..	£14.30
160, 80 or 40m. coils for above, ... .. each	£4.40
Top whip section for above ... ..	£1.10
Flexiwhip 10m. with whip ... ..	£9.35
160, 80, 40, 20 or 15m. coils ... .. each	£4.67
Ranger 160m. ... ..	£9.35
Duobander 160/80m. ... ..	£10.45
Base section for all G-Whips ... ..	£1.60

The above are normally sent British Rail—should you require 24-hour Securicor delivery, please add an extra £1.70.

**ANTENNAS**

**Verticals**

Diamond DP-KB103 80 and 40m. ... ..	£27.50
DP-KB104, 20, 15 and 10m. ... ..	£20.90
DP-KB105 80, 40, 20, 15 and 10m. ... ..	£38.50
Echo 8G 40, 20, 15 and 10m. ... ..	£22.00

**H.F. Beams**

AS-203W Wide spaced 3 element 20m. beam ... ..	£72.60
AS-154W Wide spaced 4 element 15m. beam ... ..	£48.40
AS-153W Wide spaced 3 element 15m. beam ... ..	£38.50
AS-104W Wide spaced 4 element 10m. beam ... ..	£40.00
AS-103W Wide spaced 3 element 10m. beam ... ..	£22.00
Polygon 2 element glass fibre kit ... ..	£38.50

PRICES INCLUDE SECURICOR CARRIAGE

**Antenna Accessories**

Coax UR43 50 ohms ... ..	10p/m
Coax UR67 50 ohms ... ..	26p/m
Twin feeder 300 ohms ... ..	6p/m
Twin feeder 75 ohms ... ..	6p/m
Rotator cable 4 core (AR22)... ..	18p/m
Rotator cable 12 core (TR44 and Ham-M) ... ..	35p/m
Rotators AR22R ... ..	£27.50
TR44 ... ..	£49.50
Ham-M ... ..	£77.00
SWR)Meters Hansen single meter ... ..	£5.50
Asahi twin meter ... ..	£8.80
Diamond SR435 (VHF/UHF) ... ..	£15.40
Dummy load/wattmeter (VHF/UHF) ... ..	£38.50
PL259 plugs ... ..	33p
Sockets ... ..	33p
Reducers ... ..	10p
Line Connectors ... ..	80p

**Station Accessories**

Plain brass morse keys ... ..	£1.35
Katsumi keyers EK-9X ... ..	£9.90
CW practice oscillators ... ..	£2.75
Headsets, low impedance, padded ... ..	£3.30
Microphones Yaesu YD844 table mike ... ..	£14.30
Yaesu YD846 hand mike ... ..	£5.50
DM501 hand mike ... ..	£3.75

**Valves**

6AH6, 6BZ6, 6CB6A, 6CL6, 6U8A, 6EW6, 6EH7, 6BM8, 12BY7A ... .. each	66p
6GK6 ... ..	£1.32
6JM6A ... ..	£1.65
6IS6C, 6KD6 ... .. each	£2.20
6146B ... ..	£3.30

**NEW ITEM**

2m Ground Planes. The "J" Beam 1/4 wave £3.52 and the very elegant Diamond GH2 ground plane at £11.00. Carriage by B.R. 50p extra, by Securicor £2.20.

Baluns. We are importing a very good Japanese balun. Ratio 1 : 1 impedance BY-5 52 ohms, BU-7 75 ohms. Price £4.40 post paid. This balun incorporates a centre strain insulator and is really excellent value.

**CARRIAGE**

Please note that carriage is paid on all new items—expensive gear goes by Securicor 24-hour service, lower priced antennas by Passenger Train and small items by post (usually first class). Hire Purchase available on items over £30.

**Liner 2**

The last word on 2m. SSB covering 145.25 to 145.48 as standard at the reduced price of £132. Matching power supply £15. If you wish we can supply Liner 2's covering 144.10 to 144.33 or if you would like yours altering to this frequency we can carry out the alteration (including a new dial and realignment) for £4.

**SECOND HAND**

(PRICES INCLUDE VAT)

All mint, checked, serviced and aligned unless specifically stated otherwise.

**RECEIVERS**

Trio 9R59DE. Choice of several ... ..	£38.50
Trio 9R59DS. Choice of several ... ..	£45
Trio JR500S. Choice of several ... ..	£44
Heath GR78 ... ..	£66
Trio JR310 ... ..	£65
GEC BRT400 ... ..	£45
AR88D's. CALLERS ONLY ... ..	£44
Trio JR310. Fitted optional filter ... ..	£72
Heathkit SB300 ... ..	£80
Hammarlund HQ170A. Fitted Hammarlund 2m. conv. ... ..	£80
Collins 75S3C ... ..	£325
Marconi CR200. CALLER ONLY ... ..	£10
Inoue IC700R ... ..	£65
Trio JR599 ... ..	£130
Heathkit SB301 ... ..	£105
Star SR200 ... ..	£33
National NC190 ... ..	£55
Eddystone 750 ... ..	£55
Racal RA17 ... ..	£175
Drake R4B ... ..	£185
Eddystone 730/4 A1 ... ..	£65

**TRANSMITTERS**

Collins 32S1 ... ..	£190
Sommerkamp FL200B ... ..	£85
Drake T4XB ... ..	£185

**Linears**

KW600 ... ..	£75
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**TRANSCIEVERS** All with psu's unless clearly stated.

Yaesu FTdx560 ... ..	£170
KW2000A + AC psu. Choice of two ... ..	£165
FT75 Demonstrator ... ..	£95
Yaesu FT2FB ... ..	£70
Yaesu FT2AUTO Demonstrator ... ..	£130
Heathkit SB101 ... ..	£160
Homebrew copy of KW2000. CALLERS ONLY ... ..	£50
IC21 and VFO ... ..	£170
Sommerkamp FT250 ... ..	£140
Swan Cygnet. NOTE: This is the bird with all the feathers and not the very basic thing ... ..	£135

**SUNDRIES**

Eddystone EP17R Panadaptor ... ..	£40
Heath 10-18U) ... ..	£38
Heath Monitor Scope HO-10 ... ..	£35
Drake TC2 2m Transverter ... ..	£85
Eddystone EB20 Panadaptor ... ..	£40

**SPECIAL**

We have an immaculate Drake Station, consisting of R4B Rx, T4XB Tx, CCI 2m. converter/calibrator, covering 160 to 2m., TC-2 2m. Transverter and MS4 speaker. The owner is emigrating and will accept £475 for the lot, or will separate. This is a gift for someone.

**CARRIAGE BY SECURICOR £2.20 EXTRA**

## THOUGHTS ON RECEPTION . . . . .

Whatever receiver you have, whether an expensive or inexpensive one, an old one, home-brew or surplus, there comes a time when you think it could do better with the DX. This is when you consider more front end gain such as can be provided by a preselector, not just any preselector, but possibly one that also boasts an antenna tuner. This does two jobs in one go, gets the R.F. into the receiver in an efficient way and gives it a boost as well.

We can supply such a preselector, in fact we have four models to choose from, solid state or valve over a considerable price range. These units used properly with their gain turned up and your receiver's R.F. gain control turned down as far as possible will bring up the signal to noise ratio of almost any receiver.

Used like this we think that control over signal to noise ratio is left entirely to the preselector, with your receiver's R.F. stage acting as a tuned buffer giving very little gain on its own account. The preselector with its antenna tuner and gain doing a better job of getting the R.F. into your receiver than the receiver on its own. Under these conditions cross modulation should be no worse than the receiver and signal to noise ratio a lot better. Also image rejection will be improved on receivers with low I.F.'s.

As this is our 10th year of producing almost entirely preselectors it is just possible that we speak from experience in this field, try us and see.

We can also supply you with a calibrator for those receivers lacking this refinement, but that's another story. Why not send for our illustrated leaflets on all our units, tell us the type of receiver that you have and perhaps we can advise you better.

## HAMGEAR ELECTRONICS

### 2 CROMWELL ROAD, SPROWSTON, NORWICH, NOR 65R.

(OFFICE ONLY)

The above is a repeat of our July advert, such was the response that for the benefit of those that missed it we are repeating it again. We never thought that so many people had receiving problems, judging by letters received there are lots of people who would like to improve reception yet do not know the best way around their particular problem. Let us have your problem, if we can help we will and perhaps supply you with a preselector at the same time.

# FREE

Headphones or Speakers; suitably terminated Connectors; Handbook; Carriage; Insurance: In addition a JOYSTICK VFA; JOYMATCH A.T.U.; feeder; external mounting insulators, are supplied FREE or greatly reduced when you buy a PARTRIDGE PACKAGE

A PARTRIDGE PACKAGE constitutes a COMPLETE RADIO STATION—ready to use, however confined your domestic space. The World renowned TRIO range of Communications Receivers and Transceivers, the WORLD RECORD, internationally patented JOYSTICK VFA (all band aerial) only 7ft. 6in. long (assembled) and a JOYMATCH aerial tuning unit, a pair of matching headphones or internal speaker, plus accessories, go to complete your READY TO USE RADIO STATION at a price that truly represents VALUE FOR MONEY!

#### PARTRIDGE PACKAGE

No. 1 with Gen. Coverage AM/CW/SSB (MW/SW) 9R59DS receiver	... ..	£67.77 (save £17.16)
No. 2 with Amateur Bands 80 thru 10m AM/CW/SSB JR310 receiver	... ..	£90.97 (save £22.35)
No. 3 with Amateur Bands 160 thru 10m plus 2m AM/CW/SSB JR599	... ..	£176.00 (save £30.48)
No. 4 with Amateur Bands 80 thru 10m TS/PS515 transceiver, 180w	... ..	£231.00 (save £37.08)

NOTHING MORE TO PAY!

Access/Barclaycard orders accepted by 'phone

JOYSTICK VFA £13.75; JOYMATCH Tx/Rx A.T.U. 111A 1-6 32 MHz £13.75; JOYMATCH A.T.U. 111 Rx only 500 kHz 32 MHz £13.75; JOYMATCH A.T.U. LO-Z500 Tx/Rx 500w SSB (PA input), built in RF meter £19.91; Communications 8 Ω headphones (suitable TRIO, EC10 etc.) £3.14; Matching Speaker (with instructions for internal fitting in 9R59DS and JR310) £2.00; TRIO: Linear Amplifier TL911 £172.15; TR2200 2m personal transceiver £87.45; TR7200 2m car transceiver £142.45; Spare set valves for 9R59DS £2.35; OA2 Mains Stabiliser 74p.

**NEW:** Worldwide reception on the amazing "DX CRYSTAL SET" £2.42 incl. unique aerial.

**NEW:** AMTRON QUALITY KITS—send for brochure and prices.

#### PARTRIDGE BUDGET LINE

Artificial Earth—solves receive and transmit earth problems (as used on North Sea Oil Rigs) £5.80; Aerial Bandswitch—tuned aerial for domestic receivers £5.80; A.T.U. KIT—for use with transmitters and communications receivers £5.80; (assembled £7.01); Mini SWR bridge—1.8 to 180 MHz, 2 kW P.E.P., 75 or 50 Ω, SO239 sockets; 1:1 to 1:3 ratio, 80 x 30 x 30 mm., £5.60.

(All price quotes INCLUDE VAT, CARRIAGE, PACKING, INSURANCE)

Send 3p stamp for full illustrated details. Special TRIO brochures (state which) 3p stamp extra

NO VAT ON OVERSEAS ORDERS!

BOX 4

G3CED

**PARTRIDGE**  
BROADSTAIRS, NENT ENGLAND  
**ELECTRONICS LTD**

G3VFA

Telephone: 0843 62535 or 0843 62839 evenings and weekends

# AMATEUR ELECTRONICS

## G3FIK



### ***NEW LOW PRICES FOR YAESU/SOMMERKAMP GEAR!***

We are pleased to announce significant price reductions on most items of **SOMMERKAMP/YAESU** equipment all of which is available either from stock or on short delivery. This, as can be seen, represents a major price breakthrough and presents the U.K. Amateur with an unprecedented opportunity to buy at sensible prices.



Model	Recommended retail	VAT	Total	Our VAT inclusive price	
FT-277 (Latest FT-101)	£280.00	£28.00	£308.00	£247.00	<b>£61.00</b>
FT-505 (Improved FT-401)	£265.00	£26.50	£291.50	£234.00	<b>£57.50</b>
FT-250 (FT-200) Complete with FP-250	£190.00	£19.00	£209.00	£176.00	<b>£33.00</b>
FL-2000	£165.00	£16.50	£181.50	£145.00	<b>£36.50</b>
FL-2277 (FL-2100)	£165.00	£16.50	£181.50	£145.00	<b>£36.50</b>
FV-277 (FV-101)	£42.00	£4.20	£46.20	£38.00	<b>£8.20</b>
FV-401	£42.00	£4.20	£46.20	£38.00	<b>£8.20</b>
FR-500SDX	£175.00	£17.50	£192.50	£155.00	<b>£37.50</b>

**PLEASE NOTE:** The above prices are based upon the £ Sterling/Foreign exchange rates maintaining stability.

Other models in the range will be available at pro-rata rates and prices for these will be announced as new supplies come in and are costed.

#### **IMPORTANT NOTE**

This departure from standard prices does not imply any change in our policy of providing first-class demonstration facilities together with top part-exchange allowances, courteous service and competitive on-the-spot credit facilities.

Carriage extra at these new low prices—please remit an adequate amount and we will refund any surplus.

WRITE, CALL OR TELEPHONE FOR ANY FURTHER INFORMATION REQUIRED.

**AMATEUR ELECTRONICS, ELECTRON HOUSE, 508-514 ALUM ROCK ROAD  
BIRMINGHAM, 8 Tel: 021-327 1497 and 021-327 6313.**

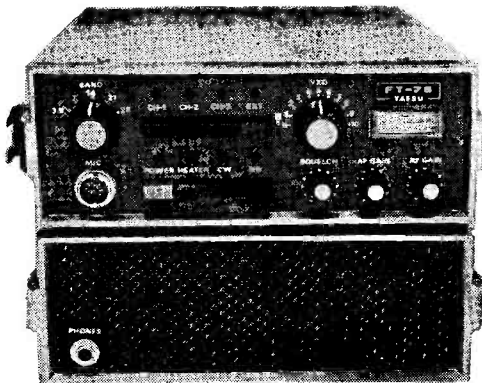
# Western Electronics (UK) Ltd

TOTTON  
SOUTHAMPTON

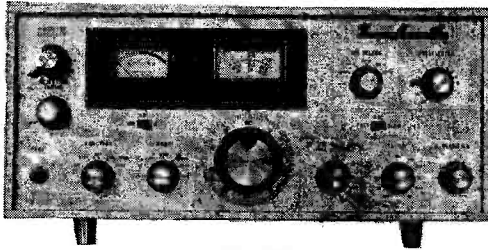


## YAESU MUSEN U.K. DISTRIBUTOR

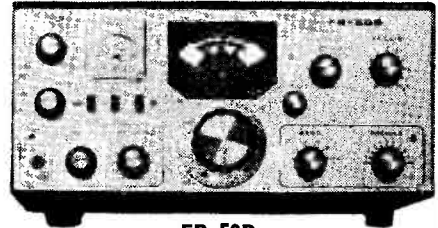
★ FIRST WITH YAESU  
★ FIRST WITH SECURICOR  
You'll be wise to deal with us where  
YOU are the important factor and YOUR  
SATISFACTION IS OUR PLEASURE.



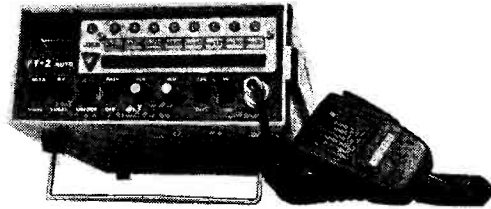
FT/FP 75



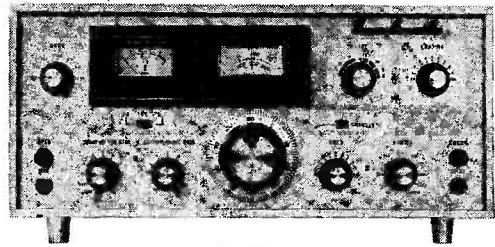
FR 400



FR 50B



FT-2 AUTO



FL 400

The **FR400SDX** (Super de luxe) receiver is made especially for us fitted with 4m, and covers 160, 80, 40, 20, 15, 11, 10, 4 and 2m. 4 filters are fitted for SSB (2.4 kHz), AM (5 kHz), CW (0.6 kHz) and FM 24 kHz. Dial readout to 1 kHz from stable VFO. Rejection tuning to notch-out unwanted heterodynes. Clarifier control permits adjustment of SSB/CW received signals when working transceive. VFO select for internal or 4 crystal frequencies. Monitor facility enables transmitted signal to be monitored at all times. Squelch circuitry silences receiver for noise-free AM/FM reception. FM discriminator fitted to SDX model, 25/100 kHz calibrator. WWV band to check calibrated, 3 step AGC. Built-in noise limiter.

The **FLDX400** Transmitter runs 240w. p.e.p. and is designed to transceive with FR100B or FR400. AM and "breaking-in" CW keying are fitted. SPECIFICATION: Frequency coverage 3.5-4.1, 6.9-7.5, 13.9-14.5, 20.9-21.5, 27.9-28.5, 28.5-29.1, 28.9-29.5 MHz. Selectable USB or LSB. Stability: less than 100Hz/1 hr. after warm-up. Sideband suppression 50dB. Carrier suppression better than 50dB. Netting facilities for zero-beating. Provision for listening on transmit frequency as well as the frequency to which the receiver is tuned. ALC fitted to secure effective performance and a "clean" signal. VOX/PTT operation. Relays operate linear amplifier and receiver. Dial read-out to 1 kHz.

**FR50B Receiver**  
10-80m. SSB/AM/CW Receiver with 1 kHz read-out and crystal calibrator. The receiver sensitivity is equal to units costing three times the price.

**FL50B Transmitter SSB/CW**  
A 50w. p.e.p. 10-80m. transmitter fitted with VOX which will work VOX control by itself or transceive with the FR50. Alternatively full VFO coverage is available with the FV50B remote VFO.

**FT-7F**  
If your requirement is for a highly compact transceiver or merely good value then this unit gives 12v. DC operation with the DC-75 or AC operation with the FP-75. Buy at pre-Yen re-valuation prices whilst stocks last.

### NEW 2m. FT-2 AUTO SCANNING TRANSCIEVER

The receiver automatically scans the 8 channels and will indicate on which one there is a signal. Power output: DX, 10w. Local, 1w. Frequency coverage: 144-146 MHz. Weight: 4.2 kg. Size: 210w. x 95h x 270d mm. Mode: F3. Power requirements: AC, 100, 110, 117, 200, 220, 230v. DC, 13.5. 5 crystals fitted.

### WARRANTY

We do all warranty work free of charge for one year, including free carriage.

### YAESU PRICES (Carriage free by Securicor) add 10% VAT

HF TRANSCEIVERS	
FT-75	£99.00
FP-75	£22.50
DC-75	£22.50
FT-101 Mk. 1	£229.00
FT-101 Mk. 2	£280.00
FT/FP200	£190.00
FT-401	£265.00
FT-501	£335.00

VHF TRANSCEIVERS	
FT-2FB	£98.00
FP-2AC PSU	£27.00
FP-ACB + Batts.	£39.00
FT-2AUTO	£157.00

HF RECEIVERS	
FR50 + CAL	£69.00
FR400DX	£135.00
FR400SDX	£175.00

FREQUENCY COUNTERS	
YC-355 30 MHz AC PSU	£97.00
YC-355 2.0 MHz AC/DC PSU	£120.00

REMOTE VFO	
FV50 for FT75/FL50	£28.00
FV-101	£42.00
FV-401	£42.00

SPEAKERS	
SP101, 400, 401	£11.00
SP101P Phone Patch	£26.00

LINEAR AMPLIFIERS	
FL2000B 1200w.	£165.00
FL2100 1200w.	£165.00
FL2500 2kVv.	£130.00

HF TRANSMITTERS	
FL50 + VOX	£79.00
FL400	£160.00



# Western Electronics (UK) Ltd

TOTTON  
SOUTHAMPTON

## NEW/USED EQUIPMENT (Add £1 Securicor delivery and VAT)

Barlow Wadley XCR 30 Mk. 2, mint ... .. £65-00	Heath SB 300, SH ... .. £80-00	Racal MA150 synthesiser for RA117, v. good ... .. £89-00	Trio JR310, mint ... .. £59-00
Codar PR40, mint... .. £7-00	Heath SB 303 SH, mint ... .. £150-00	Racal MA197 preselector, 1-30 MHz, excellent ... .. £65-00	Trio JR500, excellent ... .. £45-00
Codar PR30, v. good ... .. £5-00	Heath SB303, new + CWF assembled £230-00 inc. VAT	Swan 500 C ... .. £160-00	Trio JR500, excellent ... .. £45-00
Codar remote T/R unit ... .. £1-00	Heath GR78, v. good ... .. £59-00	Sommerkamp FL 2000, linear ... .. £70-00	Yaesu FT101 Mk. 1, mint... .. £199-00
Codar speaker, mint ... .. £2-00	Heathkit HMI02 ... .. £18-00	Sommerkamp FL 500, v. good ... .. £105-00	Yaesu FT 200, as new ... .. £33-00
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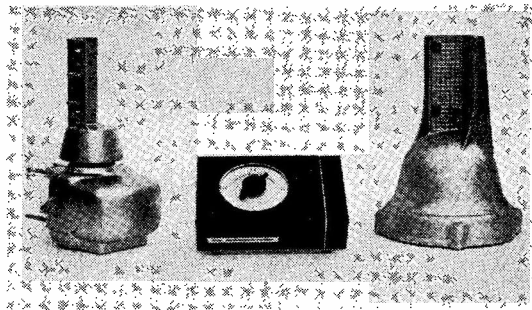
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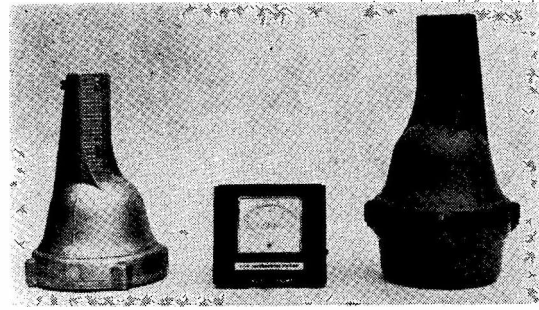
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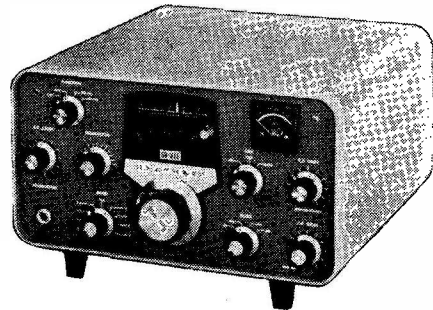
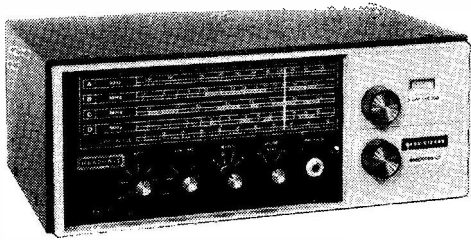
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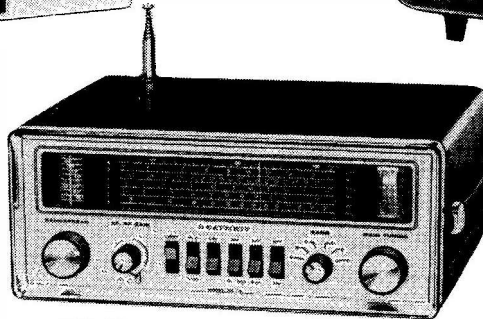
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Kit K/SB-313 £209.00 Carr. 99p (VAT £19.09 incl.) less speaker

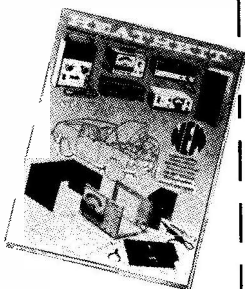
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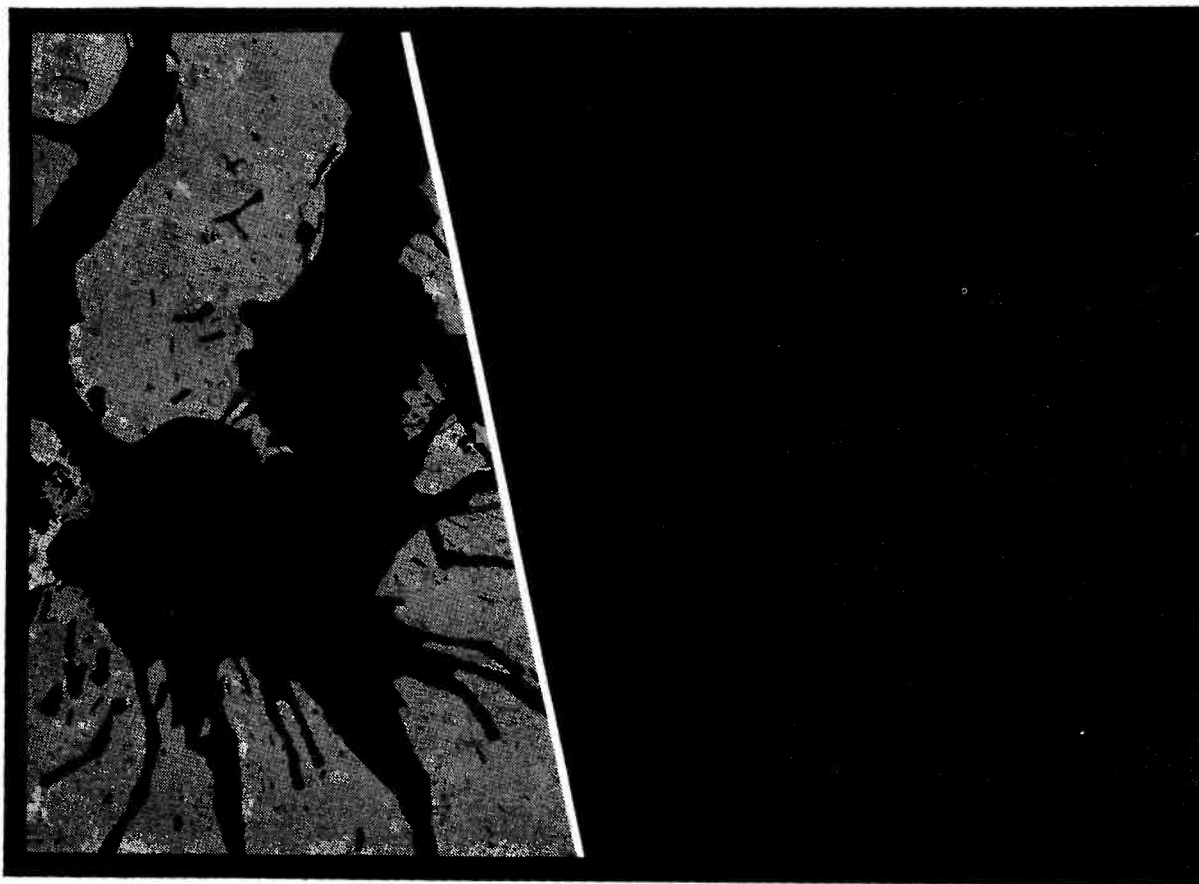
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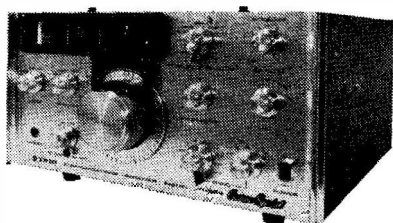
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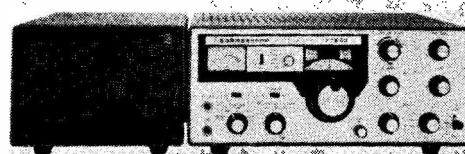
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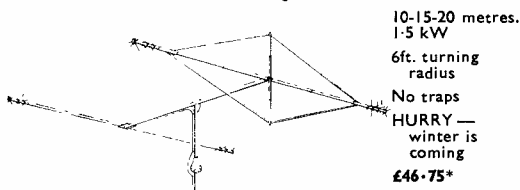
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ADVERTISERS INDEX

