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1975

THIRTY PENCE

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No. 7

THE  
**SHORT  
WAVE**  
MAGAZINE

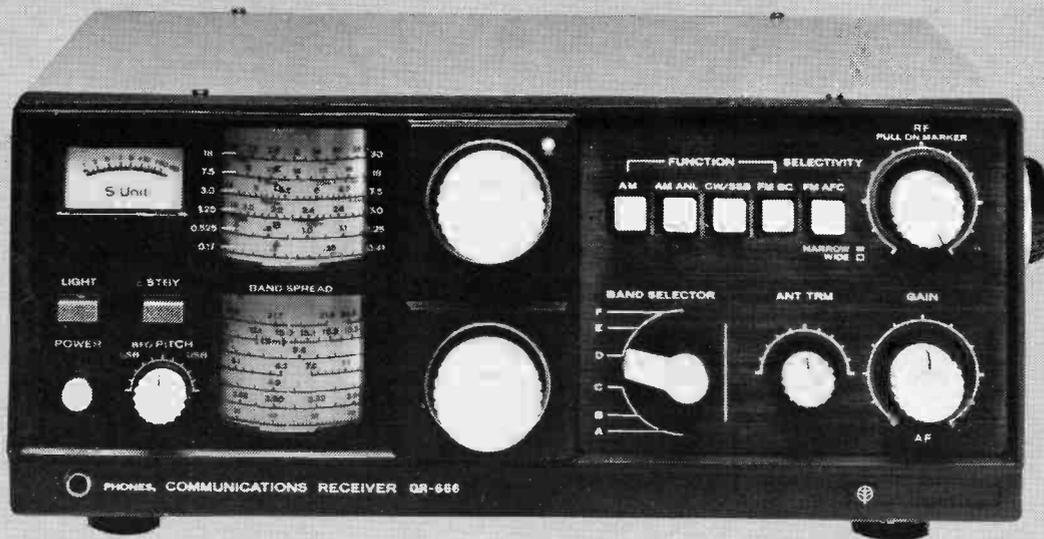
**WORLD WIDE  
COMMUNICATION**

**FOR THE RADIO AMATEUR AND AMATEUR RADIO**

# TRIO

## All band receiver QR666

Listen to the world on LW, MW and all short wave bands from 160m. to 10m.



The QR-666 meets all requirements set for modern all-band all-mode receivers, and its outstanding performance will convince every serious radio amateur or SWL. Its special features: advanced solid-state circuitry, outstanding input sensitivity and selectivity, multiple receiving modes, simple operation controls, high reliability, modern design and an attractive price.

**Modern Solid-state Circuitry**—guarantees instant operation without warmup time and optimum stability. A total of 20 transistors and 24 diodes is employed, including FET's in the front end, mixer and buffer circuits which account for the excellent input sensitivity, cross modulation and spurious response and for distortion-free, crisp and clean reception of even the weakest signals. It doesn't matter whether you listen to an expedition transmitter station in the antarctic, an amateur radio station in South America or to Radio Luxemburg, reception is always perfect and a real pleasure.

**Worldwide Reception**—The QR-666 features a total of six receiving ranges: LW from 170 to 410 kHz, MW (BC) from 525 to 1250 kHz, four continuous shortwave ranges from 160m. to 10m. (1.25 to 30 MHz) covering all important radio amateur bands and commercial shortwave bands from 75m. to 11m. A special bandspread dial scale facilitates precision tuning of radio amateur stations in 500 kHz band sections. An optional FM Tuner QR-6FM covering the standard FM broadcast band from 88 to 108 MHz can be installed any time with minimum wiring work.

**Exceptional Receiving Quality**—The multiple-tuned front end with FET complement guarantees an input sensitivity of  $1 \mu\text{V}$  on the 80m. band in AM, SSB and CW mode,  $3 \mu\text{V}$  in the MW and LW range and  $5 \mu\text{V}$  in the FM range. Careful selection of interstage coupling and ceramic filters in the IF stage account for the QR-666's excellent selectivity and image ratio.

**All-mode Reception**—The continuously adjustable BFO allows reception of SSB and CW stations. Now you can listen into the conversations between radio amateurs from all over the globe—maybe this will stimulate your interest in the fascinating world of shortwave radio and sooner or later you'll become a radio amateur yourself. Commercial shortwave stations usually operate in the AM transmission mode. The QR-666 takes advantage of that and features a special AM noise limiter which eliminates undesirable interference and assures perfect reception of commercial shortwave stations from all over the world. The broadband LW range not only covers Droitwich Radio on 200 kHz, but also ships at sea, shorebound naval stations, beacons, etc.

**Full Range of Extras**—Large, easy-to-read drum-type dial scales for coarse and bandspread tuning; illuminated S-meter; pushbutton switches for mode and range selection (AM, AMNL, SSB/CW, FM and FM/AFC with automatic frequency control); factory-wired adaptor for fast and easy installation of the optional FM Tuning Attachment QR-6FM; RF and AF gain controls; provisions for installation of the optional 500 kHz crystal marker generator QR-6MK for fast and accurate dial calibration; built-in speaker and output jack for extra speaker or earphones; automatic switching from line to battery operation and vice versa with dial light dimmer; choice of line operation with 110/240v. AC. 50-60 Hz or battery operation either from external 12v. DC battery or eight built-in 1.5 volt "D" cells.

If you are a keen SWL or a radio amateur newcomer—the QR-666 is exactly the right all-band all-mode receiver for you.

**Sole Importers: LOWE ELECTRONICS**  
Cavendish Road, Matlock, Derbyshire  
Tel.: Matlock 2817 or 2430



**TRIO**

# LOWE ELECTRONICS

## PRICE LIST — SEPTEMBER 1975

**CARRIAGE :** The amounts shown under this heading are for carriage either by Securicor 24 hours service, first class mail, or, in the case of heavier items (over 2 lbs.), parcel post. The Securicor charge is £2.20, other items are charged at the current postal rates.

	Net price	Price to include VAT	Carr.		Net price	Price to include VAT	Carr.
<b>TRIO</b>				<b>LOWE MONITOR RECEIVER REC R1420C (Marine Band)</b>			
TS900 and AC power supply ...	£480.00	£600.00	£2.00	Receiver complete, less crystals ...	£21.76	£23.50	46p
DS900 DC power supply ...	£64.00	£80.00	£2.20	Receiver complete, fitted 1 channel ...	£24.26	£26.20	46p
VFO900 external VFO ...	£110.00	£137.50	£2.20	Receiver complete, fitted 2 channel ...	£26.76	£28.90	46p
TS900 CW filter ...	£29.00	£36.25	20p	Receiver complete, fitted 3 channel ...	£29.26	£31.60	46p
TS520 transceiver ...	£290.00	£362.50	£2.20	Receiver complete, fitted 4 channel ...	£31.76	£34.30	46p
VFO520 external VFO ...	£55.00	£68.75	£2.20	Receiver complete, fitted 5 channel ...	£34.26	£37.00	46p
SP520 optional external speaker ...	£12.00	£15.00	54p	Receiver complete, fitted 6 channel ...	£36.76	£39.70	46p
TS520 CW filter ...	£21.00	£26.25	20p	Extra crystals for 2m. Band ...	£1.85	£2.32	10p
TS700 2m. all mode transceiver ...	£300.00	£375.00	£2.20	Extra crystals for 156 MHz Band ...	£2.78	£3.00	10p
Fixed channel crystals for TS700 ...	£2.32	£2.90	10p	<b>MICROWAVE MODULES</b>			
VOX unit for TS700 ...	£15.00	£18.75	54p	MMC144/28 LO ...	£16.30	£20.38	10p
TR7200G 2m. car transceiver ...	£110.00	£137.50	£2.20	MMC70/28 ...	£15.20	£19.00	10p
TR2200G 2m. handy talky ...	£80.00	£100.00	£2.20	MMC432/28 ...	£18.10	£22.63	10p
Crystals for TR7200G or TR2200G, each ...	£2.32	£2.90	10p	MMC432/144 ...	£18.10	£22.63	10p
Crystals as above per channel ...	£4.20	£5.25	10p	MMCI296/28 ...	£24.00	£30.00	10p
VFO30G VFO for TR7200G ...	£55.00	£68.75	£2.20	MMCI296/144 ...	£24.00	£30.00	10p
VB2200 10 watt amplifier for TR2200G ...	£29.00	£36.25	54p	MMV432 ...	£17.50	£21.88	10p
BP-10 NiCad battery pack for TR2200G ...	£11.00	£11.88	20p	MMV1296 ...	£25.00	£31.25	10p
TR7010 2m. SSB transceiver ...	£165.00	£206.25	£2.20	<b>GALAXY</b>			
R599S Amateur band receiver ...	£275.00	£343.75	£2.20	R1530 General coverage receiver ...	£750.00	£937.50	£2.20
T599S Companion transmitter ...	£265.00	£331.25	£2.20	<b>HALLICRAFTERS</b>			
QR666 General coverage receiver ...	£130.00	£162.50	£2.20	FPM-300 Mk. II Transceiver ...	£315.00	£393.75	£2.20
QR-MK 500kHz marker for QR666 ...	£8.50	£10.63	34p	Mobile kit for FPM-200 ...	£12.00	£15.00	46p
Extra for fitting QR-6MK, if required ...	£1.50	£1.87		Fan kit for FPM-300 ...	£24.00	£30.00	34p
QR-6FM FM tuner for QR666 ...	£21.00	£26.25	34p	<b>VENUS SLOW SCAN TV</b>			
Extra for fitting QR-6FM, if required ...	£5.00	£6.25		SS2 slow scan station monitor ...	£230.00	£287.50	£2.20
HC-2 Ham Clock ...	£11.00	£11.88	46p	SS2 slow scan station monitor kit ...	£155.00	£195.00	£2.20
MC-10 hand microphone with PTT ...	£6.30	£7.88	34p	C-1 camera ...	£255.00	£318.75	£2.20
MC-50 table microphone with PTT ...	£18.00	£22.50	46p	F-1 single frame cassette ...	£2.00	£2.50	24p
LF-30 low pass filter ...	£9.00	£11.25	46p	T-G grey scale cassette ...	£3.00	£3.75	24p
BFP-2 2m. band pass filter ...	£8.00	£10.00	46p	T-C checkerboard tape ...	£3.00	£3.75	24p
PS-5 Mains P.S.U. for TR7200G/7010 ...	£43.00	£53.75	£2.20	P-1 Polaroid camera hood ...	£17.00	£21.25	34p
TV502 2m. Transverter ...	£100.00	£125.00	£2.20	V-1 viewing hood ...	£7.00	£8.75	24p
<b>NIHON DENGYO</b>				<b>ANTENNAS</b>			
Liner 2 2m. SSB transceiver ...	£145.00	£181.25	£2.20	2m. "J" BEAMS 50 ohm impedance only			
LA-106 Linear Amplifier ...	£165.00	£206.50	£2.20	5Y/2M 5 element Yagi ...	£4.90	£6.13	£2.20
FS-1007P 2m. FM Scanning Transceiver ...	£220.00	£275.00	£2.20	8Y/2M 8 element Yagi ...	£6.40	£8.00	£2.20
AMR-104 2m. Scanning Monitor Receiver ...	£65.00	£81.25	62p	10Y/2M 10 element Yagi ...	£12.60	£15.75	£2.20
Marine Version of AMR-104 ...	£86.00	£92.88	62p	PBM14/2M 14 element parabeam ...	£19.20	£24.00	£2.20
R115E regulated psu for the Liner 2 ...	£21.00	£26.25	£2.20	5XY/2M element 5 crossed Yagi ...	£9.40	£11.75	£2.20
<b>NOTE:</b> FS-1007P transceiver and AMR-104 Monitor Receiver fitted 3 channels. Marine monitor receiver fitted 8 channels.				8XY/2M 8 element crossed Yagi ...	£11.70	£14.63	£2.20
<b>LOWE MONITOR RECEIVER REC R1420C</b>				10XY/2M 10 element crossed Yagi ...	£16.15	£20.19	£2.20
Receiver complete, less crystals ...	£19.95	£24.95	46p	D5/2M 5 over 5 slot fed Yagi ...	£9.00	£11.25	£2.20
Receiver complete, fitted 1 channel ...	£21.87	£27.34	46p	D8/2M 8 over 8 slot fed Yagi ...	£12.00	£15.00	£2.20
Receiver complete, fitted 2 channel ...	£23.37	£29.18	46p	PMH/2C Circular phasing harness ...	£3.25	£4.06	37p
Receiver complete, fitted 3 channel ...	£24.87	£31.09	46p	SVMK/2M mounting kit ...	£2.50	£3.13	46p
Receiver complete, fitted 4 channel ...	£26.37	£32.96	46p				
Receiver complete, fitted 5 channel ...	£27.87	£34.84	46p				
Receiver complete, fitted 6 channel ...	£29.37	£36.71	46p				