	Page
Amateur Electronics (G3FIK)	453
Amateur Radio Retailers Association ... ..	449
The Amateur Radio Shop (Huddersfield) ... ..	503
Antec ... ..	504
Ashley Dukes (Honda) ... ..	506
B. Bamber Electronics ... ..	505
J. Birkett ... ..	508
British National Radio School	511
I. N. Cline ... ..	510
Derwent Radio ... ..	507
Property Late Drudge-Coates	510
Eddystone Agents... ..	<i>back cover</i>
G3HSC (Rhythm Morse Courses) ... ..	<i>back cover</i>
G.W.M. Radio ... ..	509
Hamgear Electronics ... ..	452
Heath (Gloucester) Ltd. ... ..	457
Imhofs ... ..	511
K.W. Electronics ... ..	464
Lowe Electronics ... ..	450, 451
Marketing Services International ... ..	504
S. May (Leicester) Ltd. ... ..	504
Microwave Modules ... ..	460
Miniwise ... ..	507
B. H. Morris & Co. (Radio) Ltd. ... ..	<i>front cover</i>
Mosley Electronics ... ..	460
Gerald Myers ... ..	<i>inside back cover</i>
New Scotland Yard ... ..	502
North West Electrics ... ..	509
Partridge Electronics Ltd. ... ..	452
Radio Shack Ltd. ... ..	448
The Radio Shop (Bristol) ... ..	510
R. T. & I. Electronics Ltd. ... ..	462
Semicon Indexes ... ..	<i>back cover</i>
Shure Electronics ... ..	459
Small Advertisements ... ..	506-510
Solid State Modules ... ..	458
Southern Surplus Merchants	504
Spacemark ... ..	503
S.S.B. Products ... ..	508
Stephens-James ... ..	461
Strumech Engineering ... ..	511
S.W.M. Publications ... ..	<i>inside back cover, back cover</i>
	456, 501, 504, 512
Telford Communications... ..	505
T.M.P. (Electrical Supplies)	504
Reg Ward & Co. Ltd. ... ..	511
Waters and Stanton Electronics	462
Western Electronics Ltd. ... ..	454, 455
Chas. H. Young Ltd. ... ..	458

# SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXXI

OCTOBER, 1973

No. 360

## CONTENTS

	Page
Editorial ... ..	465
Communication and DX News, by E. P. Essery, G3KFE... ..	466
Proper Use of Transistors, by G. R. Thomas, G4AWJ ... ..	473
SSB Without A Product Detector, by F. G. Rayer, T.Eng. (CEI), A.I.E.R.E., G3OGR ... ..	474
Indication for Change-Over, by T. R. Wiltshire, G8AKA ... ..	475
Another Two-Metre Converter, by W. H. Bond, G3XGP ... ..	476
Pye "Cambridge" Transmitter Conversion for Two Metres, by R. E. G. Petri, G8CCJ ... ..	479
An FET Voltmeter ... ..	484
Changing Car-Electric Polarity ... ..	484
Note on The QRO Two-Metre Linear ... ..	485
Method of Winding Coils, by K. C. Wilson ... ..	486
VHF Bands, by A. H. Dormer, G3DAH ... ..	488
The Month with The Clubs—From Reports ... ..	495
MCC, The 28th Top Band Club Contest, Rules ... ..	497
New QTH's... ..	500

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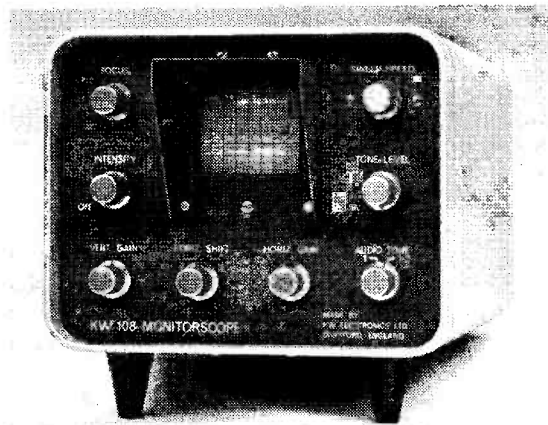
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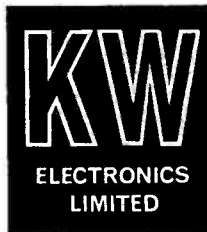
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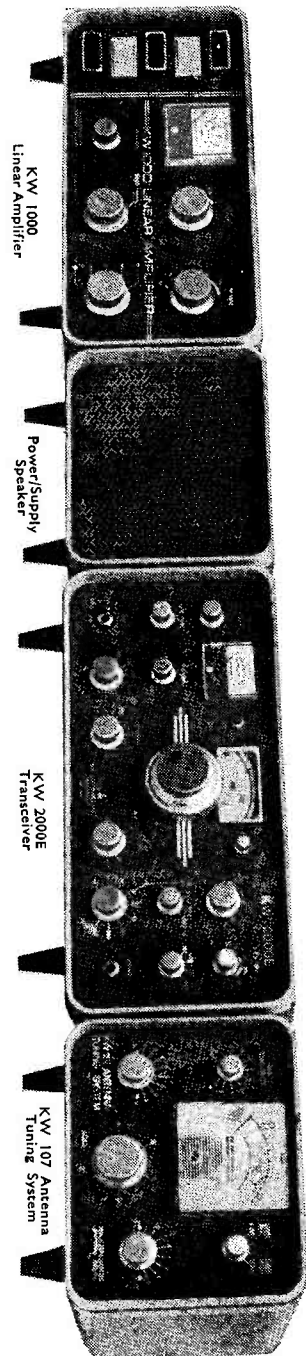
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***Subscriptions***

As most readers will be aware there has recently been another steep rise in postage charges, particularly at the heavier weights, this increase being the third since February 1971.

Actually, it now costs us 8p instead of 6p to send your subscription copy by first-class mail—multiply this by some 1,000's of copies a month, and then by twelve months, and it amounts to a pretty heavy additional charge annually, over which of course we have no sort of control.

Hence, this makes it necessary for us to say that all new first-class subscriptions, or sub. renewals, will henceforth have to be charged at £3.20 post free for a year of twelve issues. Actually, this would not fully rectify the position, but we are not scraping after the last piastre—and, of course, first-class subscriptions already running will be carried at the old rate till renewal becomes due. And by some odd quirk in the official scaling calculations, second-class posting of the Magazine is not affected—so that the subscription rate in that category remains £2.75.

*Austin Forsyth  
G6FO*

WORLD - WIDE COMMUNICATION

# COMMUNICATION and DX NEWS

**E. P. Essery, G3KFE**

CONDITIONS all round seem to have shown a welcome sign of picking up a little this past month—the odd inter-continental QSO reported on Ten; DX on Fifteen and Twenty at reasonable hours; and even the odd evening on Top Band when the summer static was less bad than usual and GDX workable through it all.

Elsewhere in this issue, on p.510, will be noticed a for-sale advertisement of the late G2DC's tackle—that same G2DC who for so long helped to give this piece what quality it has by his support through thick and thin.

## Forty Metres

As we have so often said, a badly neglected band in the DX context, as GM3JDR and others over the years have so ably proved.

Your conductor, during the course of his researches into another matter, spent a few hours on 40 metres, and in the DX segment around 7 to 7-005 MHz, between 2130 and 2200, was pleasantly surprised to find how much DX there was about, once one had wound in the Q-Multiplier and pinned the ears back—VK, JA, W, PY and ZS, all weak, but workable through the QRM.

G3XTJ (Palmer's Green) was mortified, after turning out to the shack at 0630z, to find VK3MJ and have his keyer relay stick up; when the battery volts were checked, they were down to just the one! There just *has* to be a moral there somewhere. However, during the month, Ed raised CR6AL, CX1BBL, FG7XJ, FP0BG, JA6SRO, JA0BCO, KZ5KP, LU2DKG, LU5HFI, LU9DCW, OX3JW, SV0WEE (Crete), VK2BTS, VK2HW, VK2QL, VK3FC, VK3MJ, VK3MR, VP2SAH, VP9HD, ZL1SV and ZL2MM.

Sad to say, permission for his beam

tower has been held up by his own "technical error," gripes GW4BLE, who hoped to have it aloft by now. However, Steve manages quite well with his 240 watts SSB and 18AVT /WB, and in fact worked to CE6CW, CN8BF, CN8BO, CP5BG, CR6IS, CT3AF, C31HB, EA6BJ, HI8LC, HR1RF, LU5BL, OA4OS, OX3AF, OY5NS, PJ2CW, PY2FDO, SV1DO, TG8KT, UA9BE, UI8LAG, UK9AAN, UK9CAE, VK7AZ, XE1IJ, ZL3GG, ZP5EC, 4X4HF and 9X5VA.

G3RFG (Henlow) seems to have covered all bands again this month, having put back his home-built vertical and displaced the trap vertical—which is not to say G3RFG wouldn't like a beam! CW was the preferred mode, as always, and it brought QSO's with K1EJO, K1JYU, K2FC, K5RFJ, KP4DPN, VK3MR, VK7CW, W1CER, W1GTL, W2JDC, WB2POH, W3AU, W3DQZ, WA4DME, WB4HQE, WB8DQP, ZL2AKW,

ZM1ADD, ZM1BLR, ZM3TH and ZM4NH.

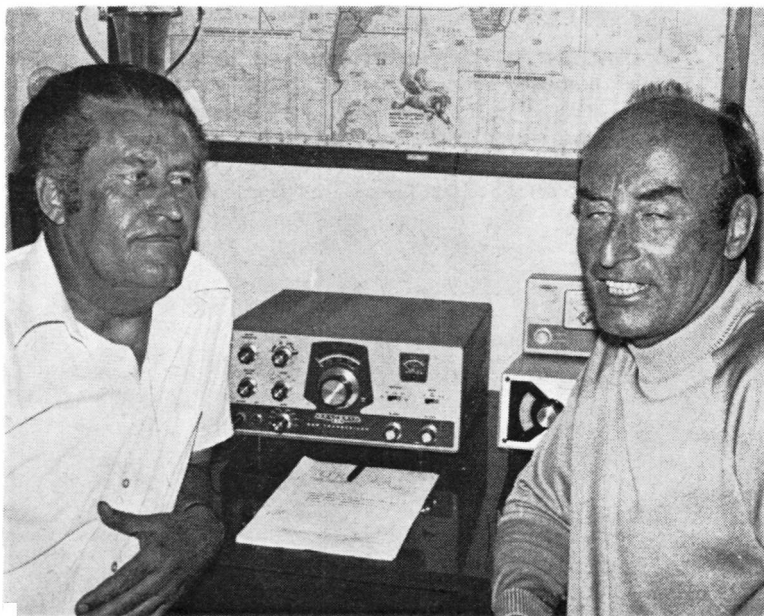
## Eighty

Shakespeare had a word for it, in *Pericles* (Act 1, Scene 1) where he says "Few love to hear the sins they love to act." That could well apply to the QRM-generators, whistle operators, groaners, tuners-uppers-on-DX—there's small choice in rotten apples.

However, there was the odd, printable, mention of the band. G3RFG went on it with his CW and made a contact with 9H1BB; and G2HKU managed SSB with LX1SF and LX2HH. Your scribe spent part of his month enjoying the company of G3UUZ (in the lighthouse down at Anvil Point, Swanage) who had his FT-250 on Eighty to a G5RV aerial—and the things we heard after dark were enough to curdle the blood!

## Top Band

We must start here with an *appeal*



G3IAG (right) in the shack of YU2RBN, Porec, during his recent visit to Yugoslavia.

to all the non-DX-minded types who still use Top Band for local nets and ragchews in the area 1900-1920 kHz. A very serious attempt is to be made this year, by both G's and JA's, to crack the formidable path between the two countries. To this end, the JA's will be transmitting in the area of the band mentioned—all they have, effectively—and the U.K. chaps will be going back to them on the usual 1825 kHz or thereabouts. The tests will take place on Friday, Saturday and Sunday evenings, for an hour, as follows: *September 28* weekend, 2000-2100z; *October 7*, 2010-2110z; *October 14*, 2020-2120z; *October 21*, 2025-2125z; *October 28*, 2030-2130z; *November 4*, 2040-2140z; *November 11*, 2045-2145z; *November 18*, 2055-2155z; *November 25*, 2105-2205; *December 2*, 2115-2215z; *December 9*, 2120-2220z; *December 16*, 2125-2225z; *December 23*, 2130-2230z; and *December 30*, 2135-2235 GMT. Please do your best to keep a channel free for these tests so that another "first" can be chalked up by one or other of the keen DX types. For the record the details were sent in, just too late for last month, by G3ZEM (Wolviston).

G2HKU (Sheppey) still looks occasionally at 160m., and Ted worked SSB with PAØPN, plus CW to PAØCC and DK2QL. He heard G3ZEM working PY1RO at 0125z one night; when 'ZEM was giving the PY a report of RST 569, the chap was RST 219 at G2HKU—as Ted says, it makes one feel like moving QTH!

As for your scribe, the elevation of his end-fed half-wave seems to have produced an improvement in GDX reports, and it was interesting to hook up once again on SSB with G3TZZ and know that old warrior is back in business on the band.

Just as this was going down, a late letter came in from W1BB, covering the winter Transatlantic tests for 1973/74. The dates are cut down this year somewhat, and will be November 18, December 23, January 13, and February 10, Sunday mornings all, from 0500-0730 GMT. Call "CQ DX Test" for the first 2½ minutes of alternate 5 minute periods, W/VE leading off. Thus, for the first 2½ minutes W/VE call, then for the next 2½ minutes they listen for calls from this side. The next 2½ minutes is occupied by the EU's calling "CQ DX Test" and the



Patricia Vizard, G4AYL, 178 Stafford Avenue, Slough, Bucks. is the XYL of G3UKS. She was licensed in February 1972 and found the R.A.E. more difficult than the Morse Test. They share the same FT-401 with a vertical Ae. and work all HF bands, as well as two-metre FM.

fourth 2½ minute period EU's listen for calls from the W's—and so through each ten-minute cycle from start to finish. Keep strictly to the calling times, unless actually in QSO, and set your clocks carefully at the start by reference to TIM, WWV, or similar standards. On the matter of conditions, it does look, with the drop in sunspot number, as though this year the tests will be the best for some few seasons.

Still on the subject of the real DX to be found on Top Band, W4WFL/1 (Farmington, Con.) mentions that around the time of the CQ WW 160 Contest—January 25-27, 1974—ears should be pricked up for the HH prefix, as he understands W4BRB is intending to serve up a full helping of activity from Haiti at that time. Incidentally, W4WFL sent over a sticker which W4BRB is making for the car, said to be very popular with the Florida gang. It is a nice fluorescent yellow, with the words "Hams

have more fun!" in large letters on it. We could do with a few such over here, at that! (Well, *not* "Hams"!—*Editor*).

#### Points from the Post

Reverting to that comment about lawnmower chopping up the G3KFE aerial, G2HKU caps it by remarking how useful he finds his rotary mower for winding up radials or counterpoise wire—always provided you *don't* want to use the mower again!

G3MLN writes in to say that G3RUS of Darlington has a piratical *alter ego*, who uses the name of Len, and says he also comes from Darlington; the real G3RUS has not been on the air for a year.

A recap on his first year of activity is given by GW4BLE (Newport, Mon.) who finds he managed to work 175 countries, with just over the 100 confirmed. The first 100 worked came in about three weeks, and the best single-band score has

been Ten, with 112 countries worked. All this with 240 watts p.e.p. to a vertical aerial. On the QSL card side, there has been expenditure on 1800 cards, by way of the Bureaux, with a "reasonable return percentage."

A record of a different sort is claimed by the three Abrahams of Bristol—Father is G8HPC, son G4AKJ, and grandson G4BZT—congratulations to them all.

The number of Russian Antarctic stations with special Amateur Radio call signs 4K1A—4K1H is taken up by G3RFG, who wrote to Min-PosTel asking why the British do not allocate an amateur prefix to each of the U.K. Antarctic bases, and publish them through the Amateur Radio press and *Call Books*. This idea has merit. The Russian arrangement is to provide an emergency link as much as anything else.

Any GD stations about?

#### BRIEF DX DATA

- SV1DB/A Mount Athis. Reported that another DX-pedition is on the way there, scheduled end of September. W3AG is also going but will probably operate from Greece first, so check 14010 kHz CW at 0500-0700, 0900-1100, 1300-1500 for latest news.
- AC4NC Is a phoney.
- A4XFD Masirah. Ray is QRV 14050 and 14170 kHz from 1500z on.
- A6... A6XB 14206 kHz SSB around 1500. For A6XP, try 21295 kHz SSB, 1800, or 14215 kHz about 2130z would be worth a try.
- JD1YAA Minami Torishima Is. QRV 14195 kHz SSB weekends at 1630, with JA3GZN as M/C.
- VS9MJ Maldiva Is. Try between 1600 and 2000; he uses various frequencies on 14 MHz SSB between 14150-14220 kHz.
- VU7GV Andaman Is. 14037 kHz CW with a T7 note, also 14008 kHz, in the afternoons generally.
- 3B6CF Agalega Is. Jacky has been QRT while shifting QTH but is now on again. Try 21230 kHz, 1630-1700z.
- 3D2... 3D2CM, 14275 kHz SSB around 0910z. 3D2EK, 14130 kHz at 0850-ish, try looking any time after, say, 0730.

## Reporting the HF Bands

W4WFL/I seems to get so near to a QSO and yet so far—every time he gets near the top of the queue the GD goes QRT or the band closes! If any GD station would give him a sked, it would be appreciated—write to Morgan *via* BM/W4WFL, London, WC1V-6XX, to set it up, or drop a line to your scribe who will pass it on.

A blessed relief for G3DCS. Like many another of us, he was getting a trifle hot under the collar about that jingle-jangle thing which smeared Twenty. It now seems to have gone away some place!

Originality and invention were ever the offshoot of need. G4BHE (Basingstoke) lives in a ground-floor maisonette in an area where outside TV aerials are taboo. A 14-AVQ was tried on the side of the house without much joy; an inverted-Vee lying on the roof was even less of a success. However, consideration of the garden, about 20 feet square, inspired the notion that maybe the wire fencing could be turned into radials. Place the vertical in the centre of the garden, use the wire fence as the radials—and *hey presto*, there was the DX.

G2BON (Walsall) writes in with a report, mainly covering Twenty, and mentions that he returned to the air in July 1972, after a QRT of no less than 18 years! However, as he says, the old bug still bites, and the DX is still there—81 countries booked in since he came back, using a HW-100 and 5RV-type aerial.

*Viva QRP!* Thus says G3MZE (Stevenage) who came back to Amateur Radio a couple of weeks prior to his letter, having just built an HW-7 rig, finding it can give him 599 reports all over Europe, and can work Yanks with ease.

#### Ten Metres

G3NOF (Yeovil) always keeps an eye on things, and he observed this time that conditions seemed to be improving, with the odd opening to South America and Africa around 1600z. However, for one reason or another, the only contacts Don made

on the band were SSB with FY7AL and PY7ARM.

G3ZPF (Dudley) takes us up on the question of local QSO's on Ten, and says that he feels it would be necessary to use all the power available for local nets, and even then the contacts are definitely short range. He has checked this point with tests, and his findings, he says, agree with tests done by others of the locals in the past. However, by *local nets* was meant just that—and all experience shows that over, say, a 10-mile radius, signals can be steady and strong using almost anything—even 10 watts into a dipole.

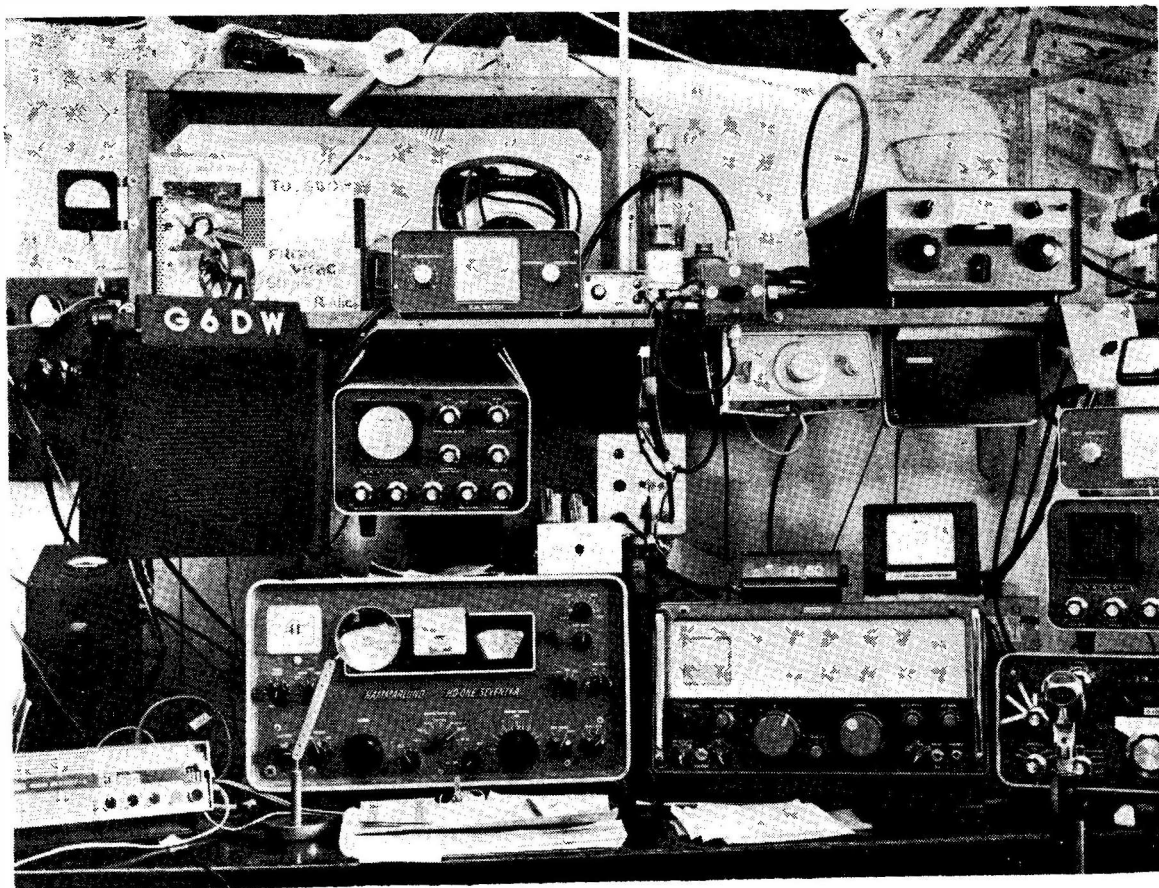
GW4BLE (Newport, Mon.) is waiting for the arrival of his new FL-DX2000B Linear to complement the beam for which he is still hoping, and will then be able really to knock a hole in the band! Even without these two valuable adjuncts to the complete DX set-up, Stephen managed to work SSB to most of Europe, with HB0LL for a new country and a transcontinental QSO to PY1EMM to round it off.

CW is the mode at G3RFG, and Stan applied it to the business of making contacts on Ten with DJ1KJ, DJ7YM, DM2DUK, F8MK, 14DOR, SP9AAJ, UK5WBG and VP2BAR.

#### Fifteen

Quite a crop of news here. G4BHE used SSB on the band to work PY2DKG PY1EMM, 9H3M, UK9CAE, K5LWL/YV6 and UD6HB.

W4WFL/I (Farmington, Conn.) has been somewhat inactive of late and when he did get on, he was for most of the time restricted to SSB, as his keyer blew up an IC and several transistors; Morgan reckons he can't seem to persuade the old hand-pump along at the sort of clip the DX stations are using these days—it is indeed a far cry from the old 5 w.p.m. DX-roll of years ago. WA9CTS/KM6, ZF1AP (Grand Cayman), GC3NCJ (Jersey) and 9X5VA in Ruanda were all new



Part of the station of G6DW, Dorking, Surrey, whose 50th licensing anniversary picture we showed on p.403 of the September issue. There is a lot more of it, out of view on the right, and it includes much modern British and American equipment of various types and makes.

countries tucked into the log.

G3NOF noted some openings around 1000 on the short path to JA-HS and VU, while in the evenings conditions have been good to Africa and South America. Don rang up a few contacts, notably with EA8CR, HS4AGN, UD6HB, VU2BK and ZS's.

G3ZPF managed contacts in both modes. For 21 MHz CW we see WP4DRT, UK5GAV, WN9LMG, WN9MOV, WN2KUM and some Europeans, while SSB accounted for 5Y3XNH, ZP5AN, ET3USA, CR6NO, KV4FQ, LU3MBQ, 3B8DE, LU9HAE, CR6IP, CR6OZ, ZD8RW, EA8JE, ZS1XG, PY1EMM, PY7ARM, PY1ZAD, PY7LAV, LU8AJG, PY3APH, PY2AN, PY7DX, PY5YC, PY1FI, PY2DKG, PY6AMS, YV1ANO plus

some W's and EU's. The predominance of PY's just goes to show what happens when there is some incentive to the stations to come on and operate.

Another to comment on the numerous PY's is GW4BLE, who worked lots of them, plus OY3H; otherwise little time was spent on 15 metres.

Quite a long list comes in from G3RFG, who stuck to his key and worked C31GW, EL2NS, JA8CQ, JR1EBZ, KH6RS, LU2EN, LU5EJS, OA6CT, PY1CKV, PY1DUB, UK9CCC, W2SRZ, W4BYM, W7IR, WA8SGO, ZS1OU, ZS2GJ and 4K1D, several times.

Although the list from G2BON is mainly for Twenty, that is not to say Tom neglected to scan the

others—indeed, he proves it by mentioning at least some 21 MHz QSO's on SSB, with PY1EMM, PY4WG and PY2DKG.