# LOWE ELECTRONICS

		Net price	Price to include VAT	Carr.
XD/2M	crossed dipoles ...	£6.60	£8.25	£2.20
UGP/2M	Unipole ...	£4.75	£5.94	£2.20
PMH2/2M	2 way phasing harness ...	£4.50	£5.63	37p
PMH4/2M	4 way phasing harness ...	£10.45	£13.06	37p

## 70 cm. "J" BEAMS

D8/70	8 over 8 slot fed Yagi ...	£10.30	£12.88	£2.20
MBM46/70	46 element multibeam ...	£13.90	£17.38	£2.20
PBM/70	18 element parabeam ...	£12.05	£15.63	£2.20
12XY	12 element crossed Yagi	£19.00	£23.75	£2.20

## 2m. MOBILE WHIPS

"J" Beam $\frac{1}{2}$ vertical swivel mount ...	£7.65	£9.56	£2.20
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## G-WHIPS

Tri-bander 20, 15 and 10m. ...	£12.30	£15.37	£2.20
Multimobile 20, 15 and 10m. ...	£14.30	£17.87	£2.20
160, 80, or 40m. coils, each ...	£4.10	£5.12	37p
Top whip section ...	£4.10	£1.37	24p
Base mount for all G-Whips ...	£1.65	£2.06	24p

## H.F. BEAMS

Hy-Gain TH3 jnr. 20, 15 and 10m. 3 element ...	£74.00	£92.50	£2.20
Hy-Gain Mk. 3.20, 15 and 10m. 3 element	£99.90	£124.88	£2.20

## VERTICALS

Hy-Gain 12 AVQ 20, 15 and 10m. ...	£25.50	£31.88	£2.20
Hy-Gain 14 AVQ 40, 20, 15 and 10m. ...	£36.00	£45.00	£2.20
Hy-Gain 18AVT/WB 80, 40, 20, 14 and 10m. ...	£56.00	£70.00	£2.20

## ANTENNA ACCESSORIES

UR43 50 $\Omega$ coaxial	Per metre	14p	15p	2p
UR67 50 $\Omega$ coaxial	Per metre	35p	38p	4p
RG8/U	Per metre	40p	43p	4p
300 $\Omega$ twin feeder	Per metre	5p	5p	2p
75 $\Omega$ twin feeder	Per metre	5p	5p	2p
8 core rotator cable	Per metre	31p	33p	2p
5 core rotator cable	Per metre	18p	19p	2p
4 core heavy duty	Per metre	19p	20p	2p
12 core heavy duty	Per metre	44p	47p	2p
PL259 plugs	...	36p	45p	10p
PL259 reducers	...	12p	15p	7p
PL259 right angle adaptors	...	76p	95p	10p
PL259 in line connectors	...	60p	75p	10p
SO239 sockets	...	36p	45p	10p
Twin meter SWR bridge	...	£10.00	£10.80	37p
Single meter SWR bridge	...	£7.00	£7.56	37p

Hy-gain CI dipole centre piece ...	£3.00	£3.75	37p
Hy-gain BN86 balun ...	£9.50	£11.88	37p
Diamond BU7 75 $\Omega$ balun ...	£4.40	£5.50	37p
Diamond BU5 50 $\Omega$ balun ...	£4.40	£5.50	37p

## STATION ACCESSORIES

Please note that carriage is by Parcel Post

Morse Keys ...	£5.00	£6.25	37p
Katsumi Keyers EK108D (DC) ...	£28.00	£35.00	46p
Katsumi Keyers EK108A (AC) ...	£32.00	£40.00	46p
C. W. Practice Oscillators ...	£2.80	£3.50	24p
Low impedance padded headsets ...	£3.25	£4.06	24p
Teisco DM501 Hand Mike ...	£5.56	£6.95	24p
Trio MC50 Table Mike ...	£18.00	£22.00	46p
Trio MC10 Hand Mike ...	£6.30	£7.88	34p
D.50 Electronic 24 hour digital clock ...	£18.00	£19.44	46p
CWM2 CW analyser and display ...	£180.00	£225.00	62p
CWM2g. CW analyser and display ...	£190.00	£237.50	62p
TRV 2010 10m./2m. Transverter ...	£90.00	£112.50	54p
SS900U Solid state 2m. linear ...	£145.00	£181.25	62p
4 pin mic. plug ...	48p	60p	10p
4 pin mic. socket... ...	48p	60p	10p
11 pin Yaesu accessory plug ...	48p	60p	10p

## ROTATORS

AR 40 Solid State ...	£30.00	£37.50	£2.20
TR 44 Heavier duty rotator ...	£50.00	£62.50	£2.20
CD 44 Improved version of TR 44 ...	£60.00	£75.00	£2.20
Ham-2 Improved version of rugged Ham-M ...	£90.00	£112.50	£2.20

## VALVES

6AH6, 6BZ6, 6CB6A, 6CL6, 6U8A, 6EW6, 6BM8, 12BY7A ...	66p	82p	10p
6GK6 ...	£1.30	£1.62	10p
6JS6C, 6KD6, Matched pairs ...	£4.20	£5.25	34p
6146B, S2001 direct replacement, each	£3.20	£4.00	22p
6LQ6, Matched Pairs ...	£5.52	£6.90	34p

## CRYSTALS

We stock all the popular channels for all the equipment we sell as well as many crystals for other F.M. equipments.

Price per single crystal ...	£2.32	£2.90	10p
Where 2 crystals per channel are required			
Price per channel ...	£4.20	£5.25	10p

## FILTERS

9 MHz. Crystal filters complete with both carrier crystals.			
SEIWA YF90F S.S.B. filter ...	£15.28	£19.10	15p
Kokusai MF455 Mechanical filter ...	£15.93	£19.91	15p
Carrier Crystals for Kokusai filters, each	£2.60	£3.25	7p

Our terms are cash or cheque with order—despatch of stock items is by return. If any item is out of stock, your money is immediately refunded.

PART EXCHANGES WELCOME

EASY TERMS

PRICES, UNFORTUNATELY, ARE SUBJECT TO CHANGE WITHOUT NOTICE

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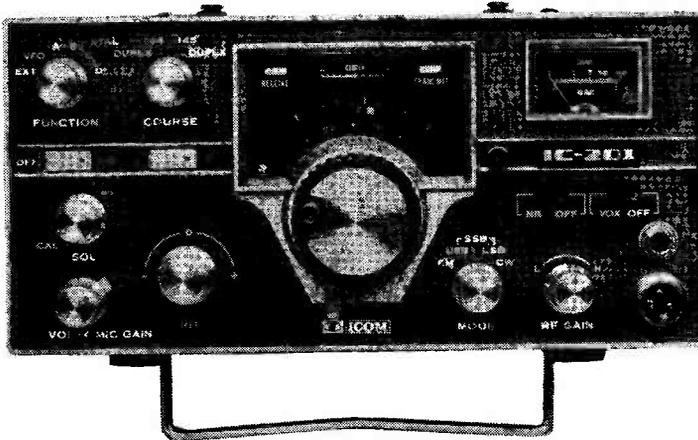
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# THANET ELECTRONICS

PAUL  
G3VJF



DAVE  
G8ELP

## THE IC-201 — AT LAST!!

The first supplies of this new, excellent multi-mode rig from the INQUE are now in the country and displaying their qualities over the air. We find that they fully live up to high standard of design and workmanship found in all ICOM equipment and feel that those of you who have resisted other models and opted to wait for the 201 will feel that it was well worth while. The supply situation is now a lot better. Contact us, or your nearest THANET agent for further details or a demonstration. They will be shown, together with most of the ICOM range at Leicester and most of the popular rallies.

Compare these features with other multi-mode rigs :

- CENTRE-ZERO meter on FM.
- NARROW FILTER on FM for 25 kHz channel spacing.
- Good, well-limited FM.
- 600 kHz shift of Tx. using DUPLEX for working repeaters.
- AUTOMATIC tone-burst introduced on DUPLEX.