G4BPW has a TA-31, headed North-West, powered by an HW-101 at 180 watts p.e.p. input, now that he has come on the HF bands after a stint as G8DQY. Contrary to what the VHF types told him Dennis finds HF contacts tremendously interesting, his speciality being to have longer QSO's with the W's and the special-activity stations that pop up from time to time. One such was with HB9AQM/AM who was operating from a *balloon*; the QSL gives such details as the pilot's name, take-off and landing times and so on. Another experience was to visit the s.s. *Great Britain* in Bristol and find his way to the

shack of GB2GB, to meet G3VLJ, the operator, who promptly handed over the rig for Dennis to work LA4JA—as he had worked GB2GB from home, he is in the rare position of having been at both ends of a *Great Britain* station QSO. Turning to more mundane contacts, we notice G4BPW also worked CR6NO, YV6WB, CR6UZ, CR6NO, IT9MPR and an assortment of Europeans.

Fifteen was given quite a pasting by G3VLX (Chislehurst) who mentions SSB contacts with XQ3BP (Chile), 5Y4XKZ, TJ1BF, 7Q7JD, CR6JO, A4XFE, UG6GAF, ZS3AK, JY6UNM, JA6BSM, VU2DK, 5B4KP, ZS6ATA, UD6HB, 9M2CX, DU1JAD, and UK0AAB.

### Twenty Metres

Everything in the way of QRM, and conditions somewhat variable but better than recent months, about sums it up.

G2BON (Aldridge) goes in to bat first. Tom seems to have been able to operate at various times—early morning, tea-break, lunch, and around teatime in the afternoon/early evening. Things seem to have been—as they were generally—pretty slack in July, but as we come into August the pace hotted up quite considerably. SSB QSO's were made with 4X4GH, OH0AM, JA3GZN, 6W8DY, YA1ED, HV3SJ, UK9CAE, UK6JAA,

UL7IO, A2CCY, 5B4FF, JW1SO, VU2HI, CR3WB, UJ8SAJ, UL7BAB, UA0TO, UG6GAF, CT2BK, UK9AAN, UA9BE, UW9WR, UK9CAE, 9M2LN and EP2DO. We hope to hear more of his doings from G2BON.

On to G3MZE (Stevenage) another of the chaps who have returned to the fold as a result of the QRP interest. John runs just two watts on Twenty, and can work Europe with 599 reports, and the U.S. with ease, on an *indoor dipole*, through all the QRM and the beam wallahs.

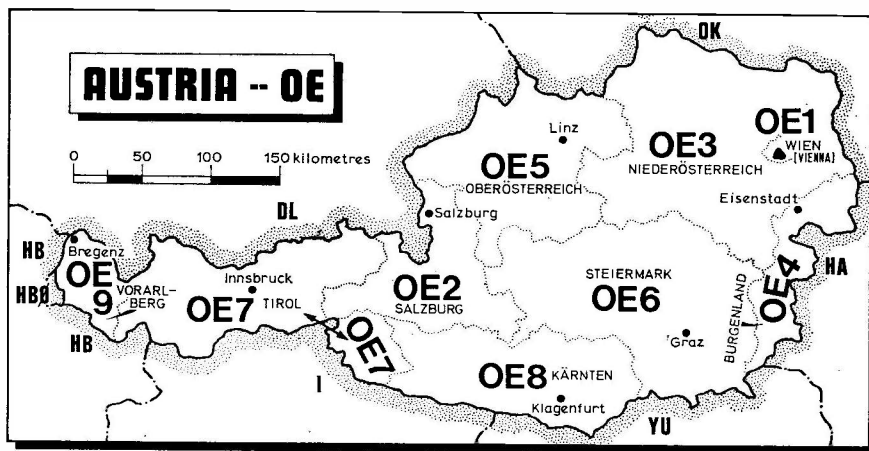
G3DCS (Ipswich) is getting to be a right one-band merchant of late; this time CW gave him contacts with VO1HP, PY7AMX, LU5HFI, SL6DC/MM, UK9AAZ, UA9CAL, UA9LJ and various W's, while RTTY made the trip to W4CQI and K2PAR both ways.

G3UZ takes colleague Justin Cooper to task over LB1R—George worked an LB1C and reckons he sounded quite un-phoney—he awaits the card to prove J.C. was off the ball. Otherwise, G3UZ was all CW, including 9J2CJ, JA1AG, JA2BP, JA6GG/M, XE1FFY, 9M8FDS, 6W8DW, PY1DG/2, PY3APH, PY5CFX, PY4AHH, PY7ASV, JT1OA, SV0WXX, SV1HX, 4X4FU, HS3AEH, PJ8AA, CN8BK, UK0AWR, UW0LQ, UJ8AC, UJ8AR, UG6EW and ULPAF, plus the usual loads of UA9's and all W call areas.

The main item of news from G2HKU is of the renewal of his morning ZL skeds on Twenty; they went out in May for an 0700z QSO, and came back and this year, resumed a week earlier than they did in 1972. It is an interesting point that when the going is poor the ground-mounted 14-AVQ is the better aerial but when the band is really open well, then the 5RV-aerial is as much as a couple of S-points up on the vertical. WA4DZS/P/4X was worked (from the Israel Institute of Technology) plus K2LZQ/OH0, ZL3KP, ZL3SE, 5U7BA for a new one and 9H3M, who turned out to be G3CDK on his holiday.

On to G4BVS (Amersham) who took his Ten-Tec PM3A with him on holiday, along with an ex-W.D. ground-plane aerial, and enjoyed a few contacts from various campsites in Germany and Austria. However, a snag was that the el-bug, bought at the Woburn Rally, didn't like the intense heat of the summer and tried to take off at about 100 w.p.m.! Mostly Russians were worked, the best being UK9LAA; only four G's were raised.

Quite a long list from G4BHE, who worked SSB to C31HB, GD3RFU, JX3P, HS4AGN, EI6S for a brand new one (!), UL7IAF, ZD3V, 4S7BR, 4S7SW, 7X2BU, 9G1BF, 9M2CX and 9V1QO. All the gotaways *would* have been new countries, had Barry been able to

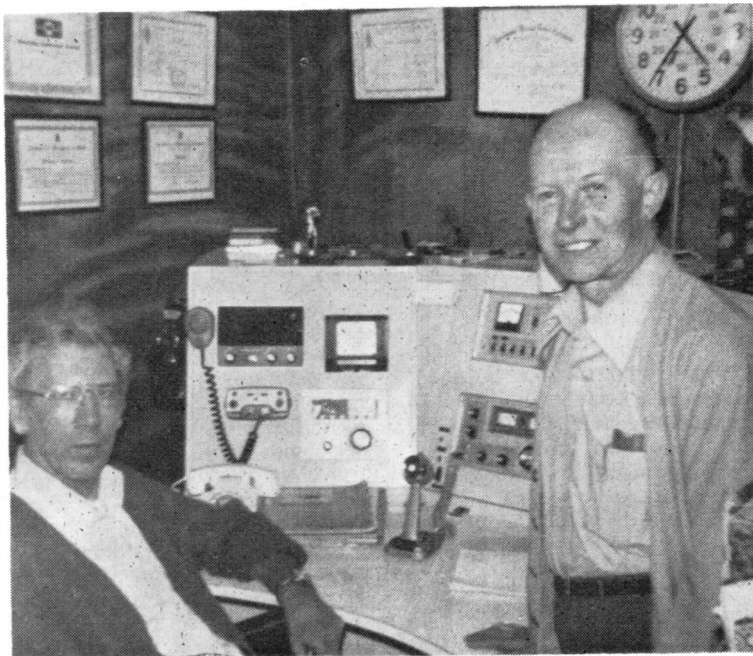


If you have spent, or plan to spend, a holiday in Austria, this is the geographical layout of the call districts. There are about 1,600 OE's licensed, showing a high level of activity over all bands.

(Map acknowledgement G2BVN, "Region 1 News").



G5MY of Leicester, right, during his visit to the VE4 district of Canada. Here he is with VE4OP, in his station at Brandon Manitoba—one of the several at which G5MY was made very welcome. He had no difficulty in getting a /VE4 licence to operate while over there.



hook them!

W4WFL worked SSB to JY3ZH, JY8UA, TU2DV, MP4BJP, JX4GN, DU2EL, HL9KK and an ISØ, but when he had made the keyer operational once again CW turned up UL7EAM, UL7GAC and UL7HB. Morgan reckons his little bit of SSB, forced on him by the keyer failure, has turned him right off SSB DX-ing!

Conditions, good to poor, reports G3NOF. Around 0700, there were some good openings to KH6 and the West Coast W's and during the last week of August and the first week of September the VK's had returned after their summer holiday albeit as yet ZL's are none too many. Not much was heard of Africa, but during the late evening South America and the Caribbean have been good. It all adds up to quite an improvement over the previous period. Don missed out on QSO's with A6XP, KJ6DI, KS6EM, VR6TC and ZK1DX—but he was able to enter CT2BK, LEØS/MM (in the Persian Gulf), G3ZXN/MM (in the Caribbean), HP1XIS, HZ1TA, IBØPV, KH6HDB (Kure), KH6HML, KX6BU, KZ5LZ, OJØAM, PY7DBN/MM (N. Atlantic), PZ1CC, T12RT, VE4SD, VE6MP, VE8DJ (Victoria Is.), VE8RCS, VK's, VP9DV, WA7BPS,

W7QK, W7SGN, YJ8DE, ZF1AP, 3D2CM, 5W1AU, 9G1HE and 9K2DC.

G3ZPF got CW contacts with 9H1DP, VE3XQ, UAICA and UA1YG, plus a few Europeans, and then plugged in the mike to work GC5BDP/P (on Sark), 5B4FF, JY6KAQ, SVØWEE, PY8JO, PZ1DR, VP2SPH, GM3JIJ/M on Lewis, 9K2AL, SM4CGA/YV5, ELØS/MM, 9M2DQ, ET3USA, VQ9GP, K2LZQ/OHØ, some Europeans and W's.

G3VLX remarks on the numbers of moans heard when the big contests are on but as he says although he is not basically a contester he does like to work the new ones that these contests always seem to flush out of their lairs, to add to his countries collection. The recent affair help along quite a bit, and Deryck totted up at the end of the month to find he had had SSB QSO's with HK7UL, LU5OH, CE3FH, JY6KJJ, 9H3L, 5Z4OG, 5B4FF, HP1TG, 9Y4RB and ZS3AK.

G3RFG, his vertical and his trusty bit of brass rolled up a few contacts on Twenty, among them JH1LPF, K2QDY, K9CLO, LU5DON, PY8AA, UA9QAQ, UA9SAA, UA9WSU, VE1ASL, VE2DFY and a string of W's including W5RK, WB6ZUC and

W71WY.

Twenty for G4BPW included SSB contacts with VE3RCMP, 9Y4EH, VE2AZQ, VE1UL, 9H4C, W9YRA, OH6KB, SV1GH, CP5EC, UD6DHN, UKINAB and the usual crop of Europeans.

#### QSL Addresses

Of late we seem to have somewhat neglected this very important part of the DX scene, but this time we have quite a few to mention, as follows.

From G3XTJ, we hear that QSL's for HL9KK go to WA8GUB; ZFIKXJ to WAØKXJ; VP2SAH to WB8AMO; 7Q7DW to G3AWY; FPØBG to VE1AIH; 6W8EX to Box 35, Ziguinchor, Senegal; YA1TCA to PAØTCA; 5R8AC to W3ABC; PZ1AA to Box 522, Schoop, Surinam; JY9GR to DK4PP; PY7ZAH/Ø to WB8FDF; and 3V8BD to DJ4DW.

G3VLX offers 9H3L, QSL via IT9GKX; 5B4FF via G4RS, and HP1TG to Box 9069, Panama City.

A long list from G3NOF includes VE8RCS, to W2GHK; CR8AM to WB6BDQ; KH6HDB to WA3HUP; GM5BDO to F6CPH; IBØPV to IØPV; ZK1DX to Box 90, Rarotonga; KS6EM to Box 309, American Samoa; VE8DJ to VE3DAM, or bureau; ZD3U to G3LQP; 9X5NA

to W7LFA; *HZITA* to HZ1HZ; *3D2CM* to Box 184 Suva; *YJ8DE* to Box 56, Vila; *ELØS* to YU2RCZ; *K2LZQ/OHØ* to W2 Bureau; *FY7AL* to Box 455 Kourou; *TI2RT* to Box 1804 San José; *ZFIAP* to Box 471, Grand Cayman.

G2HKU says that cards for *5U7BA* should be routed to Box 877, Niamey, Niger; and G2BON mentions *OHØAM*, to OH2NB; *C3IFO* to F3BW.

#### Contest News

Results are to hand of the CQ WW CW, 1972 Contest. G3HCT made fourth position on 21 MHz as a single-band entry, and GM3WSF was second as a single-bander on Top Band. Congratulations to both stations, and incidentally to W1BB who showed he is still a top-flight operator by coming sixth on Top Band.

The *DL-AGCW QRP Contests* come up for mention again. The

next one is for the weekend 12-13 January 1974, 1800-1500 GMT. Rules are largely the same as before. Details, with a QSL card sticker, from Hartmut Weber, DJ7ST, D-3201 Holle, Kleine Ohe 5, West Germany.

#### Snippets

G4BPW mentions the special-activity station at Portsmouth New Hampshire, which signed WP1ORT and seems to have done quite well, although whether they made a QSO with Portsmouth, England, is not yet known for certain. On a different tack G4BPW harks back to the W1BB theory of selective skip, and recalls a contact of his with W4HWJ, at the end of which he was called by W4NTJ, all three stations in a direct line, but the latter by far and away the stronger signal, although both the W4's were using the same power input level.

At G3WW (Wimblington) his station is still much used for SS/TV, and recently Richard was able to give a two-way SS/TV contact to a KA after the latter had just made it two-way to OE and ON4. SS/TV signals are most often to be found around 14230 kHz and on the sending side all that is needed is an ordinary tape-recorder to plug into the mike jack of the rig (?). Information of the conversion of an oscilloscope as the receiving monitor appears in the 1973 *ARRL Handbook*.

#### Signing

That, masters, is the lot for this month, time having all but run out on us. For November, the deadline will be **October 9**, addressed by the usual route: "CDXN," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18-1RQ. For December issue, get your report in by *November 13*.

#### STILL LISTED AFTER 48 YEARS

Inspired by that interesting picture of the G6DW 50th anniversary party we showed on p.403 of the September issue of *SHORT WAVE MAGAZINE*, G6PG (Honing, Norfolk) has been delving into his own archives. He is fortunate to possess a copy of the *Wireless Annual* dated 1924, in which are listed some 800 British amateurs licensed at that time. By comparison with the 1972 *Call Book*, he finds 20 G2's, 14 G5's and seven G6's who are still with us. Of course, the picture can be a bit distorted by reason of the facts that (a) In some cases, sons have inherited their father's callsign, and (b) At one time, in the mid-War period, the Post Office was re-issuing defunct two-letter callsigns. We know of several cases in both categories.

#### THIS YEAR'S J-O-T-A

The Jamboree-on-The-Air, the big Scout international QSO party, will be held over the 48-hour period 0001, October 20, to 2359 on October 21, *local time* all over the world, giving in effect a "moving period of darkness" —which will mean band-changing to get out to different parts of the world. As in previous years, the event will be played off over all bands (including VHF, where preferred) the idea being simply that Scout stations—or those operated in the Scout interest—should work other Scout stations, throughout the world. The event is *not* a contest. There are no prizes. Nor is there any achievement table, in terms of points gained to establish an order of merit. The Scout stations taking part are interested only in working one another—any band, any time, anywhere.

Of course, not every U.K. Scout group has its own active amateur station. Those without, who want to

participate, can often enlist the support of some active local AT-station, the operator of which will be glad to have Scouts present during on-the-air sessions when he is attempting to QSO other Scout stations—the call is "CQ Jamboree" and on any band during the 48-hour period it should evoke a response. Last year's highly successful J-O-T-A was reported in some detail in the December 1972, issue of *SHORT WAVE MAGAZINE*.

We have already been notified of a number of U.K. stations intending to be on for the event in support of their local Scout groups. As soon as possible after this year's J-O-T-A, we would be glad to have reports with details of Scout stations worked, band-by-band, also photographs were possible, for a general review to appear in our December issue. Address to: "J-O-T-A," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ, closing date November 9.

#### VHF FROM WOOLWORTH'S

It seems that in some of the larger *emporia* of Messrs. Woolworth they offer a transistor-type Rx which actually covers the two-metre band. Though selectivity is pretty poor, it gives quite a good account of itself, even on the telescopic aerial. Could be useful as a stand-by or monitor Rx. (Data from *Cheltenham Newsletter*, July).

#### SOME LICENCE FIGURES

The total of U.K. licences in issue is now in excess of 18,000 of which nearly 3,300 are Class-B (VHF only). Of this lot, more than 4,000 are licensed for mobile. These figures probably do *not* include those licensed following the R.A.E. in May this year.

# PROPER USE OF TRANSISTORS

## SOME BASIC CONSIDERATIONS

G. R. THOMAS (G4AWJ)

SINCE the advent of the transistor on the amateur scene, introducing such concepts as "thermal runaway," "temperature stabilisation," and so forth, things that did not effect the valve and its comforting filament glow (indicating that at least that the mains supply was on), new ideas have had to be grasped. It is hoped that this short article will help to clarify some of them.

### Biasing and Temperature Stabilisation

In order to achieve amplification without distortion the transistor must be biased to a working point so that its operation takes place within the linear part or range of the characteristic. The simplest way to provide bias would be by separate battery and bias resistor. This method is inconvenient and a far superior system is shown in Fig. 1—R1 and R2 should be as low as possible without draining the HT supply too much, so that variations in base current will not cause  $I_b$  to vary appreciably. R2 must also be shunted by a large capacity to eliminate negative feedback.

### Variations Due to Temperature

The transistor, being a resistive device, current flows between base and collector and is not controlled by the base current. This in itself would be unimportant but the "leakage current," as it is called, varies with temperature and in some cases can become so high as to damage or even destroy the transistor. The leakage current causes heat ( $I^2R$ ) which causes a further increase in leakage current which in turn results in greater heat and more current. If the ambient temperature is sufficiently high regenerative action ensues and the current may rise *rapidly* to a fatal level. It is necessary, therefore, to investigate various circuits which give protection against this thermal runaway, as it is called.

### Common-base Configuration

Take the common-base circuit and assume the emitter load is left open circuit. A leakage current flows between base and collector which is called  $I_{cbo}$ —that is, the leakage current between collector and base with the emitter open circuit. When the emitter is connected to its normal bias supply the collector current rises by an amount  $H_f I_e$ , therefore,  $I_c = H_f I_e + I_{cbo}$ .

For a typical transistor  $I_{cbo} = 5$  microamps at 25°C. and rises to 50 microamps at 55°C. This value is still small compared to  $H_f I_e$  which is of the order of 1 mA. Thermal runaway is therefore unlikely to occur in the common base mode.

### Common-Emitter Configuration

Looking at the common-emitter circuit, assume that the base lead is left open circuit. The normal leakage current flows from base to collector, but as the base is o/c this current must come from the emitter. Now, due to normal transistor action any emitter-to-base current is multiplied by  $H_f e$  to give  $I_c$ . Therefore, total leakage

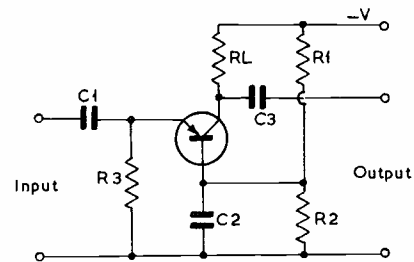


Fig. 1

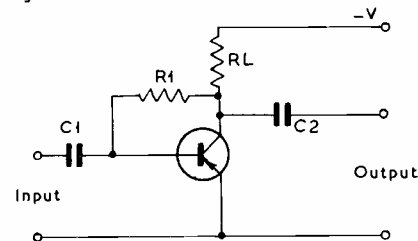


Fig. 2

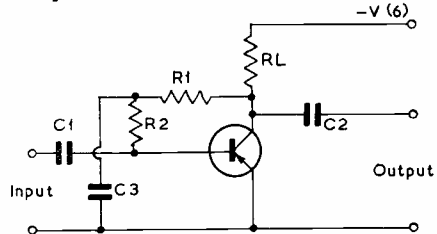


Fig. 3

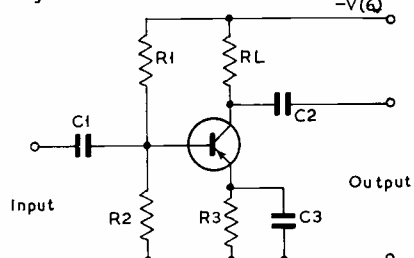


Fig. 4

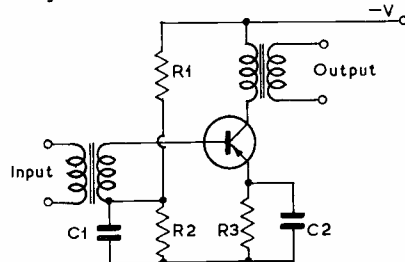


Fig. 5

X  
364

Values for Fig. 3 can be: C3, 2 μF; R1, R2, 50K; and RL, 3K.  
For Fig. 4, C3 is 500 μF; R1 23K; R2 5K; R3 1K; and RL, 3K.

current  $I_{ceo} = I_{cbo} + I_{cbo}H_{fe}$  hence  $I_{ceo} = I_{cbo}(1 + H_{fe})$ . Now,  $I_{cbo} = 5$  microamp at 25°C; if  $H_{fe} = 50$ , then  $I_{ceo} = 250$  microamps; if  $I_{cbo} = 50$  microamp at 55°C,  $H_{fe} = 50$  then  $I_{ceo} = 2.5$  mA.

If the intended operating condition is  $I_c = 1$  mA, then the leakage is 2.5 times the design current at 55°C.

#### Stabilisation Circuits

The simplest type of stabilisation circuit is shown in Fig. 2. The DC working conditions are chosen in the normal way from the output characteristics. Hence  $R_1 = V_{ce}/I_b$ . As far as stability against temperature variations is concerned, if  $I_b$  increases due to temperature increase, the value  $V_{ce}$  falls due to increased volts drop across  $R_L$ , hence there is less voltage across  $R_1$ , causing

a drop in  $I_b$ , thus offsetting the original increase in  $I_b$  due to temperature.

Negative feedback of the signal voltage will also occur, the action of  $R_1$ ; this can be eliminated by using the circuit of Fig. 3; an optimum tapping point for  $C_3$  is chosen such that  $R_1 = R_2$ , then  $R_1 + R_2 = R_B$ .  $C_3$  has a low reactance at the lowest operating frequency.

A better circuit which is more commonly used is shown in Fig. 4.  $R_1$  and  $R_2$  are chosen so that the current in  $R_1$  and  $R_2$  is equal or greater than  $10 I_b$ . The base voltage is fixed by  $R_1$  and  $R_2$  and independent of  $I_b$  and hence independent of variations in  $I_b$ .

A similar stabilised circuit using transformer coupling is shown at Fig. 5, the only addition necessary being  $C_1$ , which prevents base going direct to earth.

## SSB WITHOUT A PRODUCT DETECTOR

### ADJUSTING THE RECEIVER

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

THESE brief notes are prompted by seeing the user of a CR-100 failing completely to resolve SSB signals. He had used the receiver for general SW reception for over two years and also often listened to AM amateur signals, when he could find them, particularly on 80m.

The CR-100, in common with many other excellent receivers of the older generation, and such as the 640, 740, 840C, and others in the Eddystone range, has no special provision for SSB reception. The same applies to the AR88, D or LF. Despite this, all such receivers can usually give perfectly satisfactory SSB reception.

#### BFO Stability

Receivers of the type considered were, however, intended to cope with CW reception, so have a BFO. With the better designs, this often runs from a regulated supply, and has enough frequency stability to avoid drift being a nuisance. Even with the simpler type of communications receiver, the BFO should settle down after a period, and not require too much adjustment to compensate for drift.

The BFO frequency adjustment coverage is often much larger than wanted, but as these notes deal with SSB reception with an unmodified receiver, this must be accepted, though it calls for a little more care in using the BFO control.

#### Upper or Lower

To avoid a source of possible confusion, it should be remembered that lower sideband is general on 40m. and 80m., and upper sideband on 10, 15, and 20m.

This simply means that if satisfactory resolution of SSB signals is achieved with the BFO control off-set one way from zero beat position on 40 and 80, the opposite off-set is used for 10, 15 and 20m.

Should the BFO control be put the wrong side of the missing carrier of the SSB, no amount of adjustment will resolve signals.

#### Injection Level

The SSB and BFO have to provide a signal suitable for the envelope detector. AM reception is usually with RF and IF gains at or near maximum, and adjustment of volume by the audio gain control. Because BFO injection is small, this makes it very difficult, if not impossible, to resolve most SSB signals.

The trick is to turn back RF (and IF, if provided) gains, and put AF gain at maximum. This is to avoid the SSB signal being too strong for the degree of BFO injection provided. The SSB is correctly tuned in, then the BFO is switched on, and careful adjustment of the BFO pitch control should resolve the signal.

Powerful signals can still be too strong, so locals may need attenuating with a device such as a potentiometer in the receiver aerial-earth circuit. This depends on the aerial, receiver, and whether the interest is in local 9-plus signals, or more distant and weaker transmissions. The effect of too much SSB signal input at the detector can easily be checked by turning up the RF gain, while reducing AF to maintain about the same volume. The SSB signal will take on the character of a badly over-modulated AM signal, then reach a level where it can no longer be resolved.

#### AVC or Not

Some receivers of the type mentioned have optional AVC on/off switches; others always put the AVC out of action when the BFO is on.

As turning back the RF gain control results in working conditions where the AVC ceases to have much effect, with receivers of the type in mind there appears to be no need to bother about this point. If a separate AVC on/off switch is present, the effect of putting the AVC out of action is readily tried. If there is no such switch, merely put the BFO on and adjust as described. A properly handled Rx not having a product detector for SSB can give perfectly satisfactory Sideband results if carefully adjusted—it is just a matter of finding the correct RF gain and BFO settings.

## INDICATION FOR CHANGE-OVER

### SIMPLE "BLEEP" CIRCUIT FOR FM OPERATORS

T. R. WILTSHIRE (G8AKA)

(With acknowledgements to the "Southern FM Group" Newsletter, March, 1973)

END-OF-TRANSMISSION "bleepers" are particularly popular with "Black Box" users as they give an audible indication of Tx/Rx changeover. This is useful when working mobiles under difficult conditions; even more so when working stations at the limit of transmission range. This device is not intended to be a "repeater access machine" although the oscillator circuit is fairly stable and, by adjustment of the oscillatory frequency, it could probably be adapted for that purpose.