- 4 Crystal positions for net and repeater frequencies.
- TWO-SPEED GEARBOX giving easy rapid tuning.
- VOX. Fully adjustable (works on FM if you really want it).
- CW side-tone.
- Full BREAK-IN on CW (separate VOX delay controls for CW and SSB).

- RF GAIN CONTROL by adjusting the coupling of two helical filters.
- EXCELLENCE NOISE BLANKER.
- R.I.T.
- MIC GAIN control on front panel.
- DIAL-READOUT to 1 kHz—accurate to 2 kHz or better.
- 500 kHz Frequency Calibrator.

Transistors ... ..	53
FET ... ..	16
IC ... ..	10
Diodes ... ..	66
Frequency Range ... ..	144-146 MHz
Weight ... ..	5.4kg
Dial accuracy ... ..	(-10°C. to 60°C.) ± 2 kHz
Modes ... ..	SSB (usb or lsb), CW and FM
Ant. Impedance ... ..	50 ohms
Operation Voltage ... ..	DC 13.8v. ± 15% AC 230v.
Size ... ..	111mm. x 230mm. x 260mm. deep

Specification	
Transmitter	
Power Output	A3J 10W pep A1, F3 10W
Carrier Suppression (SSB) ... ..	> 40dB
Unwanted sideband suppn. ....	> 40dB
Spurious radiation ... ..	> 40dB
Deviation FM set to ... ..	4.5 kHz
Mic. Impedance ... ..	500ohm
Operation ... ..	... PTT or VOX

Receiver	
I.F. Frequencies A3J, A1 ... ..	10.7 MHz
F3 ... ..	10.7 MHz and 455 kHz
Sensitivity A3J, A1 ... ..	0.5uV for 10dB S+N/N
FM ... ..	0.4uV for 20dB quieting
Squelch sensitivity (FM) ... ..	... -8dB (uV) or less
Bandwidth SSB, CW ... ..	± 1.2 kHz -6dB points
FM ... ..	± 2.4 kHz -60dB points
FM ... ..	± 8 kHz -6dB
FM ... ..	± 16 kHz -60dB
Audio output ... ..	... 2W
Speaker ... ..	... 8 ohms E. & O.E.



£300 + VAT

The IC-22A is becoming more and more widely used as THE mobile rig for both simplex and repeater use. It has all the essentials without too many fancy frills and works very well indeed, which is what matters! You don't have to press buttons for a tone burst. It does work in the rain, in case you ever thought that it didn't, and the PA is rugged, and what's far more important, is covered by our comprehensive guarantee. The squelch and receiver sensitivity is excellent—you won't do much better without using very expensive front end transistors. ICOM's best advert is the many satisfied users—ask them. Again, contact us or our agents for more details.

5 channel version. FITTED 145, S20, S21, S22, S23  
= £115 + VAT

8 channel version. FITTED above channels + 3  
repeaters or 2 repeaters and S24 = £125 + VAT



**THANET ELECTRONICS**  
34 CLIFF AVENUE, HERNE BAY  
KENT (02273) 63846



AGENTS  
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# SOLID STATE MODULES

63 WOODHEAD ROAD, SOLID, LOCKWOOD  
HUDDERSFIELD, HD4 6ER

Telephone: 0484-23991

*Manufacturers of V.H.F. and U.H.F. Receive and Transmit Converters and Pre-amplifiers  
for the Amateur and Professional*

## THE REAL THING!

Of the advertisers appearing in this magazine we were:  
FIRST to offer you VHF converters—The Sentinel range.  
FIRST to bring you VHF and UHF pre-amplifiers. The Sentinel range, the PA3 and SM71.  
FIRST to bring you VHF transverters—The Europa range.  
Not only were we the first to bring you these units, but we have maintained our position for nearly eight years as the leading VHF/UHF manufacturers by following a policy of constant development (as new techniques and devices become available) and a first-class BEFORE and AFTER sales service. The performance of our units cannot be surpassed anywhere.

**EUROPA B** A highly developed unit, in production now for about three years and in use in over fifty different countries. Plugs into the accessory socket of Yaesu/Sommerkamp equipment. Our NEW power supply CPS10 makes the Europa compatible with any normal HF gear. We can supply the Europa with switched crystals if your equipment does not cover the whole of 10 metres.

### THE EUROPA B gives you:

- ★ Highest transmit power, 200W input. 50% efficient. Adequate for OSCAR work.
- ★ Highest receive sensitivity available—2dB N.F.
- ★ Cleanest output spectrum available.
- ★ Transmits any modes with a drive power of 200mW.
- ★ Crystal used is very high stability and close tolerance, 5ppm, unit.
- ★ Size: 9" x 4½" front panel, 4½" deep.
- ★ Low price, £109.37 complete to plug in. Ex stock. Price less valves (2 x QQVO3/10 and 1 x QQVO6/40A), £93.75.



**NEW!** We now have in stock a complete AC PSU for the Europa, Type CPS10. This supplies all the voltages to power the Europa or the Europa B. It also contains a 50 Ohm adjustable dummy load power attenuator and change over relay to reduce the 10 metre output power to a level for driving the Europa. This makes the Europa B compatible with HF equipment without transverter output sockets with NO modifications.  
Size: Same as the Europa B. Price: £50.00. Ex stock.  
VHF CONVERTERS—2 METRES, 4 METRES, 70 CM., SATELLITE BAND, MARINE BAND and many others from stock. Other frequencies to order—please enquire.

### SENTINEL DUAL GATE MOSFET 2 METRE OR 4 METRE CONVERTERS

- ★ N.F.—2dB. Gain 30dB. Supply 9-15V.
- ★ No oscillator frequency multiplication.
- ★ Crystals used are very high tolerance (5ppm).
- ★ High signal protection and overvoltage and reverse voltage protection diodes are built in.

- ★ 2 metre IFs 28-30 MHz, 2-4 MHz, 4-6 MHz. 4 metre IF 28-28.7 MHz.
- ★ Size: 2½" x 1½" x 3" long except the 2-4 MHz and 4-6 MHz which are double conversion and 4" long.
- ★ Price only £18.75 delivered from stock.

### SENTINEL X DUAL GATE MOSFET 2 METRE CONVERTER

A de luxe version of our Sentinel converter, containing a mains power supply or external battery operation. It has front panel RF gain control. Technical data is the same as the Sentinel. Size: 5" x 1½" front panel, 4" deep. Stock IFs 2-4 MHz, 4-6 MHz, 28-30 MHz. Price: £24.37.

### THE SENTINEL 2 METRE CONVERTER KIT, 28-30 MHz. Ex stock

The kit is supplied with printed circuit board drilled and all coils mounted to make assembly so simple. All components, metalwork, nuts and bolts etc. are supplied. Performance data is the same as our Sentinel converters. Price: £12.74. If it doesn't work, send it back with £2.30 and we will fix it for you.

THE SENTINEL MF DUAL GATE MOSFET 2 METRE TO MEDIUM WAVE CONVERTER in two switched bands. Price: £23.44.

### UHF CONVERTERS SM 70 FET CONVERTER

- ★ IF output 144-146 MHz. Noise figure 3-5dB. Gain 30dB.
- ★ Size: 2½" x 3" x 1½".
- ★ By using the SM70 with your 2 metre receiver you can get excellent 70 cms. receiving performance for only £18.75. Ex stock.

**PRE-AMPLIFIERS.** 2 metres, 4 metres, 70 cms., Satellite Band, Marine Band etc. from stock, other frequencies to order.

**SENTINEL LOW NOISE FET PRE-AMPLIFIER**—Ex stock. If you want the ultimate in 2 metres sensitivity and selectivity:

- ★ Built in a box which matches our converters.
- ★ Isolated supply lines make it compatible with any existing polarity.
- ★ Low noise figure—1dB. Gain 18dB.
- ★ High selectivity tuned circuits. Price: £8.52.

### THE PA3 DUAL GATE MOSFET PRE-AMPLIFIER—Ex stock.

- ★ Small (about one cubic inch) printed circuit board pre-amplifier developed to fit inside transceivers where it can be wired into the receiver aerial lead after the c/o relay.
- ★ Low noise figure—2dB. Gain—18dB. Price: £6.87. Supplied with fitting data.

**SM 71 70 CM. PRE-AMPLIFIER**—Ex stock. A selected 2 stage FET pre-amplifier.

- ★ Noise figure 3-5dB. Gain 18dB.
- ★ Size: 2½" x 4" x 1½".
- ★ Price: £11.25.

As a result of a professional contract to manufacture pre-amplifiers near 70 MHz we can now offer 4 metre Sentinel Pre-amplifiers from stock. Price: £8.52.

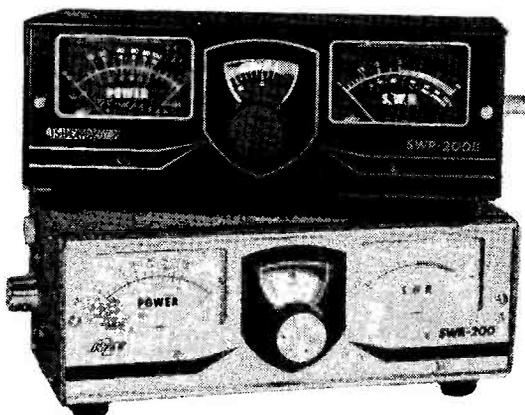
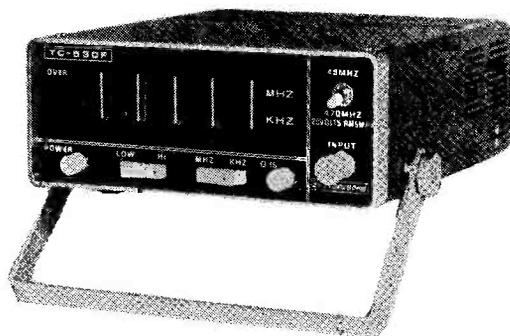
All the prices include 25% VAT and British Isles delivery. We can give same day COD service (£50 limit) or ACCESS or BAR-CLAYCARD delivery or HP. If you want any detailed information or help we are a telephone or letter away, so do not hesitate to ask us. Paul G3MXG.