The beauty of this circuit lies in its simplicity and ease of connection to the rig. Providing that a low voltage DC Tx/Rx changeover relay is available in the set-up (and it usually is!) all that is necessary in the way of existing circuit mods. is the connection of four wires. One note of caution: Before proceeding, have a good look at the circuit of the antenna c/o in the rig and make sure its operation is dependent on the Tx/Rx voltage c/o relay. This is necessary, since the operation of the "bleep" depends on both of these relays being held on for a short period after the p-t-t button is released. Again, since the oscillator is running during "receive" periods, on rigs utilising a common Tx/Rx AF circuit a little extra switchery may be called for in order to obtain mute when on "receive."

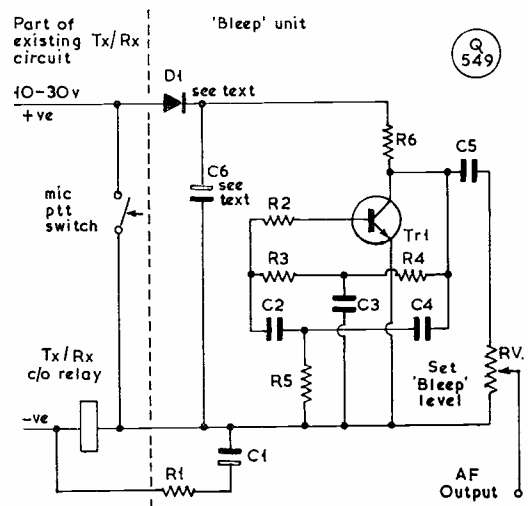
#### How it Works

The oscillator draws its power (between 10 and 30v. DC at less than 2 mA) from the potential existing across the "transmit" p-t-t button terminations whilst the button is in the open ("receive") condition. Since such a small current requirement is involved, this will have no effect on relays such as are normally used to switch Tx/Rx. The relay will act purely as an additional resistor in the AF oscillator supply line.

When the transmission takes place the oscillator immediately stops, since the p-t-t button effectively shorts out its power supply. However, due to the RC time-constant circuit added across the Tx/Rx relay contacts, the relay will automatically hold-on for a pre-determined period after the p-t-t is released. Since volts are applied to the oscillator on release of the p-t-t, the output of the oscillator will be present in the transmission for the hold-in period of the Tx/Rx relay. Hence "Bleep."

The oscillator circuit itself is of the ordinary twin-tee variety, although several values have been adjusted to ensure reliable oscillation using a BC108. Components affecting the frequency of oscillation are, essentially, C2, C3, C4 and R5. These values with about +20v. supply result in an oscillator frequency around 1800 Hz.

Should a "bleep" be required at the beginning of transmission, then two further components are necessary. Capacitor C6 and diode D1 act as supply reservoir and blocking diode respectively. This arrangement allows



Circuit of the bleeper described in the article. The oscillator frequency, with the values given, comes out at about 1800 cycles.

#### Table of Values

##### Circuit of the G8AKA Bleeper

C1, C6 = 100 μF, elect.	R2, R5, R6 = 10,000 ohms
C2, C4 = .001 μF	R3, R4 = 100,000 ohms
C3 = .005 μF	Rv = 2K potentiometer
C5 = .015 μF	D1 = OA200
R1 = 100 ohms	Tr1 = BC108

Notes: Values R1/C1 depend on relay resistance and may need selecting to suit required time constant. Items D1/C6 are only needed when a pre-transmission bleep is wanted—see text.

the oscillator to continue running for a pre-determined period at the beginning of transmission. The value of C6 must be chosen carefully to allow sufficient oscillation yet not upset the oscillator frequency stability of the end-of-transmission "bleep" by placing too heavy a load on the supply circuit.

#### RATHER DISAPPOINTING

For some years, two keen members of the Stevenage & District Amateur Radio Society had been providing slow Morse transmissions for the benefit of anyone locally learning the Code and wanting practice. In all that time, not a single report or message of appreciation was received. So, not unnaturally, they have decided to discontinue the service. (This is on all fours with our own experience—over the years, we have been canvassed for a donation to this-or-that rally prize list, Club dinner draw, or whatever, and must have given away 100's of books, maps and free subscriptions. The number of times we have been thanked, or the gift even acknowledged, either by the organisers or the recipients, can be counted on the fingers of one hand!)

# ANOTHER TWO-METRE CONVERTER

USING MODERN CONSTRUCTIONAL TECHNIQUES

W. H. BOND (G3XGP)

COMPARISONS may be odious, but the comparison between the construction of a commercial UHF receiver of the pocket-phone type and the average amateur's VHF converter has always seemed offensive to the author. The compact nature of the commercial product and the obvious success of the etched circuit board technique, compared with the bird's nest that most of us create, prompted the search for something tidier.

First attempts employed a full ground "plane," or sheet, leaving as much copper on the board as possible; whilst the circuit did work tuning was completely flat and brought in broad-band noise to degrade otherwise good performance. Pursuing the matter further it was found that by reduction in stray capacity (reducing the copper in the vicinity of the coils) and making the unit as small as possible, performance was improved and stability was such that no interstage screening was required. Miniaturisation was aided by several factors: The adoption of a broad-band toroid for the output transformer; the use of tiny solid dielectric trimmers; a reduction in the number of components by using a dual-gate Mosfet input stage requiring no neutralisation; and the development of a very simple oscillator/doubler stage. The original units used a 73.9 MHz crystal giving an IF of 3.8 to 1.8 MHz. This is an excellent frequency range, devoid of birdies, but some may object to the reversed tuning, in which case a 71 MHz crystal should be used. Without changing any components a 70 MHz crystal will give a 4-6 MHz IF and direct readout on the receiver—but there are many commercial stations on these fre-

quencies, and IF breakthrough is troublesome without a sharp filter in the input.

### The Circuit

This is in most respects quite conventional. The input stage is a dual-gate Mosfet, using a 3N140, RCA 40602 or 40673; all perform well but the 40673 is to be preferred since it is zener protected. The noise factor is improved by tapping the aerial and gate well down the coil. Output from the RF stage is by a very lightly coupled coil to the mixer, another 40602, with the oscillator capacitatively coupled to the second gate. The mixer output is *via* a broad-band toroid, the higher frequencies being shunted to deck through a small capacitor. The oscillator is extremely simple and readily provides the

### Table of Values

Fig. 1. Circuit of the Converter by G3XGP

C1, C2,	R3, R7 = 270 ohms
C3, C4,	R2 = 270,000 ohms
C6, C9 = .047 $\mu$ F	R4, R8 = 100 ohms
Cx, C7 = 2.2 $\mu$ F	R5 = 470,000 ohms
C8 = 4.7 $\mu$ F	D1 = OA200
VC1,	Tr1 = 3N140, 40602,
VC4 = 2.20 $\mu$ F	40673
VC2,	Tr2 = 3N141, 40602
VC3 = 2.8 $\mu$ F	Tr3 = 2N5245, 2N3823
R1, R6 = 100,000 ohms	

### TABLE OF COIL DATA

All coils made of 22g. tinned copper, wound on 1/8-in. drill shank, self supporting.

- L1 = 6t over 5/16 in., wound right-hand thread, aerial tap at one turn, gate tap two turns from hot end.
- L2 = Five turns stretched to quarter-inch.
- L3 = Four turns over 3/16th inch.
- L4 = Toroid Mullard FX1593, with primary 20 turns, secondary 3t. at cold end, L5.
- L6 = As L2, with diode tapped at 2nd or 3rd turn from cold end.
- L7 = Eight turns stretched to 5/16 in.

Notes: Use double-sided printed circuit board, 1/16th-in. Coils L2-L7 inclusive to be wound with left-hand thread. Taps should be fitted after the coil is mounted, soldering the tap to the board first and trimming the wires after mounting. C5 is .047  $\mu$ F.

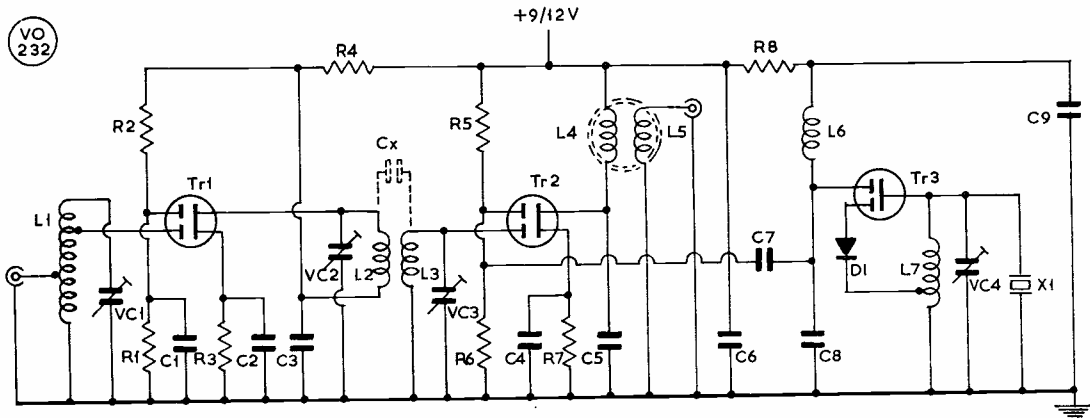
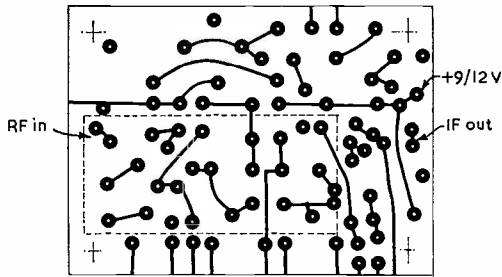


Fig. 1. CIRCUIT DIAGRAM

Fig. 1. Circuit of two-metre converter described by G3XGP.

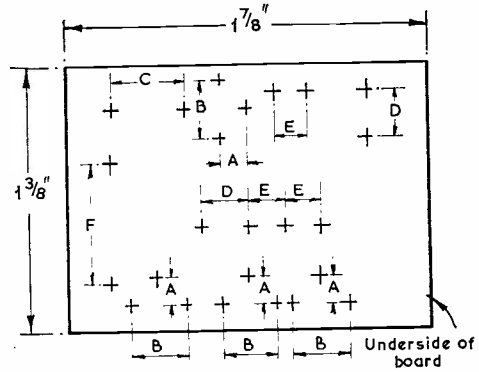


Component holes No.60 drill except capacitors which are No.53. Mounting holes No.42

Fig.2 Underside of PCB.

XO  
233

Fig. 2. Under-surface arrangement of circuit board. Component mounting holes are made with a No. 60 drill, but using No. 53 for the variable capacitor points. Inter-connections should be about 1.5 mm. wide.



Essential dimensions :-

- A : 7/64
- B : 7/32
- C : 3/8
- D : 1/4
- E : 3/16
- F : 5/8

Fig. 4

VO  
235

Fig. 4. Underside of board showing essential dimensions—the PCB could, of course, be made larger.

0.7 to 1.0 volt required. The Fet is connected as a Hartley, the coil and capacitor combination across the crystal ensuring overtone operation, the diode providing a little bias, and the drain coil resonates at the mixer frequency. A 2N5245 or 2N3823 work well in this position.

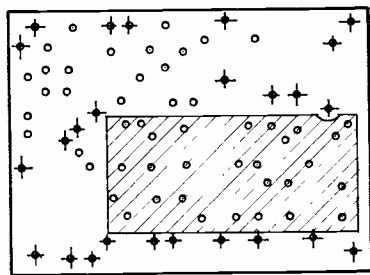
**Construction**

It is strongly recommended that the pattern of etched board shown in the diagrams be followed closely and the miniature components recommended be used. In making the coils the gauge of wire and the winding diameter is important and they should be mounted 1/8 in. above the surface of the board. Earth points should be soldered to both sides of the board and the vertical lead of the resistors should be earthy. Whilst it is true that Mosfets can be safely handled without their shorting wire, this or a piece of fuse wire should be retained until soldered in because of the risk of leakage from the iron. It is also

unwise to use an inductively heated iron, for a gate can be destroyed by the high voltage spike that appears when they are switched off. Note that R8 should be left off the board until the oscillator is set up.

**Setting Up**

Temporarily attach a metered 9-12 volt supply to the oscillator and set VC4 to full capacity. The meter should show about 7.0 mA and an RF sniffer placed near the coil will show a strong deflection. At this stage the circuit is oscillating at about 45 MHz and the capacity should be slowly reduced until a strong dip is shown on the meter—this dip is quite sharp and the sniffer will show maximum output at this point. Now place the sniffer near the drain coil so as to obtain a small deflection and using a tuning wand (Fig. 6, p. 478) apply first the ferrite and then the brass to the cold end of the coil. If the brass caused an



All holes, except those marked †, are countersunk. Enclosed area devoid of copper.

Fig.3: Top (component) surface of Board

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234

Fig. 3. Component side of the PCB showing hole-drilling and areas of copper to be removed. Holes within the bare area do not require counter-sinking, nor do those marked † as they are earthing points. It is recommended that this layout be closely followed.

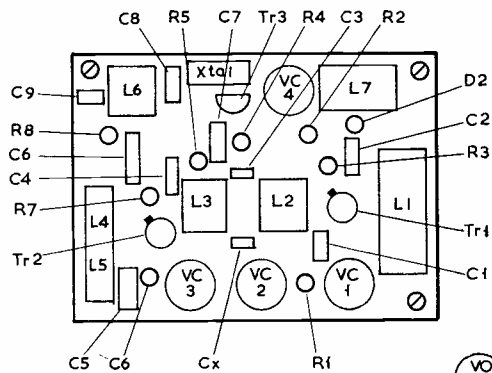


Fig. 5 Component Layout

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236

Fig. 5. Upper surface of board, to show component layout.

Fig. 6. The tuning wand. Any insulating material will do, with the slug and brass screw fixed by adhesive.  
 Fig. 7. The RF sniffer, using an 0-50 microamp. meter movement. The diode is any point-contact type and the capacitor .001  $\mu$ F disc.

upward deflection of the needle and the ferrite a fall the inductance is too high and the turns should be separated gently, and *vice versa*. Adjustment is continued until brass and ferrite cause the *same* downward deflection. The circuit is now resonant, and a much larger deflection of the sniffer meter is found near the drain coil than the gate. Finally, R8 should be soldered in and the power supply connected to the correct point.

Mixer capacitor VC3 should now be adjusted until a tiny rise in current flow is seen. The normal supply current is about 12.5 mA on 12 volts and 10 mA from 9.0 volts; any great variation from these figures suggests instability, revealed by the sniffer and rectified by adjustment of VC2. Connect a receiver and a source of 145 MHz signal, GDO or aerial and peak VC1 and then VC2. This completes the setting-up routine although if full band coverage is required instead of optimum local reception, the hot ends of L2 and L3 should be joined by 2.2 pF to increase the bandwidth, VC1 peaked to the centre of the band and VC2 and VC3 peaked to near the band edges.

The unit is small enough to tuck into a corner in most main receivers, obtaining a power supply by a simple voltage doubler circuit from the heater rail. Should the converter be mounted in a screened box, the coils and especially the oscillator coils should be at least half-inch away from the walls if instability and difficulty in setting

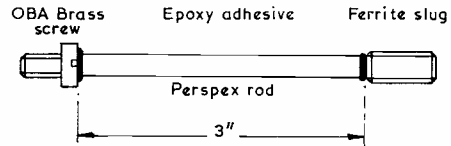


Fig. 6: TUNING WAND

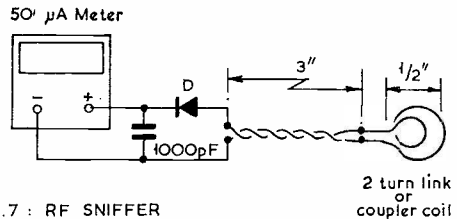


Fig. 7: RF SNIFFER

up are to be avoided. By arrangement with Charles Young Ltd., G2AK, 170 Corporation Street, Birmingham, a complete kit including ECB is available.

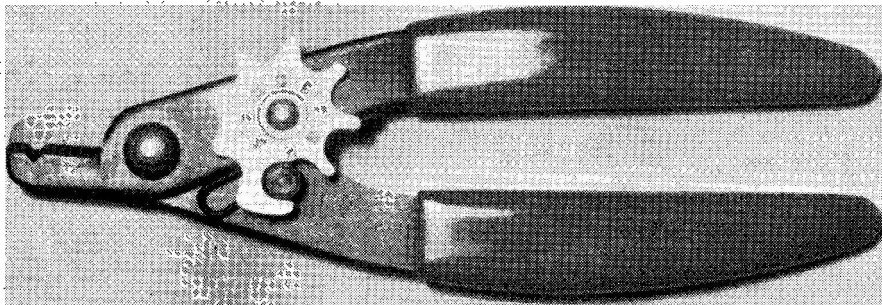
A dozen or so of these converters have already been constructed on the basis of this article and every one has gone off first time. Hence, it can be regarded as a simple, stable and satisfactory design.

### CUSTOMER SHORT-CHANGED

We are sorry to have to admit that, on September 5, a caller buying books at our Office counter was inadvertently given short change to the extent of £3. This was not discovered till after he had gone. As he is not known to us and we have no way of getting in touch, we hope that should he chance to see this he will call to collect what is due to him. It is burning a hole in an envelope on Mrs. Greenwood's desk, in our Office at 55 Victoria Street, London, SW1H-OHF.

### COURSES IN MICROELECTRONICS

We are asked to say that the Middlesex Polytechnic has a Microelectronics Centre at Enfield, at which short courses are held under the general headings of Integrated Circuit Technology, Thick Film and Hybrid Microelectronics. As full laboratory facilities and materials are available numbers are necessarily limited. Applications for details, fees and syllabi should be addressed to: Mrs. D. P. Linnell, Middlesex Polytechnic (Enfield), Queensway, Enfield, Middlesex.



The new "Bib" wire-stripper by Multicore Solders, Ltd. costs around 70p at electrical, hardware, D-I-Y and garage accessory shops. It is an improved version of the well-known Model 8 "Bib".



## PYE "CAMBRIDGE" TRANSMITTER CONVERSION FOR TWO METRES

HOW TO MODIFY THE LOW-BAND  
AM.10D

R. E. G. PETRI (G8CCJ)

*The first part of this article, covering the receiver side of the modification for two metres, appeared in our September issue. Taking the two parts together, Rx and Tx, amounts to an interesting and instructive constructional exercise and can result in a useful and effective rig for the two-metre band. As in all conversions, it is very helpful to have the appropriate manufacturer's manual, though not essential for the conversion discussed here.—Editor.*

**N**OW for the easy part of the conversion, the transmitter. As for the receiver, the transmitter will be treated in step-by-step sequence and is pretty straightforward.

The first job will be to choose the carrier frequency crystal, and as the multiplication for the transmitter is x 18, then the crystal frequency is simply

$$\frac{\text{Carrier frequency MHz}}{18}$$

18

Therefore, for the mobile channel

145.0

$$\frac{\quad}{18} = 8.055556 \text{ MHz.}$$

18

For the purposes of converting the transmitter any suitable crystal in the range 8.0000 — 8.1111 MHz will do.

The test gear required for the transmitter alignment need only be an RF power meter (a 6-watt car tail light bulb soldered to an aerial plug will do as an indicator), an Avo-8, or the average shack multimeter, and an absorption wavemeter.

- (1) Starting with the oscillator change C604 to 39  $\mu\mu\text{F}$  ceramic. C604 tunes L601 which should not be touched.
- (2) Change C610 to 27  $\mu\mu\text{F}$ . C610 tunes L603 which should not be touched.
- (3) Remove C615 (C631), C617 (C632). The capacitors shown in brackets are in parallel with C615 and C617 and are across the windings of T601.
- (4) Remove T601, leaving the decoupling and H.T. feed components *in situ* so that they can be replaced in the same position when the transformer is refitted.
- (5) Take T601 out of its can and remove the windings and the spacing rings on former.
- (6) Rewind T601 with 20g. enamel, as shown in Fig. 1 and fix the coils with *Araldite* or similar epoxy adhesive and leave to set. The spacing between windings should be  $\frac{1}{4}$ -inch and the

turn spacing about  $1\frac{1}{2}$  wire diameter.

- (7) Refit T601 so that the pin numbers conform as Fig. 1.
- (8) Fit C615 6.8  $\mu\mu\text{F}$  ceramic across primary of T601.
- (9) Connect C617, 10  $\mu\mu\text{F}$  ceramic, across secondary of T601.
- (10) Remove C621 and L604.
- (11) Replace C621 with a butterfly preset variable capacitor; 10+ 10  $\mu\mu\text{F}$  would be ideal but in the prototype, one the same as C623 was used.
- (12) Remove C620, 0.01  $\mu\text{F}$  ceramic decoupling capacitor.
- (13) Replace C620 with a 1-12  $\mu\mu\text{F}$  tubular trimmer which will fit into a small hole provided in the corner of the chassis behind C621 for this purpose.
- (14) Connect rotor vanes tag of C621 to ground at the closest possible point to the capacitor; an earth tag may be found beside C621 for this.
- (15) Take L604 and remove 1- $1\frac{1}{2}$  turns from each end of the former to leave 5 turns total.
- (16) Solder two stiff wires to the end pins of L604 to make it self-supporting and connect it to the stator vane tags of C621, cutting the ends of the supporting wires so that the length of the coil lies across C621 and about  $\frac{1}{8}$ -inch above it. L604 must be kept close to C621 to avoid contact with, and damping by, the cover when finally fitted.
- (17) Solder the end of R615 the 330-ohm anode feed resistor to the centre of L604.
- (18) Connect pin 6 of V603 to the nearest end of L604.
- (19) The opposite end of L604 should have been connected to the tubular trimmer C620, as in operation (13).
- (20) Take out L605 and remove turns equally from each end so as to leave a total of four turns; the centre tap will remain, *i.e.*, there will now be two turns on either side of the centre tap.
- (21) Refit L605 to the stator vanes of C623 so that it lies parallel with L604 and spaced from it by about a quarter-inch or less.
- (22) Reconnect R616, the 33K bias resistor for V604, to the centre-tap of L605.
- (23) Take out the anode tank coil L607, which is

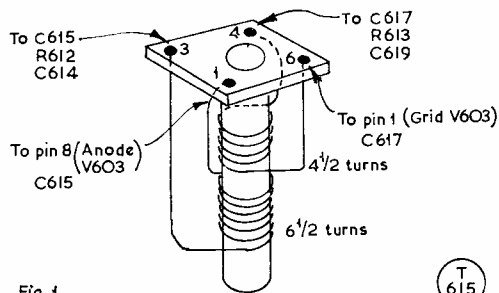


Fig. 1

T  
615

**Fig. 1. Rewind details for T601.**

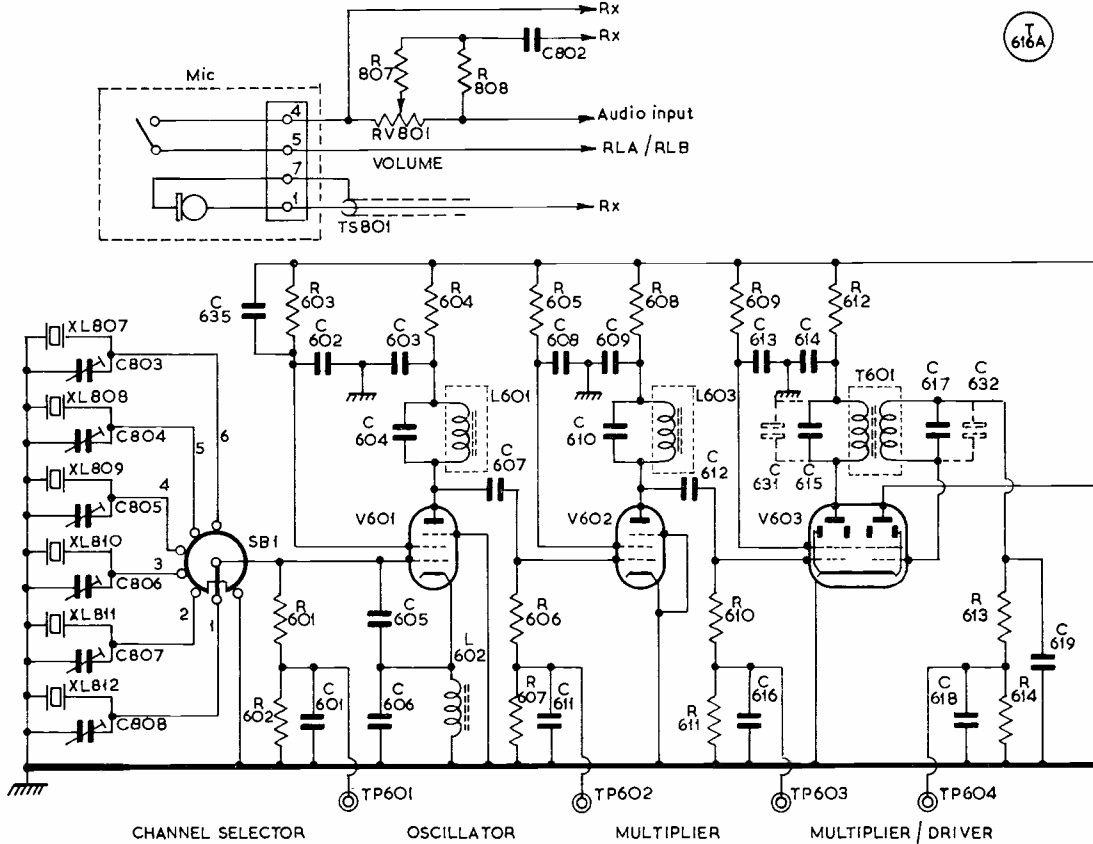


Fig. 2.

mounted in front of C626.

- (24) The aerial coil L608 comes out.
- (25) Replace L608 with a one-turn loop of the same coil diameter as before.
- (26) Remove 1-1½ turns from each end of L607 to leave a total of three turns on the former. As the winding is cemented to the former one need not disturb the remaining 3 turns.
- (27) Replace L607 and reconnect it as before.
- (28) Ensure that the aerial coil is in the centre gap of L607 former.

**Other Modifications**

At this stage we may proceed to the top of the chassis to modify the aerial low-pass filter, or harmonic rejector. The purpose of this filter is to attenuate the second and third harmonics and also any spurious signals higher than the fundamental that could be radiated and cause interference on other channels.

The method used by the writer to proportion the filter coils was to copy the filter as fitted in a high-band model. When completed and tested with the filter in circuit and out of circuit (bypassed) the results showed that only about 0.4 dB insertion loss was attributable to it; this means that for an output power of 6-7 watts we have only

lost about 0.5 watts in the filters. This insertion loss of 0.4 dB is not worth worrying about because it will only be a fraction of an S-point at the receiver end.

One should *not* consider omitting the filter in the interests of a mere 0.5 watts.

- (29) Remove L609 and L610.
- (30) C629 and C630 come out and these 39 μμF ceramics will not be required.
- (31) It will be seen that L609 and L610 are in two halves and each half must be modified the same by removing the same number of turns from each end of each coil so that 2½ turns remain on each end of each coil.
- (32) Space all the remaining turns at about 1/8-inch separation and reconnect L609 and L610 as before.
- (33) Refit C629 and C630 at new values 15 μμF, ceramic.

The conversion is now complete and all work should be checked at least once before commencing the task of alignment.

**Transmitter Alignment**

The alignment procedure for the transmitter requires very little in the way of test gear, as mentioned earlier.

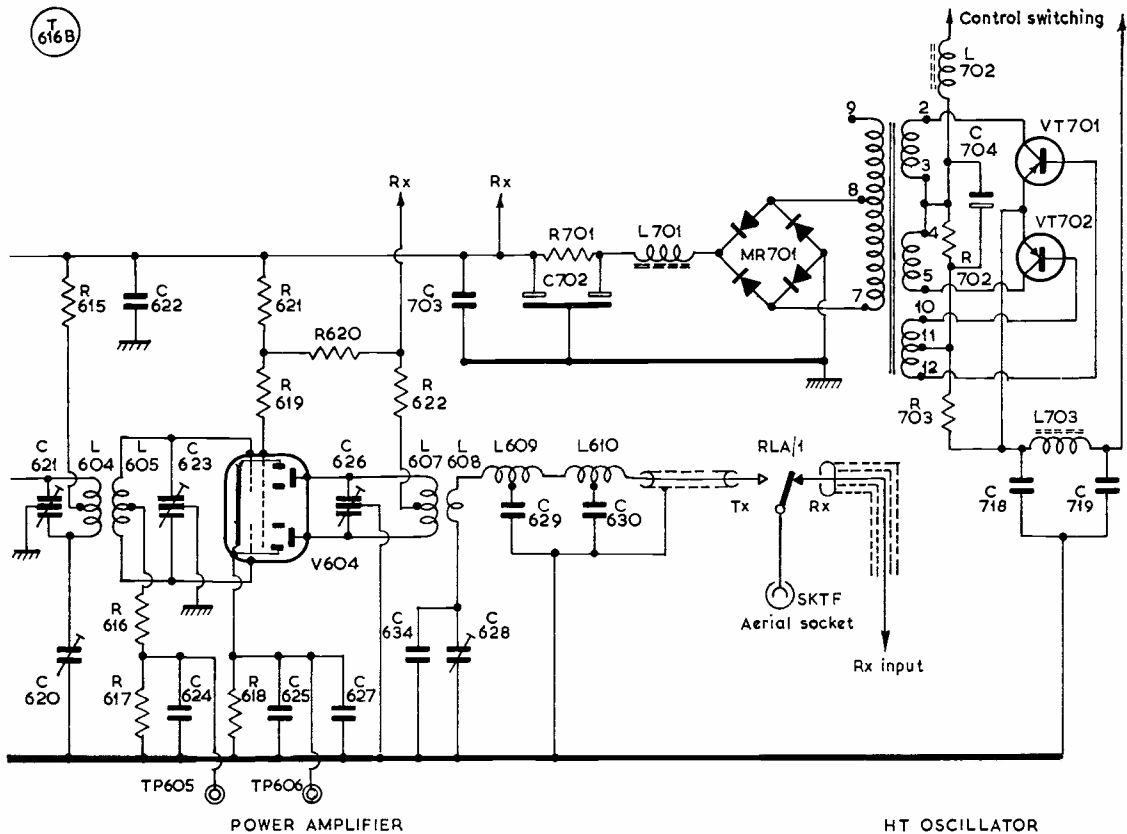


Fig. 2. Full Tx circuit diagram of the Low-Band "Cambridge".

The transmitter side of the "Cambridge" is particularly nice to align as the manufacturers have provided all the necessary test points to make things easy.

In the following procedure, when a test point (T.P.) is mentioned the DC voltage should be measured with respect to earth, noting that all early-stage voltages are negative.

- (1) Insert crystal and remove PA valve V604.
- (2) Switch to "standby." Valves will take about 30 seconds to warm up.
- (3) T.P. 601, oscillator test point reading about -0.2v.
- (4) T.P. 602, adjust L601 for -0.45 to -0.8v.
- (5) T.P. 603, set L603 for -0.35 to -0.5v.
- (6) T.P. 604, set T601 top for negative indication.
- (7) T.P. 604, adjust T601 underside for max. negative indication.
- (8) T.P. 604, tune T601 top for max. negative indication.
- (9) T.P. 604, also T601 underside for full negative reading, -0.7 to -1.05v.
- (10) Replace PA valve V604.

(cont'd p. 482)

Crystal Chart for "Cambridge"

	TRANSMITTER	RECEIVER
144-00	8-0000 MHz	44-43333 MHz
.10	8-0055	44-46666
.20	8-0111	44-50000
.30	8-0166	44-53333
.40	8-0222	44-56666
.50	8-0277	44-60000
.60	8-0333	44-63333
.70	8-0388	44-66666
.80	8-0444	44-70000
.90	8-0500	44-73333
145-00	8-0555	44-76666
.10	8-0611	44-80000
.20	8-0666	44-83333
.30	8-0722	44-86666
.40	8-0777	44-90000
.50	8-0833	44-93333
.60	8-0888	44-96666
.70	8-0944	45-00000
.80	8-1000	45-03333
.90	8-1055	45-06666
146-00	8-1111	45-10000

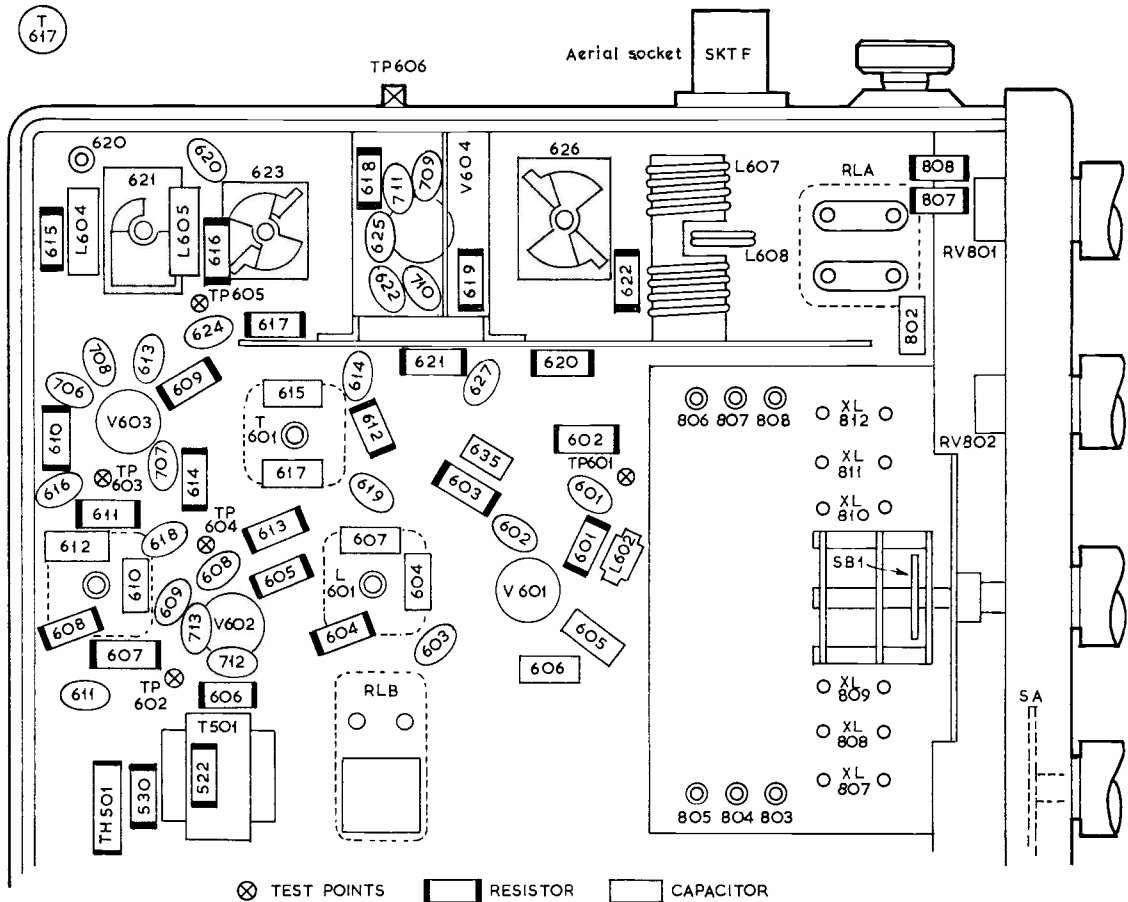


Fig. 3

Fig. 3. Underside RF section chassis showing components mentioned in text.

- (11) Connect power meter and dummy load to aerial socket.
- (12) T.P. 605, set C621 for max. negative reading.
- (13) T.P. 605, adjust C623 for  $-1.25$  to  $-1.8v$ .
- (14) T.P. 606, tune C626 for max. positive reading.
- (15) T.P. 606, adjust C628 for minimum.
- (16) T.P. 606, tune C626 for a dip.
- (17) Set C628 for max. RF output.
- (18) Adjust aerial coupling coil for full RF output. About 5-7 watts can be obtained with a T.P. 606 reading of  $+0.55$  to  $-1.65v$ .
- (19) Check with the power meter that the output is actually on 145 MHz. It is often possible when tuning transmitters to find that the wrong harmonic has been selected somewhere in the multipliers. If this has happened then go back to the start and look for alternative peaks when retuning the coils. It is also possible to trace

where the multiplication has gone wrong by use of the absorption wavemeter.

- (20) Finally, the bottom cover should be replaced and the transmitter retuned because the proximity of the cover will alter the *maxima* of the tuned circuits.

### Conclusion

The test figures of the "Cambridge" upon which this conversion was based were as good or better than the figures given in the manufacturers' handbook.

If the reader happens only to have an FM "Cambridge" then only the receiver RF and IF units need be modified, as in the first part of this article, steps 1-40. The details for the complete alignment will *not* be the same for the FM receiver.

It is not possible to convert the FM transmitter using

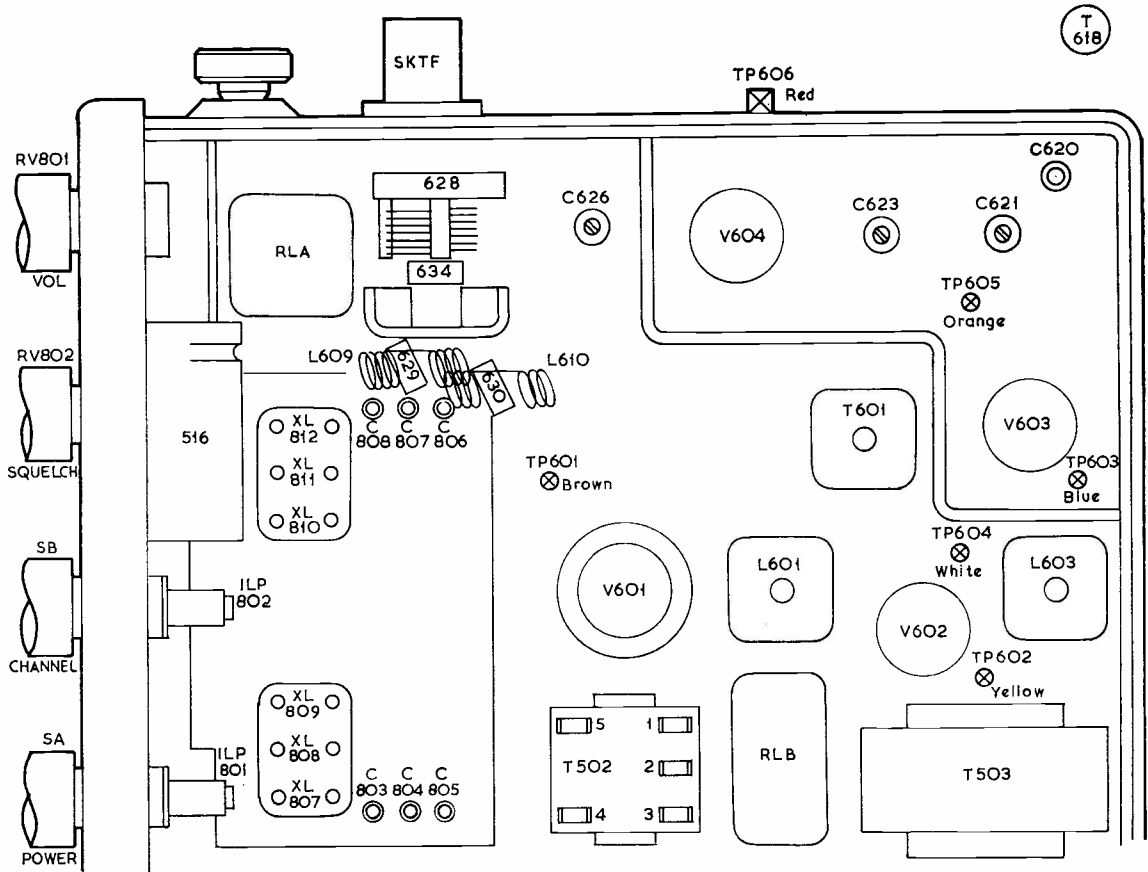


Fig. 4

**Fig. 4. Upper side of "Cambridge" Low-Band chassis, showing component layout and test points—see text.**

the foregoing instructions because the multiplication is  $\times 36$  in the FM case. *Senator* crystals were used and obtained within four days of order. The necessary

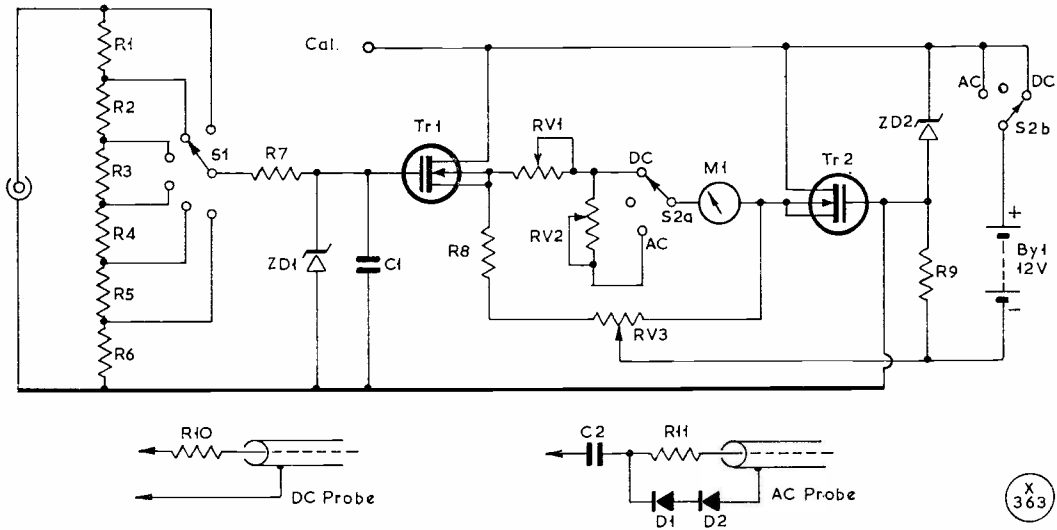
conversion details were worked out by reference to the *Pye Telecommunications* manual on their Cambridge AM.10.D.

**Obituary**

**HAROLD JONES, G5ZT-G6ABC/T**

We very much regret to have to announce the passing, suddenly on August 17, of Harold Jones, G5ZT, at the age of 64. He was particularly well known for his interest in the fields of A/TV and SS/TV, being one of the earliest exponents of both modes. Coming originally from Lancashire, he started in the radio business after several years at sea as a Marconi ship's operator (as they were known then). In the Royal Navy during Hitler's War, he had the distinction of flying Walrus aircraft—the old

single-engine pusher amphibian, used in the early part of the War for air-sea rescue operations. Latterly, he became Port Radar Officer, Devonport, in the rank of Lieutenant, R.N. He had a real "touch" for radio work of every kind and was as successful on the air, as G5ZT and G6ABC/T, as off it. He was a keen and popular member of the Plymouth Radio Club, and was well respected in Amateur Radio circles throughout the West Country.



Circuit of the FET Voltmeter discussed in the text. Values can be: C1, C2, .01  $\mu$ F, disc ceramic; R1, 6.66 megohms; R2, 2.33 megohms; R3, 660K; R4, 233K; R5, 66K; R6, 33K; R8, 4.7K; R9, 22K; R7, R10, R11, one megohm; RV1, 1K; RV2, 500 ohms; RV3, 3K; Tr1, Tr2, 3N128; M1, 0-100  $\mu$ A; D1, D2, 1N914; ZD1, ZD2, OAZ203; S1, 1p 6-way; S2, 2p, 3-way; By1, 12v. battery.

## AN FET VOLTMETER

### HIGH INPUT SENSITIVITY

(Translated from the Dutch "CQ-PA" by  
A. H. Dormer, G3DAH)

A VOLTMETER with a high input impedance is always handy to have by one, so that the circuit to be checked is not loaded and no measuring errors occur.

What is needed, therefore, is an FET voltmeter. The circuit shown is almost a direct conversion from the well-known double-triode arrangement which was published for many years in the ARRL *Handbook* but modified to use 3N128 Mosfets. The sensitivity of this FET voltmeter is 300mV and the meter is a 100  $\mu$ A f.s.d. with a scale reading 0-3 and 0-10. The supply

consists of two 6v. batteries, the current drain being about 3 mA at 12v. Of the two zener diodes (OAZ203 or similar) the first provides protection for the input of the Mosfet and the second provides a reference voltage for the DC calibration. Should the latter facility not be required, the diode may be replaced with a 22-ohm resistor. The input divider has a total resistance of 100 megohms and with the values specified reads, at f.s.d.: 300mV, 1v, 3v, 10v, 30v. and 100v. It is recommended that close-tolerance resistors be used here, although in practice the normal 10% types give adequate accuracy.

The meter probes were mounted in ball-point pen holders, but the diode in the AC probe was screened to avoid hand effects.

The DC sensitivity is adjusted by RV1 and the AC sensitivity with RV2.

## CHANGING CAR-ELECTRIC POLARITY

MANY prospective mobile operators must have been disappointed to find that whilst their car had positive earthing, all the new composite transceivers required a "negative ground."

Changing the offending vehicle for a newer model might not meet with the approval of either the XYL or the bank manager, and so the only alternative is to "switch the electrics." In most cases this will be far simpler than expected.

The first hurdle is to change round the actual connections to the accumulator—and it will probably be found the heavy duty leads will not be the right length. The battery itself can be turned round, if that will help, and the negative connection can be made to the engine instead of the chassis—this will, in fact, increase the voltage slightly and so avoid "coil-robbing" in the winter weather, a common cause of bad starting! The old push-on type of connector can be replaced with a stronger type utilising a nut and bolt, and this often gives a better contact to the post.

Next, the terminals to the coil should be changed round; these will be marked either "CB" and "SW,"

or alternatively “+” and “-”. The plus wire goes to the positive of the battery.

Finally, the residual magnetism of the dynamo must be reversed and the simplest way to do this is to take a wire from the positive side of the accumulator to the field terminal (the smaller one) of the dynamo, whilst the engine is ticking over. The red warning light on the dash should go out immediately, showing that the dynamo has commenced to charge the “other way round.” Of course it is possible to close the contacts of

the cut-out, if the case is not of the sealed type, but this can result in a hefty spark! So use the length of flex.

In most cases, that is all that is required on a fairly modern car, but a few other things might require attention. Should an electric clock or ammeter be fitted, the leads will have to be reversed, and car radios will have to be “changed round”—generally a matter of moving a plug or switch, although a few need a soldering-iron to make the alteration.

G3KPO.

## NOTE ON THE QRO TWO-METRE LINEAR

### SCREEN-GRID PROTECTION AND FUSING

WITH regard to the article on the QRO linear amplifier by GW3ZTH/GW8EHK in the July-August issues of SHORT WAVE MAGAZINE the authors would like to draw the attention of would-be constructors to the notes relating to the protection of the 4CX250B's.

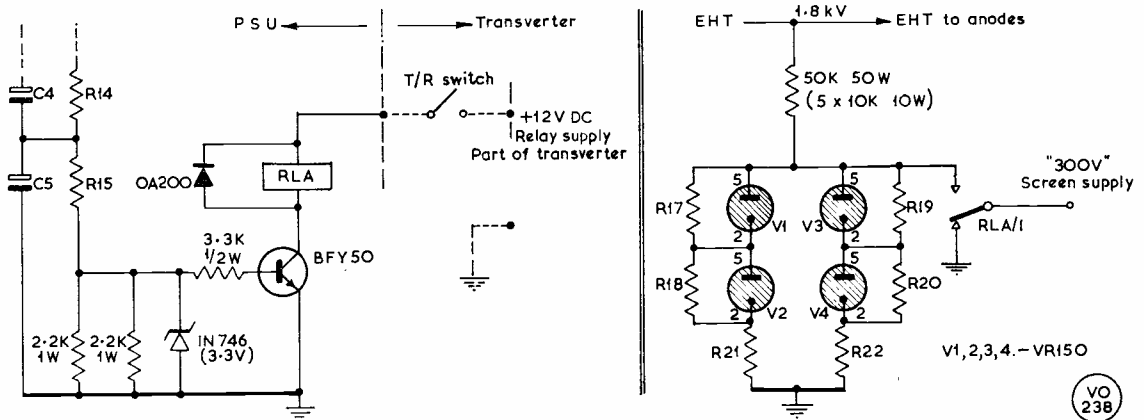
It cannot be emphasised too strongly that the screen supply for the 4CX250B's must come *after* the EHT has been applied and not before, and this is equally true when powering down the system, where the screens *must* be disabled *before* the EHT. It would be advisable, therefore, to include some additional form of protection

in the power supply. The authors therefore recommend the circuits shown here as possible alternatives.

In the first circuit relay RLA cannot operate unless the EHT supply, +12 volt supply and T/R switch are made; the transistor Tr1 needs approximately 1 mA of base current to operate the relay, obtained from the EHT supply *via* the smoothing capacitor EHT network; the two 2.2K resistors and the 3.3v. zener diode ensure that the base of Tr1 is never overdriven.

In the second circuit the screen voltage is obtained from the EHT supply and needs no explanation, except to say that it provides the necessary protection. Due to the heat dissipation it is suggested that the resistors be mounted vertically and away from heat-sensitive components.

Additional information has been included concerning the individual fusing of the 4CX250B screens and an extra fuse has been added to the primary of T1 in the PSU.



Amendment to the PSU (Fig. 2, p.288, July) for the QRO Linear. Component markings are as in the original. The primary of T1 is given a separate 5A fuse, and FS4 in the mains input is 7.5A, glass. For the second diagram (Fig. 1, p.287, July refers) the screen-grid fuses FS1, FS2 are 60 mA.

To keep in touch with the world of Amateur Radio, read "Short Wave Magazine" regularly — Independent, Unsubsidised and now in its 31st volume.

## METHOD OF WINDING COILS

Sometime ago the writer has to complete an electronic project to demonstrate that his mechanical and electronic training with a large electronics firm had been well absorbed.

Eventually, after much thought it was decided to build a short-wave converter and immediately this decision had been made several problems came to light. These were all related to the construction of the coils and briefly were as follows:

How to achieve a uniform number of turns per inch over the full length of the winding,

How to keep the windings taut, so that they would not expand appreciably as the equipment in which the coil was installed warmed up, and to prevent the winding from springing undone as its ends were terminated,

How to keep the connections between the trimming capacitors and their associated coils as short as possible.

The method of construction described here provided a simple and economical answer to these problems, although it does necessitate the use of a small lathe which is *not* a piece of equipment normally to be found in the average amateur's tool set. For this reason this method of construction would probably be more suited to the radio control model enthusiast who may have such equipment, rather than by the radio amateur.

To make a coil by the writer's method, select a suitable length of plastic rod or tube of the required diameter, (the writer's were made from  $\frac{1}{2}$ in. paxolin tube) and turn two grooves in it spaced along the former by the length of the windings. Next set the lathe to cut the required number of turns per inch for the coil in question and proceed to cut a helical track (in the same way in which you would normally cut a screw thread) between the two grooves which you have already turned. Into this track will be laid the winding, and so it is necessary, if you are using tube, to pick a depth which will hold the wire securely and yet not cut the former so deeply that it would become weak; there should be no problems here unless a very heavy gauge of wire is being used.

Having done this drill two small holes lightly outside the ends of the track and use these later on in conjunction with soldering tags and small self tapping screws to anchor the ends of the coil winding.

The next thing is to decide upon a method of mounting the coil. Here several methods were thought of: The first was that of filing slots on opposite sides of the former through which would be passed a small metal bar suitably tapped to take a bolt which would pull the coil down on to the chassis; this method was eventually chosen.

The alternatives were either to glue the coil assembly to a B9A plug and so produce a plug-in coil, or to clamp the coil down to the chassis using a length of brass studding passing through the centre of the former and threading into a tapped bar resting across the top end of the former.

The latter method was not used, since it was thought that the brass might have altered the inductance of the coil.

## Tappings and Coupling Windings

This method of construction also enables the constructor to provide the coil with tappings or additional windings and still make a neat job (which is often not the case with home wound coils).

To tap the coil drill a small hole at the point in the track at which the coil is to be tapped and when putting on the winding pass a piece of thin wire through the hole and loop it around the wire which is being wound on.

Then, when the winding is firmly in place solder the loop to the winding and terminate it in a solder tag at the end of the former as was done with the main winding.

To provide a secondary or coupling winding cut a second helical track in the spaces between the first one and lay the winding into it as was done with the primary.

If the secondary winding is of the same length as the primary then it may be terminated in the same way by fitting the ends to solder tags—if, on the other hand, it is smaller it will be necessary to drill holes in the track and use the method described for tappings.

## Mounting of Trimmers

It was said earlier on that this method enabled the trimmers to be kept very near to the coils, hence reducing stray capacitances; in fact the writer did this by gluing the trimmers to the top of the former, using *Araldite*.

In the prototype *Philips* beehive trimmers were used and these were found to be a perfect fit with the formers used. The centre connection to the trimmer was brought through the tube to the lower tag while the outer tag on the trimmer was taken to the upper tag by a small piece of wire.

Undoubtedly the constructor could mount other types of trimmer in a similar way; the postage stamp type could be glued so that its adjusting screw protruded down the centre of the tube. Both connections to the coil would then be made on the outside of the tube.

## Other Types of Coil

Although the coils originally made by this method were small ones for use in a converter this method would probably lend itself very well to the winding of larger coils, such as would be found in Tx tank circuits and aerial loading coils or traps, where the coil is relatively large with a number of evenly spaced turns.

K. C. Wilson

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## ORDERS FOR BOOKS

So far as possible, all books we advertise can be supplied from stock and prices quoted are post free. It does occasionally happen that we are temporarily out of stock of particular titles but these are replaced as rapidly as they can be obtained. We are now doing a large business in radio and electronic books and it is always our objective to despatch orders on the day of receipt, securely packed (in packaging designed for us) to prevent damage in transit. It is only necessary to name title and price and enclose remittance, addressed to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H 0HF, for immediate attention to your order.