# AMATEUR ELECTRONICS UK

## NEW LINES AND LATEST NEWS FROM AMATEUR ELECTRONICS !

TC-530F FREQUENCY  
COUNTER. 10 Hz-470 MHz  
IN TWO RANGES.

UNBEATABLE VALUE FOR  
A COUNTER WITH THIS  
SPECIFICATION. £210 PLUS VAT OF £16.80.



LA-2 2 METRE LINEAR  
SSB-FM-AM-CW  
200 WATTS PEP **OUT**  
FROM A RUGGED EIMAC  
4X150A FOR 10 WATTS  
OF DRIVE. £250 PLUS VAT.

THE FAMOUS OSKER SWR-200  
NEW EX-STOCK AT £21 PLUS £1.68 VAT

OR THE NEW SWR-200B  
(DRAMATIC BLACK FINISH) AT £22 PLUS  
£1.76 VAT (P & P 75p).



**NEW BRANCH!** WE ARE PLEASED TO ANNOUNCE THE OPENING OF A NEW BRANCH UNDER THE NAME OF AMATEUR ELECTRONICS UK-COASTAL AT 316-318 NORTHDOWN ROAD, CLIFTONVILLE, KENT. THIS WILL BE UNDER THE DIRECTION OF KEN McINNES G3FTE AND WILL CATER FOR LOCAL CUSTOMERS AND VISITORS TO THIS PART OF THE ENGLISH COAST.

TELEPHONE : THANET (0843) 22060

**AGENTS:** SCOTTISH—RON TURNER GM8HXQ WISHAW 72172  
WALES AND WEST—ROSS CLARE GW3NWS CAERLEON 42232

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**021-327 1497  
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YAESU!**



▲ THE FT101E—  
THE LATEST VERSION  
OF THE FAMOUS "101"  
COMPLETE WITH BUILT-IN  
R.F. SPEECH PROCESSOR.  
NOW EX-STOCK!



▲ THE FT-221, YAESU'S  
NEW ALL-MODE 2M  
TRANSCIVER—DELIVERY  
2/3 WEEKS. £318.50 PLUS VAT

● **YAESU MUSEN MAIN DISTRIBUTORS** ●

A COUPLE OF STAMPS (WE'LL PROVIDE THE ENVELOPE) WILL BRING YOU OUR LATEST USED EQUIPMENT LIST OR INDIVIDUAL INFORMATION ON SPECIFIC ITEMS—21 PENCE BRINGS THE LATEST GLOSSY SWAN OR YAESU CATALOGUE (FULLY REFUNDABLE AGAINST EVENTUAL PURCHASE)

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Leigh, Lancs.  
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ALSO AVAILABLE  
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SELECTED STOCK-  
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**J. & A. TWEEDY LTD.**  
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05093 5131

**THE AMATEUR  
RADIO SHOP, G4MH**  
13 Chapel Hill  
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0484 20774



Your South Eastern Stockist

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**BY PHONE** Simply telephone your Barclaycard or Access No. for immediate despatch.  
**BY POST** State clearly your requirements enclosing cheque or postal order.  
**CALLERS** You are always welcome to come and inspect the equipment at our show-rooms.

**FOR ALL ENQUIRIES PLEASE ENCLOSE STAMPED ADDRESSED ENVELOPE.**

## ATTRACTIVE CREDIT TERMS!

With the falling £1 and rising prices credit is even more attractive. Below are a few examples. If you are thinking of purchasing equipment on credit terms then drop us a line or telephone for further details.

	Deposit	12 Months	18 Months	24 Months
FT101B ... ..	£137.50	£26.58	£18.94	£15.13
FR101D ... ..	£137.50	£26.58	£18.94	£15.13
QR666 ... ..	£54.50	£10.44	£7.44	£5.94
KEN KP202 6/6 ... ..	£34.62	£6.59	£4.75	£3.84
TH3 ... ..	£41.85	£8.22	£5.99	£4.76
LINER 2 ... ..	£61.25	£11.60	£8.27	£6.60

(note —the above credit is subject to acceptance)

BELOW ARE JUST A FEW OF THE LINES WE HANDLE—SEND S.A.E. FOR COMPLETE PRICE LISTS

**YAESU EQUIPMENT (+ 25% VAT)**

FT101B 160-10m. tcvr. 240v./12v.	£330.00	(n/c)
FR101D 160-2m. rx. 240v./12v.	£330.00	(n/c)
SP101 matching speaker	£13.00	(£1.00)
FX101 remote vfo	£48.00	(£1.00)
FT401B	£307.00	(£1.00)
SP401 matching speaker	£13.00	(£1.00)
FT200 80-10m. transceiver	£170.00	(n/c)
FP200 matching spkr./AC supply	£45.00	(£1.00)
FT220 2m.SSB/ FM tcvr./240/12v.	£264.00	(n/c)
FT224 2m. tcvr. 24ch. tone-burst	£130.00	(n/c)
FP2 matching AC/charger supply	£38.00	(£1.00)
YC35SD 200 MHz counter		
240/12v.	£125.00	(n/c)
YO100 monitor scope (superb)	£93.00	(£1.00)
FT2 Auto		(n/c)
Sigmatizer (80 channel)		tba (n/c)

**JAYBEAM VHF ANTENNAS (inc. VAT)**

4m. 4 element yagi	£8.50	(£1.00)
5Y/2m. 5 element yagi	£5.38	(75p)
8Y/2m. 8 element yagi	£7.00	(75p)
10Y/2m. 10 element yagi	£13.75	(£1.00)
PBM14/2m. parabeam	£21.12	(£1.25)
D5/2m. slot fed yagi	£9.90	(£1.00)
D8/2m. slot fed yagi	£13.12	(£1.00)
5XY/2m. 5 el. crossed yagi	£10.25	(£1.00)
8XY/2m. 8 element crossed yagi	£12.75	(£1.00)
10XY/2m. 10 el. crossed yagi	£17.63	(£1.50)
XD/2m. crossed dipoles	£7.19	(75p)
UGP/2m. ground plane	£5.19	(75p)
HM/2m. Halo with mast	£2.75	(50p)
D8/70cm. slot fed yagi	£11.25	(£1.00)
PBM18/70cm. parabeam	£13.12	(£1.00)
MBM46/70cm. 46 el. yagi	£15.12	(£1.25)
MBM68/70cm. 68 el. yagi	£20.12	(£1.50)
12XY/70cm. 12 el. crossed yagi	£20.88	(£1.00)

Full range of phasing harnesses and brackets in stock. S.A.E. for catalogue.

### SPECIAL SIGNAL PUNCHING PACKAGE

Technical Associates Advanced speech compressor with variable compression, decay time and noise gate provides the most economical way of increasing talk power **WITHOUT ANY DISTORTION.** Still offered at £28.15 (50p) it's a bargain with the famous Shure 444 mic at £41 the two units, it's unbeatable! Order yours now and save money. Inc. VAT.

### BANTEX WHIPS — G WHIPS

### TAVASU WHIPS

### ELECTRONIC DEVELOPMENTS

## NEW EXCITING LINES!

This month sees some new exciting lines in amateur radio coming your way. Items that will be of great interest to the licensed amateur and short wave listener. Unfortunately our range of products now stocked are so wide that we cannot possibly list everything each month. However, we now have a complete stock list with prices and details of all our equipment and if you send us a large stamped addressed envelope we will despatch a copy to you by return. Just to whet your appetite here are a few new items:

**TET all solid state 2m. trans-verter** ... .. £90.00 (50p)

**Izumi D-50 digital clock** ... .. £18.00 (50p)

**RAK compact dipoles:**

Listener 1 antenna 3-30 MHz	£5.60	(50p)
Listener 3 antenna 3-30 MHz	£13.00	(50p)
80m. loaded dipole 22m. long!	£11.20	(50p)
40/80 loaded dipole 2 kw.		
28m. long	£13.80	(50p)
Midy-111N 40/10m. dipole		
14m. long	£15.00	(50p)
A-SBQN 80/10m. (5 wires)	£12.50	(50p)

**73s PETER G30JV**  
**JEFF**

### VHF 2 and 4 Metre Whips—Ex stock.

### FM 2 METRE MONITOR RECEIVERS

**Low 2m. 6-channel monitor receiver (less 'xtals)** ... .. £19.95

**Low 2m. fitted 6 'xtals** ... .. £29.37

**Channel 'xtals** ... .. £2.32

**Belcom AMR-104 auto scanning 2m. Rx. 240v. AC/12v. with 3 channels** ... .. £65.00

**Marine version fitted 8 channels** ... .. £86.00

### SOLID STATE MODULES—EX-STOCK

**TRIO PRODUCTS (inc. VAT)**

**QR666 receiver 160-10m. plus general coverage, 240v. AC/12v. Send for full gen.** ... .. £162.50

**Matching calibrator** ... .. £10.95

**FM adaptor** ... .. £26.25

**HC-2 Ham Clock** ... .. £11.88

### TWO HAND ITEMS (ex. VAT)

HA350 80-10m. Rx, very good...	£70.00
KW2000B transceiver	£170.00
CR70A gen. coverage Rx	£27.00
HW17 AM/FM 2m. transceiver	£40.00
Yaesu FR50B receiver	£67.00
Heath Tower 2m. AM transceiver	£20.00

### ROTATORS

AR30	£31.25	(£1.00)
AR33	£45.95	(£1.00)
AR40	£37.50	(£1.00)
CDE 44	£75.00	(£1.25)
Horn 4	£112.50	(£1.50)
Stolle 2010	£40.62	(£1.00)
Stolle 2030	£45.95	(£1.00)
5 core control cable	18p	(1p)

### AERIAL FEEDERS

50 ohm UR43	18p	(1p)
50 ohm UR67/RGBU	36p	(2p)
75 ohm standard	10p	(1p)
75 ohm UHF low loss	14p	(1p)
300 ohm feeder	8p	(1p)

### MICROWAVE MODULES

NEW 1 70 cm. transverter	£77.50	(50p)
2m. converters 2-4/4-6/28-30	£18.90	(25p)
4m. converters 28-28.7	£18.90	(25p)
70cm. converters 28-30/144-146	£22.60	(25p)
2m. dual o/p pre amp.	£11.30	(25p)
1296 MHz converters 28-20	£31.30	(25p)
2m. converter 28-30/116 osc. o/p	£19.90	(25p)

### 2M. VHF HAND PORTABLES (inc. VAT)

Ken KP202 2w. o/p 145/145.5 6 channel	£94.05	(75p)
Ken KP202 as above with 1750 Hz tone	£100.62	(75p)
Base charger unit 240v. AC	£11.00	(50p)
Leather case	£4.69	(50p)
6in. helical whip	£5.31	(15p)
Extra channels (30% discount if purchased with KP202)		
Set 10 Eveready Ni-cads	£3.75	(10p)
	£9.72	(50p)

### MINI-PRODUCTS COMPACT BEAMS

HQ-1 hybrid quad 10-15-20m.	£69.95	(£1.50)
B24 2 element yagi 10-15-20	£57.50	(£1.50)
RK3 reflector element for B24	£33.75	(£1.00)
C4 vertical 10-15-20	£33.75	(£1.00)

### HY-GAINS ANTENNAS (inc. VAT)

2AVQ 10-20m. vertical	£31.88	(£1.00)
14AYQ 10-40m. vertical	£45.00	(£1.00)
18AVT 10-80m. vertical	£65.00	(£1.25)
TH13 1m. 600w. 3 element beam	£52.50	(£1.50)
TH3 Mk. 3 2kw. 3 element beam	£124.85	(£2.00)

### 2 METRE SSB (inc. VAT)

Liner-2 2m. ssb transceiver	£181.25	(£1.00)
Matching PSU	£26.25	(75p)

### MICROPHONES (inc. VAT)

Shure 201	£7.50	(30p)
Shure 444	£16.25	(50p)
Yaesu YD844	£18.66	(50p)

# WATERS & STANTON ELECTRONICS

HOCKLEY AUDIO . SPA ROAD . HOCKLEY . ESSEX

Prices include VAT (unless stated) Early Closing Wednesday HP—Trade-ins.

Telephone : 03704 (Hockley) 6835

# PROFESSIONAL PERFORMANCE

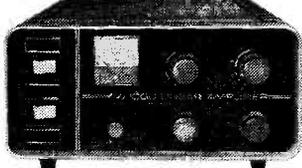
## with KW



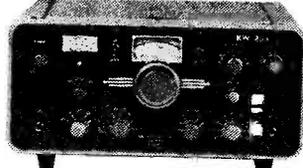
**KW108**  
**KW 108 Monitor Scope.** Monitor your transmissions 10-160m, two-tone test generator incorporated to ensure optimum linearity for SSB.



**KW 2000E and Power Supply**  
**KW 2000E Transceiver** covers all HF Bands 10-160 metres (10 metres in 4 Bands), 500 kHz VFO. SSB/CW. Outstanding TX audio quality. Excellent receiver signal-noise figures. Includes VOX, break-in CW, 100 kHz and WWV calibrator. Reliable 6146's in P.A.



**KW 1000**  
**KW 1000 Linear Amplifier.** 10-80 metres. 120 watts PEP input max. Designed to be "driven" by KW 2000A/B, or other Unit of similar power rating. In-built 2-5 Kv. PSU PA tubes pair T160L. Very quiet in operation.



**KW 204**  
**KW 204 Transmitter.** Well known for really good audio quality (SSB) and a favourite with CW enthusiasts. 10-160 metres. Reliable PA Tubes (2 x 6146).

**Other KW Favourites.**  
 KW 1000 Linear Amplifier; KW E-Z match ATU; KW 160 ATU; KW 103 SWR/RF Power meter; KW Dummy Load; KW Traps (The original and best) KW Trap Dipoles; KW 109 Supermatch (High Power Version) KW Low pass Filter; KW Balun; KW Antenna Switch. Stockists for Hy-Gain beams and verticals, CDR rotators, Shure microphones, etc. KW Spares are normally carried for a minimum of five years after date of manufacture of equipment.



**KW107**  
**KW 107 Antenna Tuning System.** Incorporates E-Z match, SWR/RF Power meter dummy load, Antenna switch. High power version KW 109 is available.

Write or phone for catalogue to: Easy Terms on equipment available over 12, 18 or 24 months



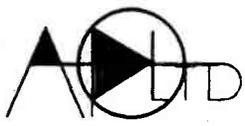
**Communications Products**  
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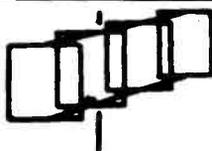
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We are pleased to announce our 4 element quad for the 2 metre band. This new design aerial features rugged construction, forward gain of approximately 10 dB, and VSWR of 1.2-1 available now with 75Ω impedance: 50Ω version available from 15th of September.

**INTRODUCTORY PRICE £11.25 (75p)**

**Axial Aerials**

2m. ground plane ...	£4.38	(50p)
2m. 5 ele. Yagi ...	£5.30	(75p)
VHF/FM 4 ele. Yagi ...	£4.75	(75p)
VHF/FM 6 ele. Yagi ...	£7.19	(£1.00)
VHF/FM 9 ele. beam ...	£15.00	(£1.50)
UHF/TV 10 ele. ...	£2.19	(50p)
UHF/TV 18 ele. ...	£2.50	(50p)

Please state channel or location

75 ohm low loss ...	16p	metre P. & P. inc.
300 ohm twin feeder ...	9p	metre P. & P. inc.
UR/67 50 ohm ...	34p	metre P. & P. inc.
6' I" mast ...	94p	(50p)
Wall Bracket for 1" mast ...	£1.24	(50p)
Lashing Kit for 1" mast ...	£1.24	(50p)

Complete accessories list available

### STATE OF THE ART SOLIDS

ACI27	15p	ZENER DIODES	T.T.L. AY-5-1224	£1.40
ACI28	15p	3 to 33 volts		
BC107	11p	400mw	11p 7400	15p
BC108	11p	1 watt	19p 7403	15p
BC109	12p		7404	20p
BC113	12p	1N4001	6p 7405	20p
BC147	11p	1N4004	8p 7410	15p
BC148	11p	1N4007	9p 7412	17p
BC149	12p	1N4148	5p 7413	35p
BCY70	22p		7442	76p
BF194	12p	8 pin dil	7447	97p
BF195	12p	NE 555	60p 7474	36p
BFY50	19p	LM 301	50p 7475	45p
BFY51	19p	LM 741	35p 7490	49p
2N2906	25p		74121	37p
2N2926	11p	8 pin dil skts	74160	£1.13
2N3055	50p	each	19p 74192	£1.40
2N3819	31p	pts. 10	£1.60	

Post and Packing 10p per £ any mix.  
 Orders over £2 P. & P. FREE

AGENTS FOR:  
**JAYBEAM MICROWAVE MODULES**  
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**C.A.R.C. PRODUCTS**

1 MHz Crystals (for home brew rock gardens)  
 £2.50 each (10p P. & P.)

### BOLT ON GOODIES

**Microwave Modules**

70 MHz Converters 28-28.7 MHz IF	£18.90
136 MHz Converters 28-30 MHz IF	£18.90
144 MHz Converters 2-4 MHz IF...	£18.90
144 MHz Converters 4-6 MHz IF...	£18.90
144 MHz Converters 28-30 MHz IF	£18.90
as above with 116 MHz output ...	£19.90
432 MHz Converters 28-30 MHz IF	£22.60
432 MHz Converters 144-146 MHz IF	£22.60
1296 MHz Converters 28-30 MHz IF	£30.00
1296 MHz Converters 144-146 MHz IF	£31.16
432 MHz Varactor Triplers ...	£21.90
1296 MHz Varactor Triplers ...	£31.25
144 MHz Preamp (2 outputs) ...	£11.30

Send for full details  
 All above prices include P. & P.

**C.A.R.C. PRODUCTS**  
 Texan Amplifier P.C.B. ... £2.40 (20p)  
 Marker Generator's (that thing that goes beep at rallies). Mk. IIIa outputs at 1 MHz, 500, 100, 50 and 10 kHz. Mk. IIIb outputs at 1 MHz, 500, 100, 50, 25 and 10 kHz. Mk. IIIa £10.15 Mk. IIIb £10.95 (20p)  
 Complete gen sheet available on request

**Digital Clock.** 4 digit, teak, walnut or oak case. Just the thing for your shack, lounge, private yacht ... £25.00 (40p)

Coming Soon ...  
 Polybase ssb generator  
 100w. Audio power amp module.  
 80MHz Auto-ranging, Period/Freq. Counter.  
 RTTY Tone Generator (New IARU Freq's)

Jaybeam Aerials  
 FULL RANGE AVAILABLE

# Western Electronics (UK) Ltd SOUTHAMPTON

UNITED KINGDOM MAIN DISTRIBUTOR  
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THE WORLD'S FINEST RANGE OF AMATEUR  
RADIO EQUIPMENT  
BY

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If you are buying all you have to do is drop us a line or telephone and quote your Access or Barclaycard number; we'll do the rest promptly.

### AFTER SALES SERVICE

No need to go even 10 miles to your nearest dealer; we will collect your equipment by Securicor from your own doorstep and save your petrol, precious time and money. This is done FREE OF CHARGE on all warranty work. So whether you're in "bonny Scotland," the "Welsh Hills" or "down the road," you won't find a better service than that from WESTERN ELECTRONICS.

### SERVICE DEPT.

For TEST EQUIPMENT we have the best, such as the latest Hewlett Packard 8554B DC to 1.2 GHz spectrum analyser, Tsurudome and Yaesu frequency counters, Marconi calibrated signal generators, Telonic sweep generator, i/c testers and many other items. What you also should know when your equipment is serviced is that it is done by the finest STAFF; all are highly experienced.

### DELIVERY

All orders are normally dealt with the same day as received and Communication equipment too heavy for post is despatched by Securicor with whom we have a contract for daily collections and delivery on the next working day. This is the quality of service which we initiated and of which we are still the leaders.