### NEW SLANT ON SLOW-SCAN TV

The September issue of the American journal *Radio-Electronics* features what it calls a TV Typewriter—briefly, a keyboard operated instrument designed to show the print-out, not on paper, but on the screen of any ordinary TV receiver. Among many obvious applications (teaching, CC/TV coverage, aid for the deaf, etc.) it can be connected to “modulate” an amateur transmitter, to show the message on a distant screen. Pretty obviously, it is a complex constructional job, involving five separate units, on IC boards, using a binary system to form the characters (covering the whole range of normal type-script presentation)

*Radio-Electronics* explains that such a project could not be fully explained in a single issue, let alone in one article. So only the basics of the design are discussed. Complete constructional details, with full-scale drawings and overlays, have to be purchased separately, at a

nominal charge of \$2. The TV Typewriter itself is costed at around \$120 to build at American prices, or about £50.

### ANOTHER RACAL SURPLUS SALE

Though called “junk sales,” those who have attended these events in the past will know that, in fact, what is offered is good-quality electronic merchandise surplus to Racal factory requirements—such as measuring instruments, test gear, materials, components, and electronic assemblies of various kinds. Everything on offer is sold only “as seen,” meaning that there is no guarantee as to condition or serviceability. But this is reflected in the price!

Date, time and location: Saturday, October 27, from 2.0 p.m., at St. Sebastian Hall, Nine Mile Ride, Crowthorne, near Workingham, Berks. The Ride connects the A.321 and A.3099, and the Hall is near a cross-road.



The Redifon main radio ship station Type 643 has been adopted for fast patrol vessels of the Kenya Navy, of which Maj. J. Kibwana is chief communications officer. The transmitter is all-solid-state, CW and phone, and runs 100w., with a companion receiver Type CJP. The Royal Navy is also taking these installations, for which a 400-watt broadband linear is available.

# VHF BANDS

A. H. DORMER—G3DAH

HE who grumbles about VHF/UHF propagation during the last few weeks needs his head examined! Without exception, readers' letters commenting upon conditions have been catalogues of rare DX worked with exceptional signal strength reports. Condensing the mass of detail into the space available is just not possible, but highlights are included in the following text.

## Contests

*Results:* The June Microwave contest attracted 21 entries and was won by G3LTF/A operating from Essex, and this in spite of the fact that he was not running 3 cm., just 23 cm. and 13 cm. only. His score on the lowest frequency band was some 1,100 points better than his nearest competitor, and was a major factor in his success. G3BNL/P in Gloucester was runner-up, his total including a valuable 1,500 points from 3 cm. operation.

That stalwart supporter of four metres, G3FDW, ably backed by G3JYP, operating from Co. Durham, led the field in the June 70 MHz Open event. They scored some 100 points more than the runners-up, GW4ABR/P, the Golden Valley Group, who were in Dorset for this occasion.

*Reports:* The 2m. QRP contest on

August 18 seems to have attracted a fair number of entries, and the occasion was blessed by good Wx and propagation conditions. If all the stations logged were in fact running the stipulated maximum of one watt input, there seems to be a very good case for scrapping all these QRO linears, or at least reducing output powers considerable, except when working long-haul DX under unfavourable conditions!

Propagation during the two-metre SSB contest on August 19 was unusually good over a wide area from GC to GM and from EI/GI to DL. Activity was higher than ever before, the "Liner-2's" contributing to no mean extent. There seemed to be hardly a spare channel between 145.3 MHz and 145.5 MHz, and this emphasises further the need for a 100 kHz sub-band allocation for this mode. A consistently good DX performer was GD8FFX/P who made one 37-point contact (with DK4QE in Hannover) and several others at 30-plus points. He amassed a total of 2,540 points from contacts with 176 stations of which 37 were Continentals. Tipped as a likely winner must be GW8BHH (New Radnor) with 2,850 points from 212 contacts including a fantastic 72 Continentals, although GWABR/P in Montgomery must be running him close with over 200 contacts. Despite recent comments about bad manners on 2m. (and this Column agrees with them) no glaring examples of selfish operating were noted, although some of the signals were barely distinguishable from FM, some had so many distortion products that, even at S7, they were many kHz wide on a good Rx. Many operators still seem to think that gabbling a call and a report, and using fast slang with Continental operators, was going to get them more points—a gross error! With the accelerating growth of operators using SSB, the contest did not appear to be too long.

Some comments: G3IUD (Cornwall) logged EI9Q. G3OHH (Staffs.) heard PA0JGF/M, PA0VV and FICCP. G5CP/M, using a halo in North Derbyshire, worked a French station near Calais. G3OUF (Amer-sham) contacted 25 stations with only 6 watts p.e.p. out.

*Forthcoming Events:* Good to see that 4m. and 70 cm. Cumulative

contests have been arranged. Dates for the former are: September 30; October 14, 28; November 11, 25; December 16 and January 6. All 1000—1200 local time. For the 70-Centimetre dates are October 13, 21, 29; November 6, 14, 22, 30. Time 2000-2200z.

Major contests to come are: UHF/NFD, coinciding with the IARU Region I 432/1296 MHz shindig on October 6/7 and the 2m./70 cm. CW event on November 3/4.

## VHF/NFD

Conditions were little short of superb for this, the major event in the VHF Contest Calendar. The leaders in this country were passing well over 300 at the end, but it remains to be seen whether this was good enough (when distances are computed) to compete in the IARU event with some of the Continentals who had over 400 contacts, even though operating from fixed locations. All VHF bands showed good DX potential with some falling off during the Sunday afternoon, Sept. 2. Once again, it was the early hours of Sunday morning which produced some of the best DX—200+ mile contacts on 70 cm. and considerably longer than that on 4m. and 2m. Rapid QSB was a bit of a problem at times, as was the excessive spread of some SSB stations. Three practices were observed which merit further comment. Many groups were "tuning both ends in". This is OK as far as it goes, but for optimum results would benefit from the occasional variant "Tuning 145.0 MHz out." The rock-bound chaps in the middle will not sit indefinitely waiting for you to work your way down, or up, to them however attractive the DX may be. The second point also concerns tuning practices. It often pays to go through the whole of the band when tuning down, or up, from an announced frequency. Several operators were tuning from, say, 145.0 MHz down and reverted to this datum after each contact, whereas a more productive system has been shown to be to go down the band from the frequency of the last contact, announcing tuning intention of course, and gradually working down to 144.0 MHz and then starting up the band again from there.

The last comment is applicable to contestants and non-contestants alike. It would be productive, as well as helpful, if the *location* were always included in the CQ call, particularly if the call sign is not yet listed in the *Call Book*. There are several reasons for doing this: Many operators use contests for county chasing and both portable and fixed stations may get more calls if their location is so identified. Others have slow-turning antenna rotators and an early announcement of QTH would give them a chance to get the beam round ready for a call, with improved chances of making a contact. It is also helpful to know the other man's beam heading while he is calling. Finally, the Licence requires that the location be stated at regular intervals when operating /P, and calling CQ on and off for 20 minutes without doing so contravenes the regulations.

Several readers have raised the question of the power limit for this event, and opinion seems to be sharply divided as to whether the "25-watt maximum" should be re-introduced for next year or not. Just why the limit was removed is not known. It is conceivable that the intention was to make British stations more competitive with their Continental counterparts in the IARU contest. Perhaps the idea was to encourage the building of Rx front-ends which would cope with the cross-modulation due to the proximity of high-power, portable stations on neighbouring hilltops—a situation, by the way, which has provoked many complaints from the locals. It has certainly entailed much rebuilding of NFD gear by contestants.

#### VHFCC Awards

Award No. 193 goes up to Lancashire for Richard Crossley, G8GPR (Carnforth) who has notched up the necessary 100 QSL cards for two metres. Operation began in September, 1972 with borrowed equipment (from G8FRO) and was interrupted by going up to University in October of the same year, but weekend trips home were used to build up a permanent installation which now consists of a '640A PA Tx with 60 watts input, a 6/6 beam at 30ft. a.g.l. (the a.s.l. being zero) and an EC-10 Rx preceded by a Mosfet converter

with FET pre-amp. Richard has now worked some 380 different stations in 41 counties and 6 countries, with the best DX as F1CCP. All contacts were made on F3 or A3. Good to see that plans are well advanced for 70 cm. operation as well as SSB on 2m.

Dennis Smith, G8ATY (*ex-D2GL*) gains Award No. 194 for 2m. operation from Hanslope, Bucks. He runs phase mod. to a QQV06-40A PA, most of the other valves in the equipment being EF91's, since he had so many of them lying around. Using three in parallel as the driver, he can get three watts of RF out of them. On receive, he uses an E88CC converter with an HRO-5T, tuning 27-29 MHz as the IF. Antennae have varied from an 8/8 beam, through a halo, to the current long Yagi with gamma match at 37ft. a.g.l. Dennis also holds the call G6AAN/T, and hopes to be able to work with video before the end of the year.

#### The Scottish Scene

An interesting visitor to Scotland last month was OH2LX/AM (Aeronautical Mobile) who flew into

Aberdeen on August 18 and gave some of the lads their first-ever contact of this type. He was worked by GM8BRM/P and GM8CBQ/P at 5 & 9 both ways while running one watt of FM on 145.0 MHz from the Piper aircraft. Also on board were OH2BLU and OH2BJO. Members of the Grampian FM Group saw to it that their stay in the Granite City was memorable.

Tom Simpson, GM3BCD, found a new position for his halo antenna while holidaying in Norfolk. He stuck it up on a windmill and promptly worked an ON5 at RST 539 while only running a few *milliwatts* output. Two newcomers to 2m. are GM4CLH and GM8HXM who were both out portable near Edinburgh on the first day they were licensed and were copied well up into Angus. GM3BQA is now on 4m. and likely to be well sought after—by GM3TNT in particular, one would imagine.

Mike Parks, GM8HBU, secretary of the West of Scotland A.R.S., writes in with a handsome offer to arranged DX-peditions to the rarer Scottish counties with stations South of the Border especially in mind. He

#### OSCAR VI—Prediction Data

Orbit	Date	Time	Position	Direction
4453	Oct. 6	0741	32°E	N/S
4454		0936	04°E	N/S
4455		1130	25°W	N/S
4458		1651	45°E	S/N
4459		1846	16°E	S/N
4460		2041	13°W	S/N
4461		2236	42°W	S/N
4541	Oct. 13	0820	23°E	N/S
4542		1015	06°W	N/S
4543		1210	35°W	N/S
4546		1731	35°E	S/N
4547		1926	06°E	S/N
4548		2121	23°W	S/N
4628	Oct. 20	0705	41°E	N/S
4629		0900	13°E	N/S
4630		1055	16°W	N/S
4631		1250	45°W	N/S
4634		1810	25°E	S/N
4635		2005	04°W	S/N
4636		2200	33°W	S/N
4716	Oct. 27	0744	32°E	N/S
4712		0939	03°E	N/S
4718		1134	26°W	N/S
4721		1655	44°E	S/N
4722		1850	15°E	S/N
4723		2045	14°W	S/N
4724		2240	42°W	S/N

Times shown are for crossings at 52°N on Saturdays. Orbits beyond 45°E or W are not included. To calculate later orbits, deduct 1.15 minutes and add 1.29° each 25 orbits. Time in GMT. Position referred to Greenwich.

## THREE BAND ANNUAL VHF TABLE

January to December, 1973

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL Points
	Countries	Countries	Countries	Countries	Countries	Countries	
G3ZMD	56	6	67	11	34	5	179
G3NHE	36	6	74	13	39	8	176
GD2HDZ	36	5	76	10	31	5	163
G3DAH	41	4	58	13	28	6	150
G3OHH	57	6	56	10	9	2	140
G3FIJ	38	4	51	9	24	7	133
G4BEL	23	2	60	11	30	6	132
G4BMM	29	3	56	11	26	7	132
G8FUI	—	—	76	11	24	3	114
G8EOP	—	—	62	12	30	2	106
G2AXI	39	4	43	7	6	1	100
G8GNE	—	—	64	11	17	5	97
G4ASR	28	2	57	7	—	—	94
GW8FOL	—	—	81	11	—	—	92
G8BXX	—	—	58	12	19	2	91
GW8FKB	—	—	76	11	—	—	87
G8DNK	—	—	75	12	—	—	87
G8ECK	—	—	67	13	6	1	87
GW3ZTH	—	—	66	14	—	—	80
G3BW	—	—	71	9	—	—	80
G3XDY	—	—	65	11	—	—	76
G8FMK	—	—	41	5	27	2	75
G8CKY	—	—	53	10	7	2	72
G8CKZ	—	—	60	11	—	—	71
G8FQE	—	—	58	13	—	—	71
GW8DUP	—	—	58	9	—	—	67
G8HET	—	—	50	12	—	—	62
GM3ZVB	8	1	45	8	—	—	62
G8FWB	—	—	53	9	—	—	62
G8GPR	—	—	55	6	—	—	61
G4AEQ	—	—	36	4	17	3	60
G8BKR	—	—	38	5	14	2	59
G3SMU	18	3	10	2	16	3	52
G3FPK	—	—	43	6	—	—	49
GW8EHK	—	—	41	8	—	—	49
G4AJE	—	—	38	8	1	1	48
G18EWM	—	—	41	7	—	—	48
G4BKG	—	—	40	7	—	—	47
GW8BXQ	—	—	39	8	—	—	47
G8ATY	—	—	39	7	—	—	46
G8CBU	—	—	32	3	6	1	42
GW3CBY	7	2	21	5	5	2	42
G8DGR	—	—	32	2	6	1	41
GW4BXE	—	—	34	5	—	—	39
G8DOT	—	—	27	8	—	—	35
G8GXE	—	—	28	5	—	—	33
G8GNC	—	—	28	2	—	—	30
G8GBV	—	—	19	3	5	1	28
G4AEZ	—	—	23	5	—	—	28
G8COG	—	—	23	3	—	—	26
G8EMS	—	—	20	2	2	1	25
G4BOW	—	—	23	2	—	—	25
GD4BJL	4	3	13	5	—	—	25
G8FUL	—	—	23	2	—	—	25
G8GJB	—	—	21	3	—	—	24
G8ECU	—	—	19	2	—	—	21
G3EKP	8	3	4	2	2	2	21
G3WHK	—	—	17	3	—	—	20
GW8CMA	—	—	14	3	—	—	17
GW8CGH	—	—	12	2	—	—	14

The Table shows claims to date from January 1, 1973 and runs through to December 31, 1973. Your claims should be sent to "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ each month.

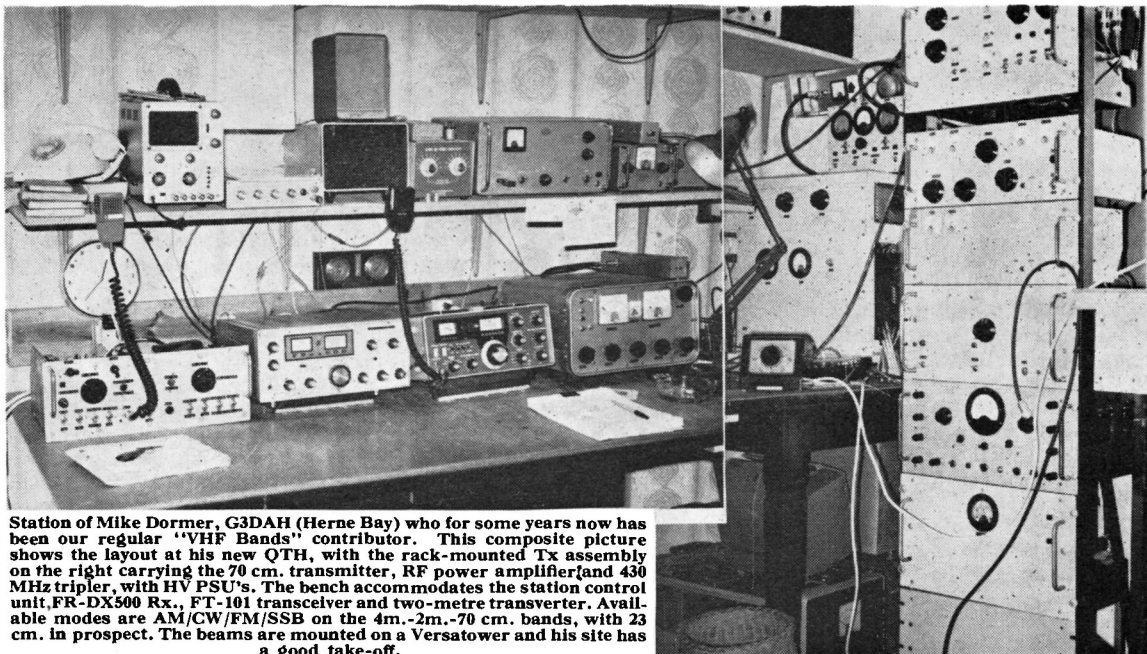
says that the power, the antenna, and sites and the will are all there and that, if sufficient interest is shown in the venture, they will go ahead. Now this is too good to be missed, both by the Sassenachs and the GM themselves, and the first expedition can be mounted over the weekend on November 10/11 if the necessary support is forthcoming. They will have 2m., possibly 4m. also, so write in *now* for skeds to: GM8HBU, 18 Netherplace Crescent, Newton Mearns, Glasgow, G77 6BT. The exact locations, callsign and operating times can be announced next month if all goes well.

Putting in a good signal to the South during the lifts around August 24 was GM8BDX in Duns., Berwick. He ran 100 watts p.e.p. of SSB from the 360ft. a.s.l. site there. GM8DMZ/P on the Mull of Gallo-way was another good signal, as was GM3WOJ who made it with FICCP, among other choice DX.

## The Welsh Scene

GW3NJW (Cardiff) made a couple of very nice MS (meteor scatter) contacts during the recent *Perseids* shower. On August 11, he worked DJ5DT with signals up to 30 dB over noise in 500 Hz bandwidth. The QSO took 90 minutes to complete and included bursts up to nine seconds long. On August 12, he had another go, but conditions had deteriorated and no QSO was effected in spite of many hours of effort. Later that evening he made contact with DJ6CA and this took three hours to complete due to the very short bursts. Signals were occasionally 50 dB above noise, but mostly around the 30 dB mark. These contacts were made with comparatively straightforward equipment. At GW3NJW the power output was 35 watts to a 5-ele. beam, at DJ5DT it was 100 watts output to a 10-ele and at DJ6CA 200 watts e.r.p. with a 10/10 ele. All this goes to show that complicated gear and very high power are not required, but a lot of patience is! Showers until the end of the year are: *Giacobinids*, Oct. 9; *Orionids*, Oct. 18-23; *Leonids*, Nov. 14-15; and *Germinids*, Dec. 10-13.

GW8BXQ (Pembroke Dock) comes up with news from that quarter. A VHF net runs each evening on 144-35 MHz, members



Station of Mike Dormer, G3DAH (Herne Bay) who for some years now has been our regular "VHF Bands" contributor. This composite picture shows the layout at his new QTH, with the rack-mounted Tx assembly on the right carrying the 70 cm. transmitter, RF power amplifier and 430 MHz tripler, with HV PSU's. The bench accommodates the station control unit, FR-DX500 Rx., FT-101 transceiver and two-metre transverter. Available modes are AM/CW/FM/SSB on the 4m.-2m.-70 cm. bands, with 23 cm. in prospect. The beams are mounted on a Versatower and his site has a good take-off.

usually active being: GW3KGD, GW3LXI, GW3RPR, GW3XJQ, GW4AKO, GW8BXQ and GW8HVP. Add to that total, GW8CFU and GW8CRY, who are on 2m. SSB, and the number available for contacts, from what is usually regarded as a "rare" county, are considerable and one has to ask oneself why many more QSO's are not made. The Pembroke Radio Club plan to have activity weekends on two metres, the first being over October 27-28, and thereafter during the weekend immediately following the last Friday of each month. Available modes are AM on 144.53 MHz, FM on 144.35 MHz and 144.48 MHz and SSB on 145.40 MHz. Callsigns are: GW3RPR/A, GW3XJQ/A or GW8BXQ/A. Requests for skeds, with s.a.e. pse, to GW8BXQ, *QTHR*.

GW8FOL (Anglesey) has found propagation to be best on a North/South axis, and has been working strings of F and GM stations of which F1COF at 5 & 9+20 dB and GM8FFX/P in Stirlingshire at 5 & 9 were two of the best. He found time for GC8AAZ (Jersey), G3IUD (Keverne on the Lizard)

and, to the East for a change, G3DAH.

#### From Ireland

Several choice DX possibilities from here during the last few weeks. GI3GXP, GI3VPK/P, GI3TLT/P, GI6YM/P and GI8EWM were all workable over to the East Coast. In addition to these stations, GI4AIO and GI8FLQ both now have a "Liner 2" and GI8HIE is on the band with a home-built transverter.

In the South, EI9Q and EI5BH have been particularly good signals over much of the country. 5BH operates from Athlone and had a real ball on August 12/13 with the best DX as F1CSX/P, in QRA ZI50j, who was running only four watts at the time, but managed 5 & 7 both ways. It was on this night, during an RTTY QSO, that he heard a station calling CQ with the prefix QX3. Unfortunately, Paul was unable to get the remainder of the call, and the signal faded after a few moments. We mentioned last month that Paul had established a 2m. "First" by his RTTY contact with GI3NEX on July 27. He also

holds the EI/G RTTY "First" with G6CW and another with DM2DBO in Berlin, still standing from March 24, 1969 it seems. EI4AL and EI7AF are rebuilding and not available at the moment.

During the World Ploughing Championships in Co. Wexford, between October 3-6, 2m. and 4m. stations will be active from the site, signing EI0WPO, operated by EI5BH, EI8BZ and EI5CI. They will be on VHF during the evenings.

#### From GC and GD

GC2FZC in Guernsey is very disappointed with the 70 cm. traffic over there and asks for more beams to be turned his way. He is on the band checking GB3SC and looking for contacts at 0830 and 1830 local time each day, and if his 70 cm. signal is as good as his 2m. signal, there should be many times when a contact is on, particularly in the mornings. So, how about it?

GD2HDZ has a bit of a moan concerning poor operating methods on 2m., multi-station nets spot on 145.41 MHz being the main source of complaint. Now, Heaven help us, he has been hearing stations

## About The VHF Spectra

calling "CQ Dog X-ray"! What will they do next?

### Activity

23 cm.: Activity on this band is increasing, one of the latest recruits being G8BKR, Bristol. He runs a 2C39A at 8 watts input to an 8/8 at 33ft. The converter is the *Micro-wave Modules* job. Best DX to date is with G8ANZ/P (Quantocks) at 65 km. and G8AH near Chepstow at about 20 km. G4BYV (ex-G8BYV) of Dereham, Norfolk, had a fine QSO with F3LP at 5 & 7 on August 24 at 2055z, as did G4ALN in Romford and G3PQR in Frinton-on-Sea. 'ALN also worked PA25HVA at 5 & 9 both ways. Propagation on that night was reported to be better than that on 70 cm.! It was surprising for your scribe to learn from two independent sources that, during VHF NFD, some 70% of stations on 70 cm. were calling for 23 cm. contacts. Friday nights between 2000-2200 local time have been proposed as activity periods in the South.

70 cm.: G8ECK (Sunbury-on-Thames) is now QRV on 70 cm. with 2 watts out from a varactor to a Parabeam at 30ft. G3BW (Whitehaven) is still having some trouble with the DJ6ZZ board for 70 cm. and would welcome correspondence with others in the same predicament. If you wondered who the operator was at GM3BA/P during the SSB contest and again with the MARS Group during VHF NFD, Bill was there, and finding things a bit different from the comparative quiet of Cumberland! G8EOP, Dewsbury, Yorks, now has SSB on 70 cm. and runs 60 watts input to a '640A linear. Skeds can be arranged for most evenings and for Saturday and Sunday mornings.

G3NHE (Sheffield) was able to work the G4AGE expedition to Scotland in Dumfries, Kirkcudbright, Lanark and Ayr and was one of the only three English stations to do so, the others being G3NEO (Sheffield) and G5UM (Leicester),

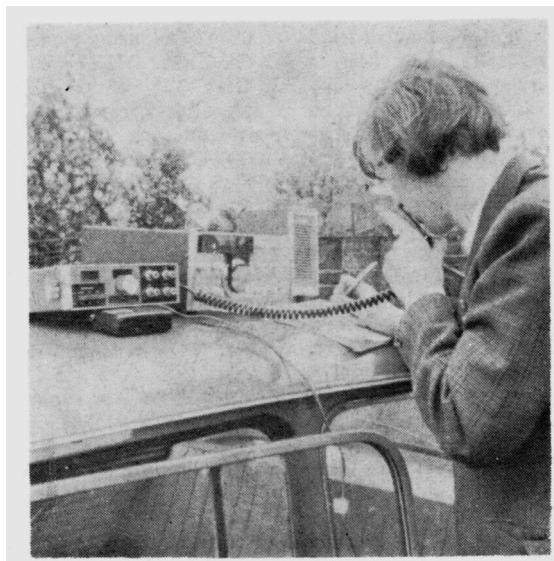
in spite of the fact that signals were 599 from some sites. One must attribute this to lack of activity again. A conclusion which can be drawn from these results, when matched with the listening tests of G8AGU on his trips to GM as reported recently, is that it is well worth while taking 70 cm. gear with you when you are planning a foray. It will be a welcome addition to the efforts to boost the traffic on the band. '3NHE raises another point which seems apposite in this context. Do we tend to regard 70 cm. as a local natter band and fail to search for the DX after a CQ call? He has found it frustrating in the past to hear stations 100-150 miles from Sheffield making local contacts without apparently looking for the weaker DX although the band was open. A check on GB3SC would have revealed this. Guilty?

2m.: G3OHH (Mow Cop) sends in

a report of his activity during the IARU Contest which reveals a 4:1 ratio of SSB to AM/FM. His final score was 202 contacts yielding 29,400 points against some 25,000 last year.

A French balloon transponder *Anjou 8* is due for another launch, on October 23. You transmit 432.1-432.4 MHz and receive 145.6-145.9 MHz. Beacon on 146.0 MHz and telemetry on 145.8 MHz. Reports would be welcomed by F1NK, Georges Guinard, 15, route de Villers, 54520 Laxou, France.