OUR AIM IS YOUR PLEASURE

### YAESU PRICES (Carriage free by Securicor) including VAT

#### HF TRANSCEIVERS

FT-75B 10-80m. 120w. ....	£175.00
DC-75B DC PSU for FT-75B .....	£50.00
FP-75B AC PSU for FT-75B .....	£40.00
FT-101B 10-160m. 260w. ....	£412.50
FT-101EE latest model .....	£450.00
FT-101E "101EE" + RF Processor....	£493.75
FT/FP-200 10-80m. AC only .....	£268.50
FT-201 10-80m. AC/DC .....	£362.50
FT-401B 10-80m. 500w. ....	£387.50
FT-501 10-80m. Digital .....	£498.75

#### HF TRANSMITTER

FL-101 10-160m. ....	£300.00
FL-101RF 10-160m. + RF Processor	£343.75

#### HF RECEIVERS

FR-400DX .....	£193.75
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FR-101S 10-160m. ....	£306.25
FR-101S Dig. 10-160m. Digital .....	£387.50
FR-101D 2m.-160m. + SVV Bands...	£412.50
FR-101D Dig. Digital "101D" .....	£493.75

#### VHF TRANSCEIVERS

FT-2 AUTO 8 Ch. FM Scanning .....	£250.00
FT-221 2m. SSB/AM/FM .....	£412.50
FT-224 24 Ch. FM .....	£162.50
SIG BOR 80 Ch. FM... ..	£231.25
FT-620B 6m. AM/SSB/CW .....	£243.75
FP-2AC AC PSU for FT-224 .....	£47.50
FP2AC + B as above + Batteries...	£88.75

#### LINEAR AMPLIFIERS

FL-2000B 1200w. 10-80m. ....	£243.75
FL-2100B 1200w. for 101B/E .....	£243.75

#### REMOTE VFO's

FV-50C for FT-75B .....	£28.75
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FV-101B for FT-101B .....	£60.00
FV-200 for FT-200 .....	£60.00
FV-401 for FT-401B .....	£60.00

#### SPEAKERS

SP-101B for FR/FT-101B/E .....	£16.25
SP-101PB Phone patch//Speaker .....	£36.25
SP-401 for FT-401B .....	£16.25

#### TEST EQUIPMENT

YC-355 35 MHz AC only .....	£75.60
YC-355D 200 MHz AC/DC .....	£135.00
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		6CB6 ...	40p
		6CH6 ...	85p
		6CL6 ...	75p
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FV200 VFO for FT200	£42.00

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## YAESU'S NEW TWO METRE MULTI MODE TRANSCEIVER THE FT221

ARRIVAL SCHEDULED AUGUST 20

#### ALL MODES

USB, LSB (for Oscar), CW, FM and AM.

#### STABILITY

Phase Locked VFO (less than 20 Hz change for 10% Line Voltage).

#### PORTABILITY

11½" (W) x 5" (H) x 8" (D) (4" less than the FT220). 240V AC and 13.5V DC (at 3A). Weight 19 lb.

The FT221, with plug-in boards, P.L.L. V.F.O., 1 kHz readout, front panel adjustable V.O.X. and mic gain, 100 kHz crystal calibrator, sensitive squelch (0.3 µV), clarifier offering both I.R.T. and I.R.T. and I.T.T. (makes F.S.K. easy). Switchable "S" and centre zero tuning meter, noise blanker, 11 crystal control channels, sensitive and selective receiver and with its clean T.X. output (capable of further amplification) it must be:

**THE Transceiver for Two, for the Seventies, from Yaesu, from SMC.**

#### FULL COVERAGE

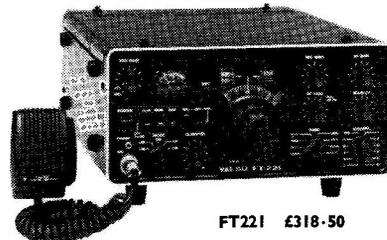
144-148 in 8,500 kHz Sections (146.2 + 1,150 = 1,296.2 MHz).

#### REPEATER(ABILITY)

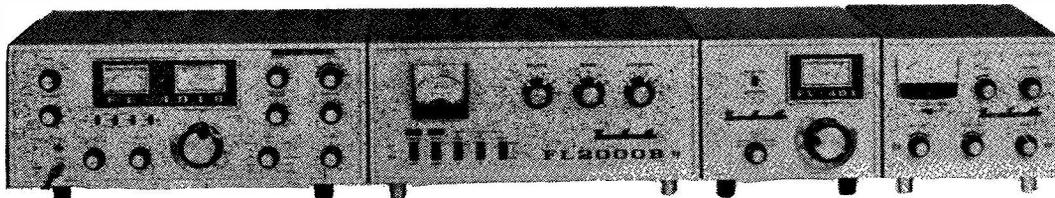
Simplex or Duplex (Normal and Reverse) with Tone Burst.

#### SELECTIVITY

SSB 2.4 kHz (1.7 : 1 shape factor).  
FM 12 kHz (2 : 1 shape factor).



FT221 £318.50



The FT401B and its accessories are shown above, and provide an uncompromising approach to the home station. The FT401B itself runs 500W P.I.P. but when throttled back to drive the FL2000B and coupled with the FV401 external VFO provides the base stations with ultimate DX appeal.

The unit nesting on the end is the FTV650, a 6m. transverter which we can provide electrically modified for 70 MHz, 100W P.I.P., 50W CW, 40W FM/AM, £80.00.

FREE STOCK PRICE LIST AND SECONDHAND LIST SEND S.A.E.—SEE OVERLEAF FOR SELECTION OF MASTS/ANTENNAS



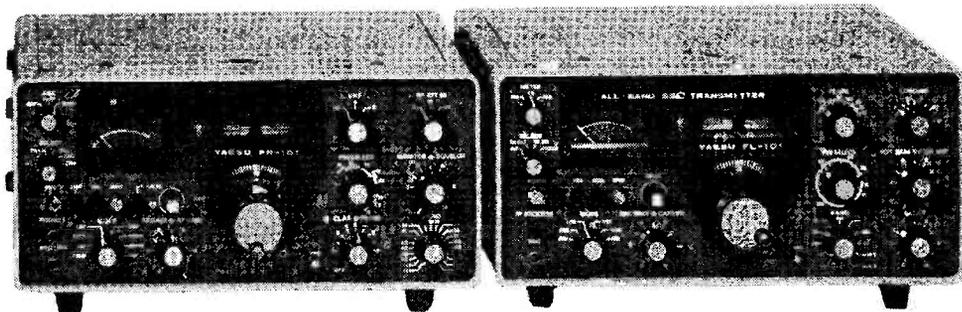
### PLEASE NOTE — THESE PRICES DO NOT INCLUDE VAT 25% or 8%

Terms:—Cash with order or credit card holders just 'phone in for, if possible, same day despatch. Immediate H.P. available for card owners for amounts up to £150.00. Holders of current U.K. calligns (where references have been provided) can be speedily cleared, or normal H.P. at competitive rates is available.



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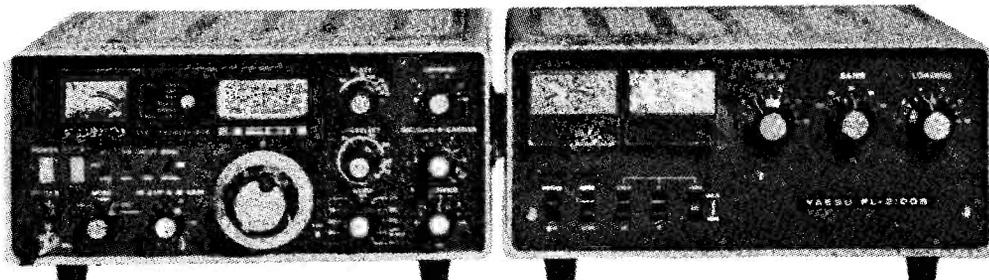
17 YEARS OF PROFESSIONAL EXPERIENCE



FL101 £265  
FR101S £245  
FR101D £330  
FR101SD £330  
FR101DD £430

The FR101 is an advanced offering in the deluxe version, coverage from 1.5 MHz including all SW broadcast and HF amateur bands (23 in all) to 144 MHz. AM, FM, SSB, CW are catered for, each with a separate crystal filter. Transceive operation with the FL or FT101. Also Digital versions available.

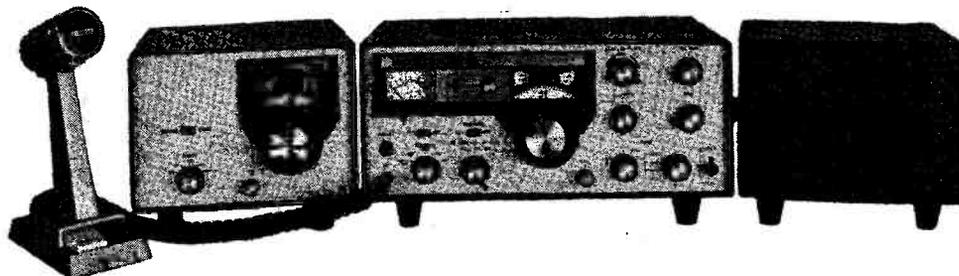
The FL101 is the ideal companion to the FR101, thus forming a superb base station. Operation on 160 through 10m, using SSB, AM, CW or FSK is offered, with the added bonus of an option inbuilt RF speech processor being available at moderate cost.



FT101B £330  
FL2100B £195  
Ex-Stock in Totton

The FT101B is except for driver and PA fully solid state using reliable and serviceable "computer type" plug-in modules. All that is needed for instant "on the air" operation from 160 through 10m, is either 12V DC or 234V AC and, of course, an antenna.

The FL2100B features operation 80 through to 10m, using two rugged 572B carbon plate tubes in class "B" grounded grid circuits with individually tuned input coils for each band, and Bifilar wound ferrite filament chokes.



FT200  
VALUE FOR MONEY STILL ONLY £170 plus PSU £44

VD844 FT200  
FV200 FP200

The FT200 is still without doubt one of the "best buys" available. Compare its features with similarly priced units. SPECIFICATION : 260W, P.I.P. SSB/ CW ; 75W AM 1 kHz readout on all bands 3.5-28.5-29 MHz (3 optional 10m, crystals available). Stability : 100 Hz 30 min. after warm up. Sensitivity : 0.5µV 10dB/S + N. Selectivity 2.3 kHz (6dB) 4 kHz (60dB). Solid state FET VFO with excellent linearity (like all Yaesu VFO's). Xcal calibrator. VOX/ PTT. Clarifier + 5 kHz. Break in CW keying. Extra crystals from SMC only £2.20 (+ VAT).

## SOUTH MIDLANDS COMMUNICATIONS LTD.

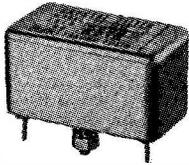
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individually supplied with  $\pm 6$  dB, (25dB), 60dB bandwidths, ripple factor and insertion loss.