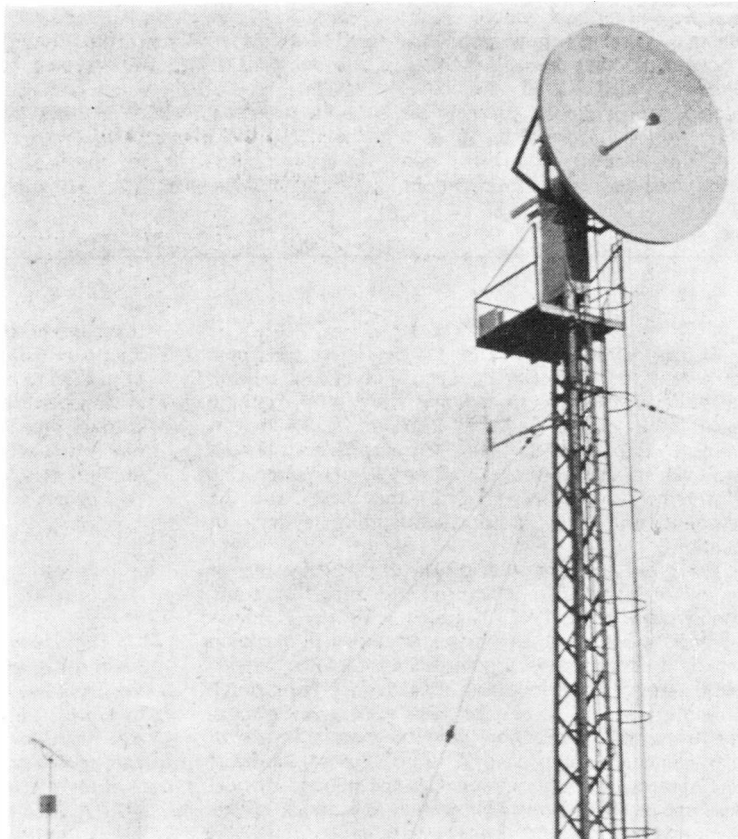
"The tumult and the shouting dies" as Kipling once said, and even if the Captains and the Kings have not departed, his next line, "Still stands thine ancient sacrifice," might be applicable if it means that, at last, as seems the case, a sensible compromise has been reached, with both parties yielding up some of their "rights," between those who operate FM out of Zone at the top end of the band and those who want to work *Oscar VI* up there. That is fine as far as it goes, but it doesn't seem to go quite far enough, in that it doesn't resolve the problem for the GM and G1 stations operating in their allotted Zones who want



S. C. Ruff, G18EWM, Braemar, Lynda Park, Jordanstown, Co. Antrim, Northern Ireland, ran this outfit during a portable occasion earlier this year. He is on two metres only and his score now stands at 48 points in the Three-Band Annual.

DL8AQ is one of the West German stations equipped for E-M-E (Earth-Moon-Earth) operation, which calls for much careful schedule-keeping under the right conditions, with gainy antennae. His address is Karl Kummel, 8000 Munchen, Hindelangstrasse 3. The dish can be used on 70-23-12 centimetres and for E-M-E on 23 cm. (1296.01 MHz) he runs 150 watts, with a receiver designed for the job. Other VHF antennae are just visible at lower left.

(Picture courtesy DL1CU "QRF")



to communicate with the Southerners, and *vice-versa*. Perhaps a little more sacrifice and a little less shouting are still required.

Touching further upon *Oscar*, G6RH has sent in an analysis of his results to date which makes impressive reading. Total QSO's, 996; Total VE/W worked, 212; different stations worked, 297, of which 67 are VE/W; countries worked, 40.

G3FPK advises that G8GQY/P should be operating from Millom, Cumberland each Thursday evening until the weather gets too bad, frequency around 145.3 MHz. '3FPK should be on CW on 144.036 MHz by the time this appears.

G8AEJ (London) is now G3TDG, and if you wonder how he managed to get that G3 call, it is because he held G6TDG/T. A call well-known on two metres is that of PA0CML. It certainly *should* be—he has now worked 1,512 different British stations on the band. Add to that 1,140 DJ/DL, 142 OZ and an unspecified number of PA0, and you can see that Cor doesn't waste much time off the air. *Cor!*

An (as yet unofficial) French beacon with the call F9YD is operating from near Angers in QRA ZH48 on 145.92 MHz.

The next meeting of the South-East UHF/VHF Group is scheduled

for October 12 at the Electronics Building, University of Kent, Canterbury. Time 1930 clock and the speaker will be Richard Baker, G3USB, of Pye, who will be talking about the two-metre repeater.

Our old VHF friend G2JF is now ZS5JF and QRV on the HF bands.

4m.: Once again, this band has been capable during the last few weeks of supporting more DX than was actually worked. The four-metre contest and VHF NFD showed how many fixed stations are equipped for the band, but where do they all get to at other times? G4BMM in Luton made it with G13VPK/P, for

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*"Short Wave Magazine" covers the whole field of Amateur Radio  
and should be obtainable to order through any newsagent.*

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example, using an indoor 4-ele. antenna, so that's how good the propagation has been. G3NHE (Sheffield) also raised the latter using a simple dipole, to bring his VHF Tables 4m. score to 36 + 6 with this elementary antenna and 5 watts or so output. Conditions

were good enough on August 13 for G3SMU/M at Winter Hill (Bolton) to work G13BWM, 40 km. west of Belfast, on a whip antenna at 5 & 5 both ways! G3VPS/P in Cheshire was RST 599 and GW3MHW/A in Cardigan RST579 in the South East on September 11. All good

stuff going to waste.

#### Deadline

Deadline for the next issue is October 6. Correspondence to: "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ as usual. Have fun, good DX and 73 de G3DAH.

### WHAT PILOT?

It may appear that with all the latest electronic equipment for navigation, weapon aiming and release, the pilot of the modern military aircraft has nothing much to do except glance at instruments, fiddle with switches and hope that the various "black boxes" don't all go up in smoke at once (though surely the pilot himself would *never* agree—and there's still the autopilot and fully automatic landing system to mention!).

Several of these electronic devices of particular interest are two of Marconi's avionic products: Their "head-up" display (*HUD*) and TACAN system. The *HUD* allows the pilot to see his instruments and aiming information apparently superimposed upon his view of the outside world through the windscreen (effectively a see-through instrument panel), so that he gains maximum information from the simultaneous and co-ordinated view of instruments and outside world. Furthermore, the latest development of the system enables the pilot to do just the same *at night*, being able to find and attack targets like bridges, ships and vehicles, at a range of several miles, with the same ease as if it were daylight. This is achieved by displaying the television-like picture from a night-viewing device in the head-up display, together with the usual guidance symbols. (Marconi's *HUD* is already standard equipment on American A-7 Corsair attack aircraft).

A *TACAN* system—Tactical Air Navigation—provides the pilot with highly accurate information on his aircraft's position, using signals from ground beacons; it also has an air-to-air capability giving distance read-outs between similarly equipped aircraft. The Marconi *TACAN* is the first such all-British system, and was developed primarily for the U.K. version of the Panavia MRCA (Multi-Role Combat Aircraft). The *Tacan* is in fact derived from two other Marconi avionic systems—their VOR/ILS and DME (Very High Frequency Omni-Directional Ranging/Instrument Landing System and Distance Measuring Equipment). The system produces highly reliable and accurate range-and-bearing from an external beacon up to a maximum distance of 300 miles; frequency range on the transmitter side is 1025 to 1150 MHz, while for the receiver it is 962 to 1213 MHz; power output is 2.5 kW peak pulse power output plus/minus 2 dB.

Lasers for target acquisition and locking-on, and computers for every kind of data analysis and decision-making are by no means new to military aircraft, and avionic systems account for anything up to half the total value of the modern military aeroplane.

Whatever the pilot has or has not to do nowadays,

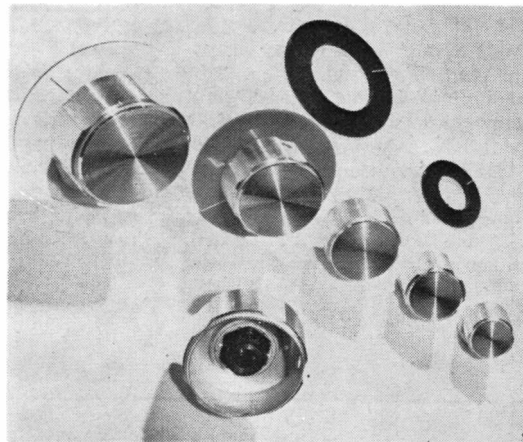
there can be no doubt that military aviation has come a long way from the days when the pilot, in his Sopwith Pup, tried to conquer his opponent with a brick (eye-ball guidance with manual propulsion) in one hand and a revolver (eye-ball target acquisition and chancy locking-on) in the other, and with the stick between his knees (autopilot). Anyway, who's ever heard of a Pup, or for that matter a radar controlled automatic gun-turret?

C.A.F.

### MORE R.A.E. COURSES

Though we thought we had closed the book with the Second List of R.A.E. Courses shown on pp.434-435 of the September issue, some more notifications have come in since. While all classes have already started (or will have done by the time this appears in print) late comers will no doubt be accepted, at:

East Herts. College, apply J. V. Beavan, G3GBL, *QTHR*, (lecturer); Ilkley Further Education Centre; Leeds, South and Farnley, for details apply F. Stork, G3TEE, *QTHR*; London (Islington), de Beauvoir Evening Institute, Tottenham Road, N.1.; London (Merton), Technical College, Morden Park, London Road (01-640 3001); and Pontefract at Knottingley High School, details A. E. Ashby, G3HCW.



West Hyde Developments, Ltd., ("Contil") now do a nice range in ready-made instrument knobs. The designs offered will cover most requirements. Made in aluminium with a handsome, glossy turned finish, they have interchangeable dials in various colours, with a scale line.



# THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for November issue: October 4)

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

LAST month we announced the dates for MCC. This time, we have the Rules in full and, as will be seen, a new formula has been adopted—no, not just for the sake of change, but in an attempt to provide an even better Contest. A little consideration will show that, with the multiplier system, astronomical scores are possible!

This has always been an event for Clubs; this year we are adding the additional flavour of county-chasing and EU country-chasing to the formula, as well as simplifying the tabulation of your scores. In view of the geographical changes to take place with effect from next April, this is the last time the counties concept can be used in its present form, so it is hoped that all Clubs will turn out and make it a grand finale. For next year, we have quite another scheme in mind.

## Club Reports

Taken this time regionally, and commencing with the clip devoted to the West Country, Wales, and Ireland.

Our first port of call this time is at **Ballymena** who have a new Hq. in a cottage at the summit of the highest hill in the district, with a two-element Quad to make best use of the site. One room is being converted into a lecture room for Morse and R.A.E. classes, which they propose to have started by the time this comes to print. Meetings are held at this QTH, 86 Culleybackey Road, Ballymena, every Tuesday evening, and they have a "Yarn-in" as they call it on Sunday afternoons, too.

**Plymouth** have the sad task of recording the death of Harold Jones, G5ZT, who was for so long one of the prime movers in Amateur Radio in the area. At the Club Hq. at Virginia House, Bretonside, Plymouth, October 2 will be a Junk Sale, October 16 an Open Meeting, and November 6 a Film Night, and during all this time it is hoped the "restyling" of the Club will be continued to its conclusion.

At **Yeovil** the routine is of weekly get-togethers, the venue being the Youth Centre at 31 The Park. On Thursday October 4, the highlight will be the showing of G8DNF's tape-and-slide lecture of the Andorra DX-pedition.

The college at **Blackwood**, known as the Community College, Oakdale is the venue for the local Club on

October 12, when GW3UUS will show colour slides of his trip to U.S.A., with particular reference to VHF and repeater activities there. The second meeting in October is a blank, owing to the onset of half-term holidays.

**Cornish** serve the county in various ways; the main meeting is at the SWEB Clubroom, Pool, Camborne on October 4, when there will be a Junk Sale first, and a talk to follow by G3VWK covering DX/TV reception. The *Newquay* group have October 3 for a talk about a Standing Wave and Power Meter and October 17 for an SSB transceiver, fully transistorised, for 3.5 MHz. Then there is the *West Cornwall* group who have alternate Wednesdays with no programme specified for October. *Newquay* are at Treviglas School, and the *West Cornwall* crowd at the Borough Surveyor's Staff Office (Old Office), Guild Hall, Penzance—and all are part of the Cornish group.

A new home has been found for the **Exeter** group, now at the Air Training Corps Hq., The Quay. The first meeting here will be the AGM, on Monday October 8, at 1930; and it should be noted that there are possible changes of meeting dates in the wind so it would be very advisable to make sure the AGM is attended, quite apart from the importance of this meeting as such.

According to the secretary the **Torbay** membership is quite definitely growing week by week. Tuesday evenings are proving very popular, with Morse tuition, darts, and the alterations to the Club room for the coming winter all taking their part. The Saturday evening formal is on October 27, when the subject will be Stereo, by P. Jarvis. All these activities will be at the Hq. in Bath Lane, rear of 94 Belgrave Road, Torquay.

## South

Interested in Direction-Finding? Possibly the only Club in the country specialising in this are **Dartford Heath**, as their *Compass Points* newsletter clearly shows—but they are not behind when it comes to events like entering Field Days, either, or in giving Morse and R.A.E. aid to members. You can find them in the Scout Hut, Broomhill Road, Dartford, on October 5 and 19, or at the J.O.T.A. station which they are running on October 20/21 for the Erith and Crayford Scouts Association.

(over)

It seems quite a while since **Thanet** last reported in with their news. They foregather every Friday evening at the Hilderstone House Community Centre, Broadstairs, and the programme of events for October runs something like this: September 28, a talk by G3TDZ on the Club Project; October 5, a visit to the control centre of the Thanet Water Board; October 12, visit to the South-East VHF group meeting at Canterbury; October 19, a talk by G3EMU on his Emupressor and other products; and on October 26 they turn attention again to the Club Project.

**Cambridge University** is another Club who report only at long intervals. They have alternate Tuesdays, at one or other of the Cambridge Colleges, and during the September/October periods we notice such doings as a talk by the Sinclair firm on their Hi-Fi gear; by G3LTF to talk about Aircraft Landing Systems; G3JGW on RAEN activity; and a BBC member discussing SIFAX. For more details, get in touch with G3XZP at the address in the Panel, p. 498.

Wolverton Youth Centre is home base for the lads of **North Bucks**. On October 8 they have Eric Mollart to talk about D/F Contests, and on November 12, G2ANS will describe and demonstrate the Spectrum Analyser.

A treat is in store for **Bishop Stortford** on October 15, when Lou Schnurr, G5AAN, will be once again—this is his umpteenth return visit to them—making crystal-clear one of the more misunderstood facets of Amateur Radio, by way of talk and demonstration. To get to this one, find the traffic lights at the centre of Bishops Stortford, and turn up the hill to Windhill; the British Legion club is on the left-hand side at the top of the hill, with parking available on the opposite side of the road or directly outside the building.

Another crowd with a "special" in the lecture line for this month is at **Crystal Palace**, where Ron Ham will be talking about the Sun as Cause and Effect in connection with Radio Propagation. This is on October 20, at Emmanuel Church Hall, Barry Road, London, S.E.22.

A change of venue is noted by the **Farnborough**

group, who now get together on the second and fourth *Wednesdays* at the 8th Farnborough Air Scouts' Hut, Rectory Road Recreation Ground.

Latest news from **Chiltern** covers August and September, but we can say that they will get together in the Works Canteen at the Ernest Turner factory on October 24, for a talk-with-slides, by G8DNF, on a DX-pedition to Andorra.

A Family Evening is in prospect for **Acton, Brentford and Chiswick** on October 16, when a Film Show of interest to all the family will be screened. This one is at the Club's Hq. at Chiswick Trades and Social Club, 66 High Road, Chiswick, London W.4.

Now **Verulam**, who assemble in the Market Hall, St. Albans on October 17 at 7.30 for 8.0 p.m. although we cannot at this moment tell you exactly what is on the programme—their newsletter regularly just misses our deadline! However, be that as it may, there is always something doing—we can't recall how long ago it is since last they had a meeting with nothing arranged.

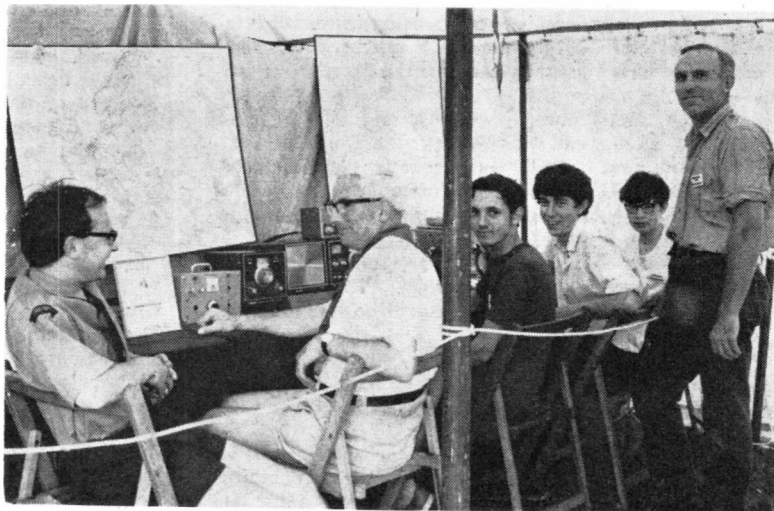
**Edgware** have a talk and demonstration of Amateur Television on October 11, given by G6GDR/T, and an informal evening on October 26; both are at Watling Community Centre, 145 Orange Hill Road, Edgware. An extra event is on October 12, also at the same place, when they will put on an exhibition station in connection with the Community Centre Building Extension Fund appeal, which they understand will be inspected by the Mayor and Mayoress of Barnet.

The British Red Cross Hall, The Crescent, is home to the **Maidenhead** Club, who on October 4 will be listening to Eric Mollart on D/F Hunting, and on October 16 will have a talk/demonstration by G6OPB/T on Amateur TV.

A slide show on October 8 is an event which appeals to the **Echelford** chaps, if past experience is anything to go by, and equally one would expect the Surplus Sale on October 25 to be crowded. Both are at St. Martins Court, Kingston Crescent, Ashford, Middx.

Weekly meetings are the form at **Dunstable Downs**, who have "between weeks" on October 5 and 19. Then

Station GB3BSI on Brownsea Island, Poole Harbour, Dorset, during the local Scout jamboree recently. They made 900 contacts in 70 countries from 50 hours of operating, running an FT-101 with HW-14 linear, Trio TS-510 and a multi-band aerial system. Operators shown here include G3SEM, G3BHK (centre), G4BIN and G3OBD (right).



there is the Constructors' Contest on October 12; and on October 26, G3VVS will be talking about the Spectrum Analyser.

October 4 is the date for the main meeting at Cray Valley, who have their place at the United Reformed Church Hall, Court Road, Eltham, London S.E.9. In addition and at the same QTH there is a "Natter Nite" on October 18.

All sorts of things seem to be happening at Purley, where the Hq. is at Landsdowne Hall, Landsdowne Road. Normal meetings are on the first and third Fridays in each month, and in addition Club nets are held, Sunday 0900 on 3665 kHz, with G4AKG as net control, and Sunday 1000 on 144.65 MHz.

Reigate next, and here the members are rather taken up with the preparations for the South-East VHF Convention in November, at Crawley. A change of date is noted for the formal meeting, which is now on October 18, when the club will hear G3RIN talking about their VHF Transceiver project. at St. Marks Church Hall, Alma Road, Reigate. In addition, earlier in the month there is the informal gathering at the Marquis of Granby, Hooley Lane, Redhill.

Second and fourth Thursdays of every month are the dates to be remembered if you want to attend a get-together of the North Kent group at the Congregational Church Hall, Bexleyheath, adjacent to the Clock-tower. However, at the time of writing we have no details of the programme; for this we have to refer you to Secretary G4ARQ, address as Panel, p. 498.

For Brighton (Technical College) things are now back in full swing, on alternate Mondays, this giving us dates on October 1, 15 and 29. Again, for the details, we must refer you to the Secretary—see Panel.

For the Thames Valley meeting on October 3, Harold Barnard, the retired Editor of *Wireless World*, will speak to the group members, and their guests, on the history, development and production of our respected contemporary. Since *Wireless World* had so much to do with Amateur Radio in the early years his talk should be of great interest.

#### Midlands Clip

One hopes our ideas of "The Midlands" coincides with that of readers!

First on the pile is the Cheltenham (RSGB) *Newsletter*, who have their Junk Sale on October 4, the venue being the Royal Crescent Hotel in Clarence Street.

Nottingham, at the time of their letter, were still, as they put it, suffering from the summer doldrums, although at this end we have noticed no falling-off in their activities. During the autumn there is to be a slight reshuffling of the sequence of their weekly doings, so that, in October, for instance, the talks will be on the 11th and 25th; the Forum will be on the 18th; and the Activity Night on the 4th. Details on the talks can be obtained from the hon. Secretary—see Panel.

Two evenings a week is quite a high level of activity for any Club to keep up for months on end—the South Manchester group seem to thrive on it! Every Monday evening the VHF types foregather at the Club shack at "Greeba," Shady Lane, Manchester 23, and on Fridays everyone is at Sale Moor Community Centre, Norris Road, Sale, for the lecture or whatever-it-is which has

### MCC—THE TWENTY-EIGHTH

#### TOP BAND CLUB TRANSMITTING CONTEST

##### RULES

- Object:** Clubs to work one another and also geographical counties, U.K. and Eire.
- Dates:** Saturday-Sunday, November 3-4, 1700-2100z (eight hours in all).
- Band, Power and Mode:** Top Band, ten watts, CW only.
- Call signs and Identification:** Clubs to use their own c/s (or that of a nominated member) and identify by QTH/name, e.g., "Coventry Club," or as conveniently abbreviated.
- Scoring:** Count 3 points for each Club worked once in each session. Score double points for contacts between Clubs G/EI, G/GC, G/GD, G/GI, G/GM, G/GW. Similarly, Clubs in EI, GC, GD, GI, GM and GW take double points for Club contacts between these prefixes.  
Take 2 points for each different county worked, but for once only over both sessions. Hence, Leicester Club would give five points to a G/Club in another English county worked once, and would take 6 + 2 for working a GM/Club once, or 12 + 2 if that Club was worked during both sessions. Non-Club stations make one point, score for their county multiplier and may be worked once each session. EU contact also count one point only.
- Multiplier:** Is the total number of different U.K./Eire geographical counties worked once each only. EU countries score once as additional multiplier.
- Logs:** To be legibly set out on one side only of quarto of foolscap sheets, with Club call sign used and name on each sheet, under the following heads: (A) Date: (B) Time: (C) Station worked: (D) RST given: (E) RST received: (F) QTH/Name Club worked: enter "non-C" for non-Club: (G) QTH non-Club: (H) County, or EU country: (I) Points claimed for QSO: (J) Tick opposite each QSO claimed for multiplier credit.  
At foot each page, total points claimed for that page. Column headings may, if desired, be (A), (B), (C), etc. as given above. Logs set out in any other form will not be accepted.
- Disqualification:** This will be at the discretion of the invigilators and could include a consistently bad note (rough or chirpy), signs of deliberate interference, use of excessive power, or over-driving a transceiver resulting in strong key-clicks or a spread of spurious.
- Contest Call:** Use "CQ MCC" only when calling up. Shortened call signs used in course of QSO will disqualify.
- Final Tabulation:** The last log sheet to show the total of QSO points claimed, figure taken for Multiplier, and resulting grand total, e.g., 2384 points times 10 counties equals 23,840 points claimed.  
Give also details of equipment used, dimensions of aerial and call signs of operators.  
Include a general statement on the Contest itself—experiences, comments, criticisms or suggestions.
- Entries:** Addressed "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ, must be posted to arrive not later than Friday, November 16. Results in full will appear in the January, 1974 issue of SHORT WAVE MAGAZINE, due out on December 28. The Editor's decision is final on all matter affecting the Contest.

been set up for that evening. This month of October sees G8FXO on Audio Processing on the 5th, followed by a film-and-lecture by P. Goldstone of Ferranti on Semiconductor Manufacturing Techniques. This is followed by another film-plus-talk, this time by G8HIW on Power Distribution. Then on October 26 G3SVW continues his slide-show of Life in the Antarctic.

**Melton Mowbray** missed the deadline with their advice of the Annual General Meeting on September 21, at the Club Hq. at the St. John Ambulance Hall, Asfordby Hill; but we are aware that they continue to be active and thriving. For details, contact Secretary G3NVK, address as in the Panel, below.

**Lincoln** have accommodation at the premises of the Lincoln Astronomical Society, Westcliffe Street, off Burton Road, in the Lecture Room, where they are always ready to welcome visitors or prospective new members. On October 3 there is the important AGM and this is followed a week later by a Junk Sale on the 10th. Films provide the entertainment on October 17, and on the 24th there is an Open Night. A talk rounds off the month on October 31.

Yet another lecture-demonstration of Amateur TV comes to our notice this month, this one being given by G5KS on October 3 to the **South Birmingham** crowd, at their place at Hampstead House, Fairfax Road, West Heath.

**Hereford** seem to be gaining in strength all the time, which must be good for them! They have Hq. at the County Control, Civil Defence Hq., in Gaol Street,

where they can be found on October 5 and 19, the first date being devoted to Safety in the Shack, and the second to a Film Show.

October 16 is the big day this month for the members of **Midland**, as this is the date for the AGM, which all members are specially asked to attend.

**Derby** put out a nicely-produced *Newsletter*, covering much of the activity of this powerful and well-known group, which can trace origins to 1911—when Radio, as we call it nowadays, was universally known as “wireless”. Their next events scheduled are for October 3, 10th, 14th, 17th and 31st, involving a pretty extensive programme, and they will also be busy in connection with the Leicester Amateur Radio Exhibition over October 25-27. A heavy month, indeed.

#### Scotland and the North

The **Star Short Wave Club** get together at the New Inn Hotel, Bramley Town Street, Bramley, Leeds 13. On October 10 there will be a full programme of films covering the workings of a radio, the workings of a TV, Semiconductors, and the workings of an oscilloscope. A little earlier, we notice yet another of those Grand Junk Sales the proceeds of which are presented to R.A.I.B.C.—September 26, at Hq.