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YF90F2-4 2.4 kHz...	...	£11-00	YF107M2-4 2.4 kHz	...	£12-00
YF90F12 12 kHz	...	£13-00	YF107M12 12 kHz	...	£12-00
Carrier Crystals HC18/U	... each	£1-50	Carrier crystals HC18/U	... each	£1-50

**FT2F** (52 MHz Rx 6 MHz Tx) £3-50 pair, £2-00 each  
 144 (-15, -25, -36, -48, -60R, -70, -80)  
 145 (-08, -09, -68R, -90)

**Simplex**  
 S (0, 12, 16, 20, (21), (22), 23, 24)

**Duplex (Repeater)**  
 R (0, 1, 2, 3, 4, 5, 6, (7), (8), 9)

**Inverse Repeater**  
 IR (0, 1, 2, 3, 4, 5, 6, (7), 8, 9) Rx  
 IR (0, 6) Tx

**FT220** Channel crystals £2-00 each  
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**FT200** £2-20 each  
 10A, 10C, 10D

**FT2FB** (14 MHz Rx, 18 MHz Tx) £3-50 pair, £2-00 each  
 144 (-15, -20, -30, -36, -40, -50, -60, -70)  
 145 (-09, -32, -44T, -51, -84, -90)

**Simplex**  
 S (0, 16, (20), 21, (22), 23, 24)

**Duplex (Repeater)**  
 R (0, (1), 2, 3, 4, (5), 6, (7), (8), (9))

**Inverse Repeater**  
 IR (0, 1, 2, (3), 4, 5, 6, 7, 8, 9) Rx  
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**CI46A and C826MB** £3-50 pair, £2-00 each  
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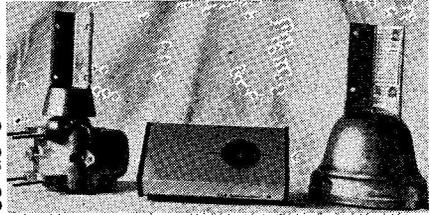
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Trapped dipole standard 10-80m. (S) £16-85 High Power version of S (HP) £18-75 Portable version of S (P) £19-50

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AR30 for Stereo and small VHF beams ... £25-00  
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THE NEW CONTROL UNIT FOR THE CD44 AND HAM 2  
 5 core for AR30/40 at 18p/m.  
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**KW EQUIPMENT Carriage extra (plus VAT)**  
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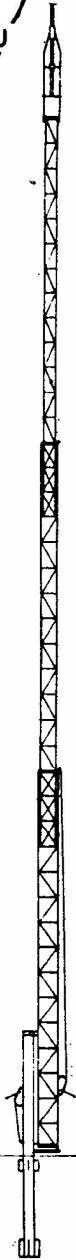
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# MAGNUM TWO AND FOUR METRE TRANSVERTERS

Our transverters accept low level drive from most HF transceivers in the 28–30 MHz band (other IF's to special order) and convert this signal to the corresponding frequency in the 70 MHz or 144 MHz band. Signals being received in either of these bands, are in a similar manner, converted back to the 28 MHz band.

All power requirements are taken from the accessory sockets of the HF transceiver as in the YAESU MUSEN or SOMMERKAMP range, or with very simple modifications to most other gear, either transceivers or separates. If any details on modifications are required please do not hesitate to contact us.

We have incorporated in our design one of the well known and highly respected "MICROWAVE MODULES" Mosfet converters.—Need we say more.

It has been our experience in industrial electronics that printed circuits, when used in valve circuitry, prove to be unreliable in many cases and because of this we have chosen to "Hand wire" the RF section of the transverter. In doing this, we are confident that it improves the stability and reliability factor of our product.

## SPECIFICATION

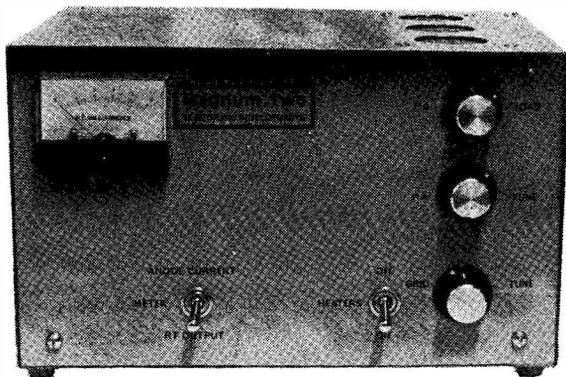
Modes : CW, SSB, AM and FM.  
 Input Drive : Typically  $\frac{1}{2}$  Watt RMS.  
 Output Power : Minimum of 50% efficiency.  
 Typically when used with FT 200, 90–100 Watts  
 SSB output.

## SIZE

10" x 6" x 7".

No special cooling required.

Our transverters are constructed for good mechanical stability, while providing adequate ventilation.



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 S.M.C. — SOUTHAMPTON  
 CRAYFORD ELECTRONICS — KENT  
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## PRICE

£88.00 Plus VAT  
 Including all valves, relays and power lead to transceiver.  
 If you already have an M.M. converter in good condition we are prepared to give a generous allowance and use it in the Transverter.

## GUARANTEE

12 MONTH UNCONDITIONAL GUARANTEE, but we exclude from this the PA valve, which is covered by the manufacturers own guarantee for 3 months.

For users of the LINER TWO, TRIO, or in fact any low power 2m. TRANSCEIVER, we are now producing a Linear Amplifier/Receiver Preamp.

This unit is entirely self-contained, operating off AC mains and provides a stabilised low voltage supply to operate the transceiver.

## SPECIFICATIONS

Up to 100 Watts SSB output.  
 Self-contained power supply.  
 Microwave Modules receive PREAMP.  
 Full input and output relay switching.  
 PRICE : £83.00 Plus VAT

## 70 Cm. LINEAR

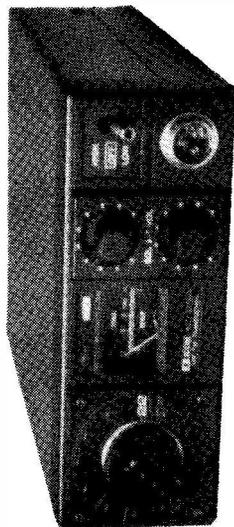
Compatible with the M.M. Transverter  
 Drive required—Up to 5 watts Rms.  
 Output 50 Watts.  
 PRICE : £36.50 Plus VAT. Complete with valve and power lead.  
 VAT — 25% on all products

# ELECTRONIC DEVELOPMENTS

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# IMAGE



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# SHORT WAVE MAGAZINE

(GB3SWM)

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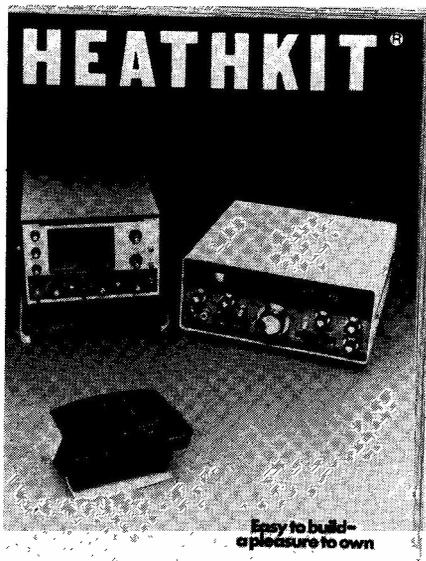
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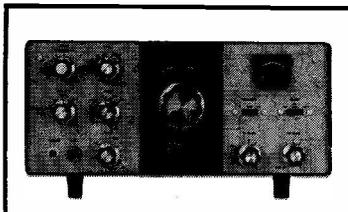
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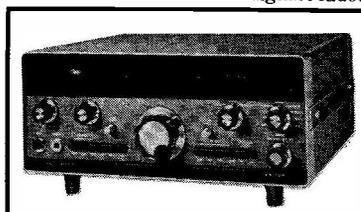
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E D I T O R I A L

***Re-Adjustments***

During the last twelve months we have had to contend with steadily increasing prime costs—printing, paper and postage, with another large rise in distribution by mail in immediate prospect. Apart from having to carry the increased postal charges in the case of existing direct subscribers, the cost of parcel delivery goes up by 30%—and it is by these parcels, sent out to the retail newsagent trade all over the U.K., that the bulk of our circulation is achieved. For a year, this cost increase alone runs into four figures. . . .

In spite of all this, during the year since October last our cover price has remained unchanged. But we are now at a point where some modest increases must be made to hold the position and keep the business viable.

Accordingly, with effect from the next (October) issue the cover price will be 35p and the direct-subscriber rate £4.80. There will also be increases in the rate for small advertisements, trade and reader. All existing direct subscriber contracts will, of course, be honoured at the old rate until their expiry. Since the increased prices do not come into effect until publication of the October issue, on September 26, from now till that date new direct subscribers will be accepted at £4.20 for a year of twelve issues.

It is a matter for regret and of no advantage to us—and, indeed, is a great nuisance from the point of view of administration—to have to make price increases. However, if the Govt. anti-inflation measures do succeed to some reasonable extent and the present position as regards costs does tend to flatten off or “bottom out,” we would hope that the position can be held for the foreseeable future.

\* \* \* \*

We take the opportunity of announcing that as a measure of economy and to reduce the wear-and-tear of commuter travel, also to ease the staff situation, we are moving the whole administrative side of our operation out of London altogether, to new offices at Welwyn, Herts. This will not become effective for a couple of months or so yet and for the time being the London Office address remains as it has been for nearly 30 years. A further announcement will be made in due course.

*Austin Forsyth  
G6FO*

# COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

**P**ERHAPS the most pertinent fact of the period under review, at least for U.K. readers, has been the flow of summer weather; with temperatures up in the nineties during the day, shacks have been all but uninhabitable in many cases, and periodically all activity has come to a halt while aerials are earthed down as protection against lightning. On the other hand, this same weather has prevented many an amateur from getting a decent night's sleep, and doubtless there are many who have crept into the shack and hunted DX while waiting for a bedroom to cool down a little.

In terms of events on the bands, no doubt for many the third Mount Athos expedition was the major pinnacle, although the expedition was not blessed with the very best of luck, as will be seen in due course. In general terms, we are still bumping along the bottom of the sunspot cycle, which seems to be showing a trend to a long "flat" at the bottom, rather than the sharp change of direction we all hope for. But the luck is not as bad as it might have been—witness the unfortunate chap who *drowned* in the Sahara desert, or nearer home the umpire at the village cricket match who was struck by lightning, had his leg-iron welded into a solid mass, and lived to tell the tale.