Halifax next, where the **Northern Heights** have their Hq. at the Peat Pitts Inn, Ogden. October 10 sees them getting ready for the J-O-T-A station which they are putting on at Cullingworth Scouts Hq., signing G2SU/P. Then there is October 24, when G8CB will be

#### Names and Addresses of Club Secretaries reporting in this Issue :

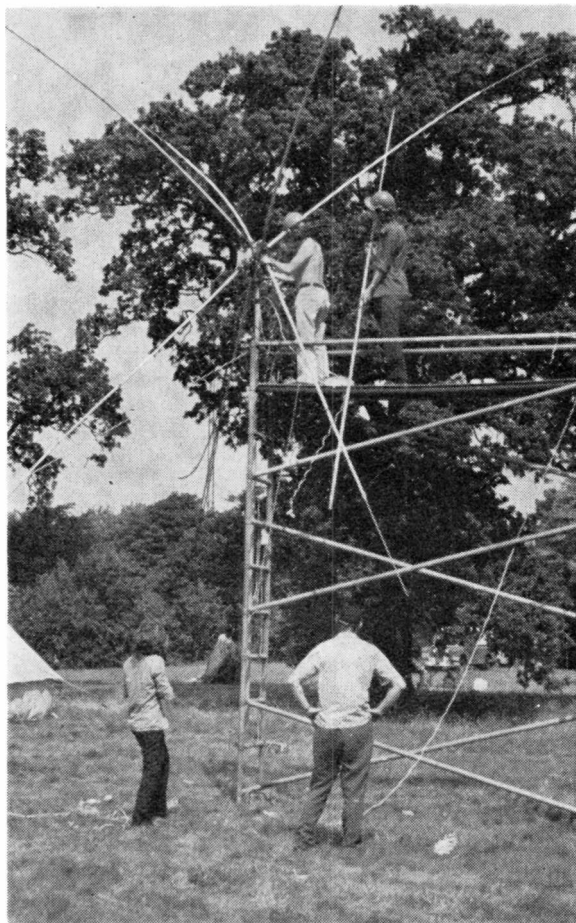
ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W3-8LB.  
 BALLYMENA: W. J. McNally, G13YDO, 6 Spring Way, Neillsbrook, Randalstown, Co. Antrim.  
 BISHOPS STORTFORD: E. P. Essery, G3KFE, 17 Ascot Close, Parsonage Lane, Bishops Stortford, Herts., CM23-5BP.  
 BLACKWOOD: R. B. Davies, GW3KYA, 16 Vancouver Drive, Pennain, Blackwood, Mon., NP2-0UQ.  
 BRIGHTON (Technical College): R. J. Henley, G2CMH, 35 Wilmington Way, Brighton, BN1-8JH.  
 CAMBRIDGE (University): D. M. Holburn, G3XZP, Fitzwilliam College, Cambridge CB3-0DG.  
 CHELTENHAM: E. Janes, G2FWA, Hillside, Bushcombe Lane, Woodmancote, Cheltenham (Bishops Cleeve 2229), Glos.  
 CHILTERN: F. S. G. Rose, G2DRT, 84 Cock Lane, High Wycombe, Bucks. (Penn 4240).  
 CORNISH: H. Webster, G3XTF, Crandale, Gillyfields, Redruth (6905), Cornwall.  
 CRAY VALLEY: P. F. Vella, G3WVP, 78 Hurst Road, Sidcup, Kent.  
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, SE23-3BN. (01-699 6940).  
 DARTFORD HEATH D/F: Mrs. M. Worbey, G3XVC, 13 Havelock Road, Dartford (22889), Kent.  
 DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby.  
 DUNSTABLE DOWNS: C. G. Powell, G8BPK, 1 Wenwell Close, Buckland Wharf, Aston Clinton, Aylesbury (630600), Bucks.  
 ECHELFORD: V. W. Higgs, G3VWJ, 205 Commercial Road, Staines (57021), Middx., TW18-2QT.  
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 EXETER: A. W. Bowden, 232 Exwick Road, Exeter, EX4-2BA.  
 FARNBOROUGH: J. Maidment, G8FWE, 2 Giffard Drive, Cove, Farnborough, Hants. (Camberley 22887).  
 HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (3237).  
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MAIDENHEAD: A. K. Chennells, G8HNI, 10 Lower Cippenhams Lane, Slough (20417), SL1-5DF.  
 MELTON MOWBRAY: R. Winters, G3NVK, 32 Redwood Avenue, Melton Mowbray (3369), Leics., LE13-1TZ.  
 MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham, B32-2AN. (021-422 9787).  
 NORTH BUCKS: R. J. Pye, G8AAT, 7 Meadow View, Potterspury, Towcester, Northants. (Yardley Gobion 542440).  
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44239), Yorkshire.  
 NORTH KENT: R. Wells, G4ARQ, 12 Bullbank Road, Belvedere, Kent.  
 NOTTINGHAM: S. F. Claringburn, 49 Fernleigh Avenue, Westdale Lane, Nottingham, NG3-6FN.  
 PLYMOUTH: C. Mitchell, G3UVS, Kechil Rumah, Green Lane, Yelverton, Devon, PL20-6BW.  
 PURLEY: A. Frost, G3FIQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.  
 REIGATE: F. H. Mundy, G3XSZ, 2 Conifer Close, Reigate (43130), Surrey.  
 SOUTH BIRMINGHAM: R. J. Thompson, G8GDZ, 23 Fox Hill, Selly Oak, Birmingham, B29-4AG. (021-472 0533).  
 SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale, Cheshire, M33-3GW.  
 STAR (Leeds): T. Leeman, G4BUU, 115 Asket Drive, Seacroft, Leeds, LS14-1HX.  
 THAMES VALLEY: C. B. Seaman, G3ATF, 40 Park Road, Ashford (56030), Middx.  
 THANET: P. O'Brien, G3DNR, 18 King Edward Avenue, Broadstairs, Kent, CT10-1PH.  
 TOLBAY: M. Yates, G3UIQ, Top Flat, 23 Waverley Road, Newton Abbot (3025), Devon.  
 VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford, Herts., WD2-5JQ.  
 WEST OF SCOTLAND: M. Parks, G8HBU, 6 Stamperland Hill, Clarkston, Glasgow, G76-8AE. (041-644 1783).  
 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil.  
 YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

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Sorting out the spider's web—not a crashed Quad this time but the erection of a tri-band version for the summer camp of the Silverthorn Radio Club, signing GB3SRC a highly successful annual event in which most members of this active Club participate. Those seen here dealing with the mechanics are G3XSA, G3YJZ, G8DRE and G3AVG—the age gap is about 50 years!

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selling off some surplus gear. November 7 is down for G8ENN to talk about the Technicalities of VHF.

At York a couple of the lads have passed the R.A.E. making three successes for the Club this year—as a result, we are told, their CW oscillator is taking a right pasting! On October 4, G3TMN is booked to talk about DX, and on October 26 there is the annual dinner. Normal meetings are every Thursday, at the British Legion Club, 61 Micklegate, York.

North of the Border we go now to West of Scotland, where truly Scots enthusiasm prevails. There are two meetings each week, the Wednesday one being set aside for practical matters like projects, construction, Morse tuition, trouble-shooting and such, while the more formal programme is down to Fridays, with films, talks, more Morse, and other activities. All are held at 81 Virginia Street, Glasgow, G.2.

#### Conclusion

So, once more, we come to the bottom of the pile—deadline for next time will be **October 4**, carrying in your letters all the forecomings for November for your Club or group. The address is "Club Secretary," SHORT WAVE

MAGAZINE, BUCKINGHAM, MK18 1RQ.

And, finally, take a careful look through the Rules for November's MCC, on p.497—make sure you understand them, that your Club enters and that whoever is nominated for doing the logging gets sheets ruled off in good time—you have to use a bit of savvy about this, because of the different widths of column headings. And do *please* send in a *fair* copy, as distinct from the one scribbled out during the Contest.

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For this month's

Small Advertisements,

see pp. 506-510

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# 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 will be 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.

- G3BOQ**, H. Griffiths 146 Lazy Hill Road, Aldridge, Walsall, Staffs., WS9 8RR. (*Re-issue.*) (*Tel. Aldridge 52667.*)
- GM4BNZ**, E. C. Walker, Glendale, 34 Balmoral Road, Elderslie, Renfrewshire, PA5 9RA.
- G4BVQ**, P. J. Kennedy, 18 Rushmere Avenue, Levenshulme, Manchester 19.
- G14BXX**, R. J. Brown, 26 Bawnmore Road, Belfast, BT9 6LA. (*Tel. Belfast 668582.*)
- G4CGS**, D. Sugden, 11 Uplands Avenue, Clayton Heights, Queensbury, Bradford, Yorkshire, BD13 1EN.
- G4CHV**, J. L. L. Osborne, 30 Berekford Road, Cheam, Sutton, Surrey, SM2 6ER.
- G4CIO**, M. E. Phillips (*ex-G8GW1*), 131 Harbord Street, Fulham, London, SW6 6PN.
- G4CIU**, S. J. Leeding, 105 Hall Avenue, Rushden, Northants., NN10 9EU.
- G4CJN**, L. S. Gumbrill, 4 Finley Close, Kendal, Westmorland. (*Tel. Kendal 22541.*)
- G4CJP**, V. L. Duffy, 30 Broad Acres, High Harrington, Workington, Cumberland.
- G4CJX**, P. J. Ashby, 413 Green Lane, Finham, Coventry, Warks., CV3 6EL. (*Tel. Coventry 414136.*)
- G4CKF**, D. Rodgers, 33 Dewhurst Road, Harwood, Bolton, Lancs., BL2 3NF. (*Tel. Bolton 24081.*)
- G4CKG**, R. Price (*ex-G8GZD*), 4 Cawood Court, Mayo Road, Sherwood Rise, Nottingham, NG5 1BL.
- G4CKX**, S. Taylor, 9 Roeselare Avenue, Torpoint, Cornwall, PL11 2LN. (*Tel. Torpoint 812497.*)
- GM8GJH**, K. A. Hastie, 44 High Street, Jedburgh, Roxburghshire, TD8 6DQ. (*Tel. Jedburgh 2214.*)
- G8HIF**, D. R. Hellak, 19 Oliver Road, Shenfield, Brentwood, Essex, CM15 8QD. (*Tel. Brentwood 221722.*)
- G8HKJ**, J. C. Parkinson, 41 Goldsborough Road, Doncaster, Yorkshire, DN2 5HW.
- G8HMI**, B. May, 25 Welford Gardens, Abingdon, Berks., OX14 2BN.
- G8HNA**, Mrs. Sheila Clark 61 Radnor Road, Horfield, Bristol, BS7 8RA. (*Tel. Bristol 43847.*)
- G8HNB**, C. E. Clark, 61 Radnor Road, Horfield, Bristol, BS7 8RA. (*Tel. Bristol 43847.*)
- G8HNT**, T. W. Thompson, 25 Meadow Avenue, Codnor, Derbyshire, DE5 4QN.
- G8HOW**, M. A. Kipp, 43 Southdown Crescent, South Harrow, Middlesex, HA2 0QT. (*Tel. 01-864 1412.*)
- G8HOX**, I. Forse, Penlan, St. Stephens, Saltash, Cornwall. (*Tel. Saltash 3219.*)
- G8HPA**, M. J. Marsh, 21 Stour Gardens, Great Cornard, Sudbury, Suffolk, CO10 0JN.
- G8HPC**, T. S. Abrahams, 92 Wordsworth Road, Horfield, Bristol, BS7 0DZ. (*Tel. Bristol 691492.*)
- G8HPD**, G. W. Black, 18 Lattimore Road, Wheathampstead Herts., AL4 8QE. (*Tel. Wheathampstead 3307.*)
- G8HQG**, A. W. White, 83 College Road, Oswestry, Salop., SY11 2SA.
- G8HRK**, P. D. Gurney, 19 Highfords, Ickelsham, Rye, Sussex.
- G8HRO**, 62 Loppets Road, Tilgate, Crawley, Sussex, RH10 5DP.
- GW8HRR**, P. K. Matthews, 10 Edgemoor Close, Upper Killay, Swansea Glam., SA2 7HJ.
- G8HSA**, J. T. Halford, 1 Little Lane, Great Houghton, Northampton. (*Tel. Northampton 61887.*)
- G8HSF**, D. G. Wheeler, 36 Squire Street, Cheetham Hill, Manchester 8.
- G8HSQ**, T. C. Donaldson, 13 Ersham Road, Canterbury, Kent, CT1 3AR.
- G8HSZ**, J. W. Redfearn, The Cottage, 5 The Square, Pentewan, St. Austell, Cornwall, PL26 6DA.
- GM8HUM**, J. T. Kinghorn, 86 The Glebe, Kirkliston, West Lothian, EH29 9AT. (*Tel. Kirkliston 611.*)
- G8HUU**, P. L. Newman, 58 Park Street, Thame, Oxon., OX9 3HT.
- G8HUV**, M. P. Rowlands, 43 Rylett Road, London, W12 9ST. (*Tel. 01-743 9650.*)
- G8HVB**, B. Higton, 21 Douglas Avenue, Paddock, Huddersfield, Yorkshire, HD3 4HD. (*Tel. Huddersfield 54142.*)
- GM8HVE**, W. McMillan, 149 Easter-Hill Street, Glasgow, G32 8LE.
- G8HVH**, P. D. Cockbain, Coplands Corner, Dartington, Totnes, Devon, TQ9 6DJ. (*Tel. Totnes 2484.*)
- GM8HWV**, A. Paterson, Jesmond Dene, Station Road, Brightons, Falkirk, Stirlingshire, FK2 0TY.

## CHANGE OF ADDRESS

- G2HNO**, L. J. J. Morgan, 4 Tree Tops, Martello Park, Canford Cliffs, Poole, Dorset, BH13 7BA.
- G3BNV**, F. M. J. Exeter, 7 Wilberforce Road, West Earlham, Norwich, Norfolk.
- GD3GBG**, A. W. Moore, 114 Ballabrooie Drive, Douglas, I.o.M.
- G3HIS**, G. Berrisford, Vermont, Cranham, Glos.
- G3JEL**, A. L. Skilton, 1 Daren Court, Carleton Road, London, N.7.
- G3JMV**, G. Easton, 46 High Stors Crescent, Sheffield, Yorkshire, S11 7JY.
- GM3JWS**, W. T. Sutherland, 2b Chalmers Crescent, Edinburgh, EH9 1TR.
- GM3NYG**, Miss Joan Fish, 31 Oaklands Avenue, Irvine, Ayrshire, KA12 0SE.
- G3PEK**, B. D. Simpson, 17 Kenilworth Drive, Hazel Grove, Stockport, Cheshire. (*Tel. 061-483 7607.*)
- G3RYM**, T. J. Money, 38 Eythrope Road, Stone, Aylesbury, Bucks.
- GW3TQI**, D. Benson (*ex-G3TQI*), 16 Penrhos, Radyr, Cardiff, CF4 8RJ. (*Tel. Radyr 842489.*)
- G3YLL**, R. F. Brooks, 1 Britannia Avenue, Upavon, Pewsey, Wilts.
- GM4BHU**, D. A. Aitkenhead, Cedarbank, 474 Perth Road, Dundee, DD2 1LL.

# Technical Books and Manuals

(ENGLISH AND AMERICAN)

## AERIAL INFORMATION

ABC of Antennas . . . . .	92p
Aerials (By D. Sjobbema) . . . . .	90p
Aerial Handbook (Briggs) . . . . .	89p
Amateur Radio Antennas (Hooton) . . . . .	£1-89
Antenna Handbook, Volume 1 . . . . .	£1-79
Antenna Round-Up, Volume 1 . . . . .	£1-50
Antenna Round-Up, Volume 2 . . . . .	£1-80
Antenna Handbook, 12th Edition (ARRL) . . . . .	£1-42
Beam Antenna Handbook, 4th Edition . . . . .	£2-13
Quad Antennae, 2nd Edition . . . . .	£1-82
Simple Low Cost Wire Antennas . . . . .	£1-75
73 Vertical, Beam and Triangle Antennas (by E. M. Noll) . . . . .	£2-42
73 Dipole and Long-Wire Antennas (by E. M. Noll) . . . . .	£2-22

## BOOKS FOR THE BEGINNER

Amateur Radio (Rayer) . . . . .	£1-63
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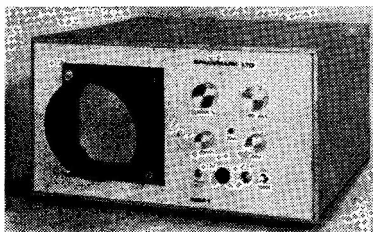
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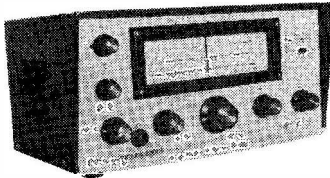
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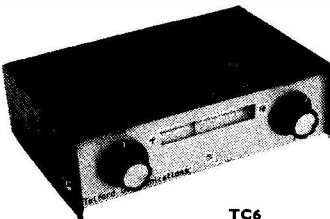
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**NOVEMBER Issue:** Due out October 26. Single-copy orders, 32p, post free, to reach us by Wednesday, October 24, for posting on October 25.—Circulation Dept, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H-0HF.

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## READERS

**SALE:** Eddystone 940 with plinth speaker and Codar PR-30X; Joystick aerial and ATU. All items four years old (unused last two years), in "as new" and untampered-with condition, £110 The Lot.—**Carr, Pincroft**, Cook's Corner, Crowborough (2524), Sussex.

**OFFERING:** Drake 2C and Q-multiplier, perfect condition, ten months old, best offer secures. (R4B purchased).—**Craven**, Grassmoor, Radford Road, Alvechurch, Birmingham, B48 7DT (Tel: 021-445 1347).

**SHACK CLEARANCE:** Two G.E.C. Lancon personal transceivers, Low Band, £10 each, or £18 pair; R.216 receiver, 19-157 MHz, £65; Three 88 Sets, complete with aeriels, leads and cases, £4 each; Two VHF radio mics, based on BM-21 Tx module, 5 mW, 88-108 MHz, £2 each; No. 10 crystal calibrator, £2.50; Ex-R.3673 converter, 20.90 MHz, recently aligned, tuned to 4/10/15m., £1.25; Mains PSU, suitable for R.216, +250v., +90v., -30v., +1.5v. DC, 20v., 6.3v. AC, £5; Supply unit No. 4, 12v. DC input, with well screened, smoothed and filtered output of 230v. DC at 100 mA, £4; Ex-R.109 PSU, 6v. DC input, 120v. DC at 20 mA output, £2; Supply unit No. 7, 100-240v. AC or 12v. DC input, outputs of 80v. DC 30 mA twice, 40v. AC at 30 mA, 12v. DC at 300 mA, as new, £1.50; Miniature Variac-type transformer, 10v. AC input, 0-13.3v. AC at 2.65A output, £1; Tx tuning unit comprising three ganged roller-coaster coils, £1; 1 kV electrostatic voltmeter, 3-in., suitable for AC or DC, new, £1.25; 5-element UHF Yagi, new, £1; Variometer tuned for SW, 1-valve as described in "Radio Constructor" 1963, built in 1972, with batteries, £1.50 (worth more in components); 1940-era Ever-Ready portable valve receiver, almost as new, with new valves fitted, £4.50; Two dozen heavy duty screened terminals, panel mounting, red and black insulators, 75p; All items well maintained and in good working order, will consider near offers. Buyers collect, or add postage. WANTED: Eddystone 770R in good condition; Advice on alignment of R.216; Servicing manuals for B.44 Mk. III and R.109A.—**Rycroft**, 10 Grove Crescent, Worcester (421708), Worcs.

**FOR SALE:** Heath SB-310 with AM/SSB filters and SB-600 speaker, mint condition, £80; Top Band converter, £5.—**Kennedy**, 24 Fraser Avenue, Reading (476737), Berks.

**SELLING:** CV-89A/URA-8A frequency shift converter and CM-22A comparator, with blowers, plugs and cables; 62 Set Tx/Rx with p-t-t handset, £11; RT-22/APXL, £1; BC-620F Tx/Rx, £2; Creed 85/BM, 24v., £3; Creed 7B, 160v., £5; PSU, 160v., 80 + 80v., £3.—**Ring Pickering**, G3UWP, 0947-3725 (Whitby), after 6 p.m.

**WANTED:** Electroniques bandspread coils and 1.6 MHz IF transformers.—**Sutcliffe**, 24 Medfield Street, Roehampton, London, S.W.15. (Tel: 01-789 4979).

OFFERING: Panda PR-120V Tx, coverage 10-80m.; Eddystone 840A Rx, good condition. Offers?—Harper, G2HD, Cropwell Butler, Nottingham.

FOR SALE: Eddystone 840C, £40; Stereo recording equipment with recording, control and mixer units, replay and playback amps., distortion meter. Offers?—Jackson, 8 Arnott Avenue, Gorleston, Great Yarmouth, Norfolk. (Tel: 0493 62008).

FOR SALE: R.1155B communications receiver, fully tested, with manual, £14.50; G.E.C. R.67907 double-conversion communications receiver, AM/FM/VHF, complete except for crystals, clean condition, £5.—Petty, 130 Whitstable Road, Canterbury, Kent CT2 8EG.

EXCHANGE OR SELL: FL-400 Tx; FR-400 with 2m. and 4m. conversions and extra mechanical filter; Pye AM-10D Cambridges, 2m. and 4m.; AR88D, new; R.216 receiver; Collins F455-Y60 mechanical filter. Various other items, s.a.e. for list.—McGonigal, G13ZSC, QTHR. (Tel: Randalstown 378, Northern Ireland).

WANTED: Two-metre “base station” in first class condition, rack mounting preferred, Pye or similar. Will collect anywhere in the South of England. (Berks.)—Box No. 5169, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H-0HF.

SPECIAL SHACK CLEARANCE: K.W. Atlanta transceiver and power supply, brand new, £150; Automatic two-metre transceiver, little used, £100; IC-21 2m. transceiver with external VFO, £110; Drake 2A receiver with Q-multiplier, £30; Brand new K.W. SWR bridges; Eddystone grid-dip meter, £25; Low pass filter, £3.—Ring Goodbody, 01-592 7800 or Romford 61191.

FOR SALE: TR-44 aerial rotator and control unit, £25 (additional pole bracket and top bearing also available); FSK-2 frequency shift unit for RTTY, with PSU, xtal oven and shift meter, totally enclosed and rack mounting, good condition, £10 or near offer; WANTED for VP2KH in St. Kitts: SB-220 amplifier, price and condition please; Also good 2m. transverter.—Addie, G8LT, Spring Hill, Wapenham, Towester, Northants. (Tel: Blakesley 321).

SALE: 30-ft. self-supporting portable garden mast, heavily galvanised tube, with base insulator and strakes, £10.—Davies, The Lymes, Priory Road, Bradown, Cheshire. (Tel: 061-928 2257).

SALE: Sentinel 2m. converter, IF 4-6 MHz; Para-beam 2m. aerial; G-Whip 160/80 aerial with base mount, £6 per item. (Lanca.)—Box No. 5170, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H-0HF.

FOR SALE: Fifty microamp meters, 2½ in. round, scaled 1-10 milli-Rontgens, ex-equipment, individually tested, clean condition, only 90p for two. Postage extra, please. (Staffs.)—Box No. 5171, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H-0HF.

SALE: FT-DX401 Tx, unused, £265; FV-401 VFO, £40; Osler SWR 200, £15. All in mint condition. The Lot for £300. WANTED: New Trio JR-599 Rx.—Montgomery, 23 Larkham Lane, Plympton, Plymouth (37003), Devon.

SALE: Self-supporting mast, nine 4-ft. sections, with centre plates, pole and bolts, £20.—Scriver, 16 Peacock Avenue, Bedfont, Middlesex.

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**FOR SALE:** Drake TR-4 transceiver with AC-4 PSU and RV-4 remote VFO, hardly used, £320; Tech. VVTM, £12; Tech. TE-15 GDO, £10; Tech. TE-20D signal generator, £12; LM-14 frequency meter and PSU, £16; Pye Cambridge 4m. dash mounting transceiver, £27.50.—Barry, G3UFU, 15 Fairlawn Court, London, W4 5EE.

**WANTED:** First-class quality general coverage Rx, e.g. Racal RA-117, Drake R4B, R.C.A. 8516L, or W-H-Y? Must be in perfect working order and condition.—Townshend, 4 Harbour View, Fowey, Cornwall.

**SELLING:** HQ-170A with manual and Eddystone plinth speaker, £90 or near offer.—Kenway, 16 Hilliers Lane, Beddington, Surrey. (Tel: 01-688 5083).

**WANTED:** Hallicrafters SX-28 in good condition. Cash waiting.—MacGregor, 166 Euenborough Road, Sidcup, Kent.

**SELLING:** FR-DX400 Super, 1972 model, with all options, coverage 2-160m., mint, £150. (Have passed RAE and bought FT-101).—Ring Radwell, Southampton 779902.

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**WANTED URGENTLY:** For Club station: Heathkit HW-17A 2-metre transceiver, must be in mint condition. Details and price please—call or write. Club meetings every Wednesday at 8 p.m.—Star Radio Club, New Inn Hotel, Bramley Town Street, Bramley, Leeds 13.

**SELLING:** Hallicrafters SX-100, immaculate condition. £90; Hallicrafters portable receiver, AM/FM, two SW bands. £40; New and used spares, including cases for Hallicrafters SX-28 models. **WANTED:** Hallicrafters SX-42's and SX-62A receivers in any condition.—Wise, 55 Longacre Drive, Nottage, Porthcawl (2635), Glam., S. Wales.

**SELLING:** Old valves, s.a.e. for requirements please. **WANTED:** Hallicrafters S.38 receiver. Condition and price please. — Fowle, 138 Surrey Road, Bournemouth, Hants.

**FOR SALE:** Eddystone 770R receiver, coverage 19-157 MHz, very good condition, £80; Eddystone 730/4 receiver, coverage 480 kHz to 30 MHz, excellent condition, £55.—Jesson, 181 Kings Acre Road, Hereford. (Tel: 0432 3237, evenings).

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**ENFORCED SALE:** Transmitters Tiger 300 and LG-300, with high-power amplifier and modulator; NC-400 receiver; Mobile transmitter; Odd receivers, desks, benches, mics., tools and loads of spares, etc. No reasonable offer refused. Moving QTH.—Sims, G5VS, 160 Bridge Road, Maidenhead (26306), Berks.

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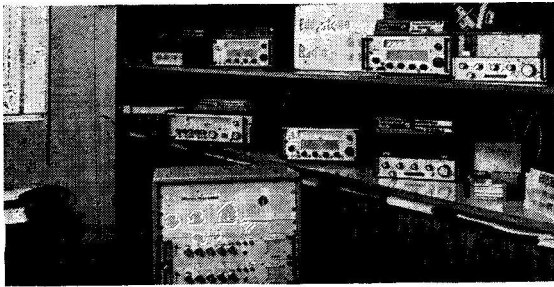
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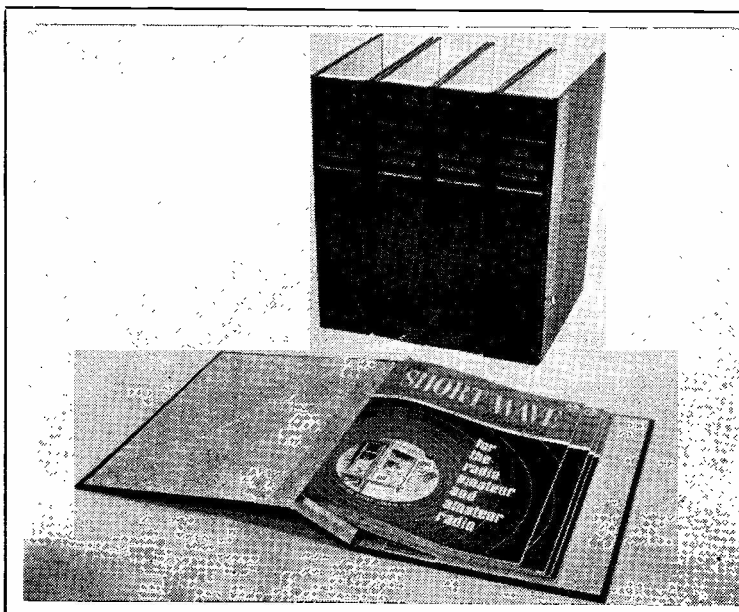
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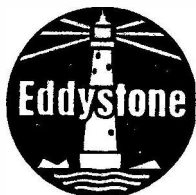
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