## Eighty Metres

Our little gripe about the use of AM and SSB at the CW end of Eighty touched off a *cri-de-coeur* from G8GMI, who is on the band with the sole intent of getting his Morse up to scratch for the test. Jesse does a couple of hours each morning, and in particular is listening from 1930-2000 to G3RAF on 3590 kHz. Fine, while the slow stuff is going on, no problem, but the moment the operator goes up to the 12/13 w.p.m. mark, about 1950, sure as fate a certain operator comes up on the frequency calling CQ at far too fast a speed for Jesse to copy, and wipes up the very bit of the Slow Morse that G8GMI needs to receive to get his speed up. At 67, and after a stroke at that, one is going to have to work *hard* to pass in Morse, and to make it harder in this manner is a bit much—surely the gink who is sending the fast CQ knows he is on top of G3RAF's Slow Morse? Has he forgotten his own struggles to learn Morse, the more so if there isn't a convenient class at hand? Meantime, G8GMI will be taking the test by the time this comes out—let us hope he passes, in spite of frustrations.

G2CAS (Harrogate) also writes in some detail on the subject of the persistent phone intruders into the 80m. CW area, listing a total of no less than 30 U.K. regular day-time offenders, many of whom with call signs suggesting they ought to know better. (Our own little piece of research indicates that they are probably mainly in the retired category, and amuse themselves on the air during the mornings).

When challenged about straying into the CW area, one or two adopt an aggressive attitude "... nobody is going to tell me where I can operate..." or "... my licence doesn't show any band plan..." and so forth. Of course, the Band Plan is no more than what is hopefully called "a gentleman's agreement," worked out in the interests of all and should, therefore, be observed by everybody. The European agreed CW area is 3500-3600 kHz, with 3600-3800 kHz available for all other modes.

It's quite a time since last we heard from G8HX (Mansfield) who brings up an interesting postscript to the previous mention of him being QRT with a burned up choke in his DX-100. It seems W6OJW (who saw the comment here) wrote on his behalf to Heathkit in U.S.A. after a new choke, but no joy, and so he wrote to Frank and they corresponded later. Imagine Frank's surprise, when, taking his holiday weeks from the salt mine, he answered the front door bell to find W6OJW there in person! As G8HX says, a very pleasant surprise, to meet W6OJW and his XYL who were on their way to visit Southwell Minister nearby and made a short diversion to G8HX. Back to radio, and G8HX reports his bent long wire seemed to work quite well on all bands, with an II as best *daylight* DX on Eighty CW.

Now to G3RJV, who wrote from Cleethorpes, but at the time of writing will be in transit to his new QTH. This being so, opportunities for radio relaxation have been somewhat lacking; however, a Joy-stick and five watts have managed to work around to G3NEG in Essex, to GD3TNS and a long QSO with G15SJ. George says that if the band is "not too QRM-riddled" QRP SSB is possible although he personally prefers and does better with CW. Hopes are high for the new spot, which has a ridge on the SW side but is on a rural site as against the old town-centre QTH with all its local noise level.

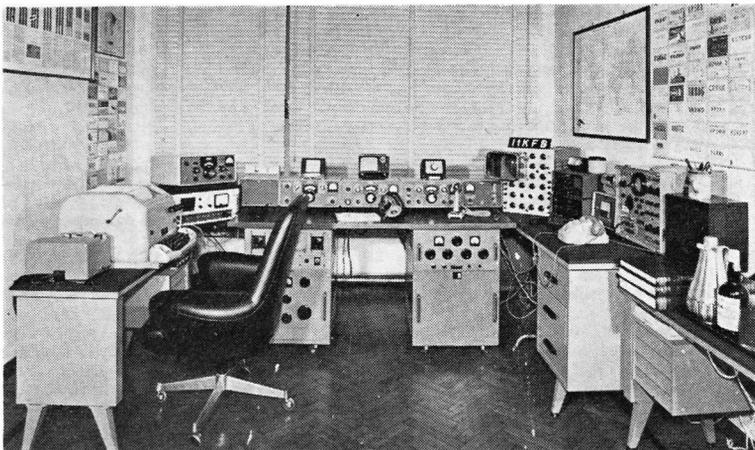
GM3OLK and GM3YOR made a trip to the Hebrides at short notice and the latter writes from Kirkcaldy to let us know how it got on. Despite there being no advance warning, they knocked up 128 QSO's on Top Band and 359 on Eighty. No problems were met save that the weather broke after the first couple of days, and the generator developed an oil leak; but still they clocked 1234 miles on the speedo of the van *plus* various sea crossings. As a postscript, we might comment that despite the lack of advance warning quite a few of the letters mention in passing the pleasure at a QSO from the Hebrides.

G3DNF (Leeds) comes next, and he is still plugging away on the QRP front; he now has operational gear from Eighty down to Fifteen, with tackle for Ten in the form of a CO/PA "on the stocks." During the *DL AGCW Contest* for QRP, Gordon was pleased to note that he and G8PG, the arch-QRP merchants, received some real opposition from G and GW in the battle for points.

When camping in the south of France, near St. Tropez, G3SCD (Louth) and his family were interested to meet F6DCN/P, Herve and Marle-Jeane Le Roy, operating from their caravan on the same camp site. Both the Le Roys are licensed, and run an FT-250 with a trap dipole.



Franco Amoretti, Via Renzo Righetti 9-12, 16146, Genoa, signs I1KFB and has more than a bit of everything! As well as high-power on the communication bands, he runs RTTY.



Being somewhat dis-satisfied with QRO at 750 milliwatts, G3CED/G3VFA (Broadstairs) has come down to between five and six hundred milliwatts—price of batteries going QRO, hi. George operated mostly in the mornings, and noted the marked QSB on all bands with frequent complete wipe-out, particularly on Eighty, quite suddenly occurring. George, incidentally, comments on the saving in both capital and running costs by using QRP—when he flogs the Japanese QRO, G3CED reckons to recover enough to buy a wind-powered generator to run shack lighting, heating and the rig, so as to be able to chase QRP DX in the power cuts! On the actual contacts, perhaps the most interesting was that with YO4ARR/MM near Hull. This was the way of it: He was 599 plus many, and George guessed him to be off Broadstairs from the strength: the YO went back to GM4CMO in Glasgow. A call slightly off the frequency failed to turn the trick, and then the YO went QRT—QRL 10 mins. At that, G3CED went a bit LF and went on calling the chap, thus drawing the gaggle away from the frequency; when ten minutes were up, a rapid call on the proper frequency raised the YO and got a 589 before the gaggle "caught on" and returned to the fray—but the seconds turned the trick! As the maker of the Joystick (and most consistent user of his own product) George was amused to hear from a W of the XYL half of an XYL/OM team in the States who gave a report and added that the "Antenna is the old man's Joystick."

Another chap who has been out of sight for a while is G5BHK/F6DDY (Dorchester) who has been deserting his beloved Top Band for Eighty, preparatory to a trip to France to activate his F6DDY call on Eighty as Top Band is not allowed over there. He makes no comment on his reactions to Eighty!

G3ORP (Maidstone) seems to have deserted Top Band for the other areas since embodying the latest mods to his Drake R4C, an anti-cross modulation kit which he finds to be pretty effective. SSB was used on Eighty to hook up with ZC4AK, C31GN, CT1MK, VO1FG, VE1ED, VE1AGX/1, and VE1ALD, all but the last two with 59 reports inwards.

G2NJ (Peterborough) worked a couple of portables on the band, G4DGU with three watts and G2ALM at Bournemouth, both on CW.

#### Forty Metres

We are gradually getting away from the static and heading for the DX. G2BY (Wroxall, I.o.W.) watches things between 0500 and 0830z; over the year August 1 1974 to August 1 1975, Bert worked a total of 56 VK's and 58 ZL's on the band, all of course on CW; recently he received a tape of his signals recorded by VK3MR and was astounded at the quietness of the background out there. Over here, G2BY reckons never to operate without a 20 dB attenuator; otherwise DX signals are just inaudible under the sharsh—as Bert says, those who "don't like Forty" would lose many of their problems if they were to use an attenuator in the aerial circuit.

Weather and garden combined forces to put G2HLU (Earley) well down the activity stakes, but Harold did at least try 7 MHz, and found his most interesting QSO's to be K5ETA/6Y5, a long matter with KZ5DX and 4K2AB, all of course CW.

Another recruit to the ranks of the QRP forces is GM3RFR (Baltasound, Shetlands) who reappears after a very long absence, to advise he is taking an interest—like so many of us, indeed—in the

QRP game. GM3RFR's formula is a BD124 transistor on 7.032 MHz at about four watts, and so far he has made contact with G, EI, F, EA, DL/DM, SM, OH, UQ, OK, YZ and YO—and now he reckons we should recall the old five-band DX Table but make it a five-watts-or-less affair. Changing the theme a little, it comes to mind there must be something in the air up in Shetland—we have had, over the years since the writer took on this piece, GM3SVK, GM3KLA and GM3RFR all reporting their DX, which must make Shetland the most DX-minded part of the U.K. and Unst the most DX-minded part of the Shetlands!

G3ZGC/MM is our next correspondent, back in action aboard *Esso Scotia* (GZJG). It seems the FT-75 and its owner had a rough ride to join ship this time, with trip over the desert of A6-land to cover, riding the sand for fifty miles during which they bogged down about twelve times! Forty was very quiet from the Gulf to ZS, both as to G3ZGC/MM activity and as to DX when he was on. From ZS3 area a brace of LU's were worked, and ZS's remained "in" up to St. Helena. The voyage is from the Persian Gulf to Aruba in PJ3; and the DX only really started to roll when they got to the north-east corner of PY, since when a call on 7025 kHz has usually fished up some Europeans, particularly from 2230z when the BC QRM dropped. Just before he wrote, on July 23, they were in the Caribbean and having been awakened at 0200 local time (0700z), Richard fired up and found VK3XI, G13OQR and VK7DJ booming in on 7080 kHz. By and large, the peak in conditions was on the 18th and 19th of July, with a marked fall-off next day.

G4CXM (Paignton), like so many others, found it a bit of a strain staying in the shack, but Ray seems to have been pretty active on Forty CW, contacts mentioned being G3ZGC/MM, KV4CI, KP4EBV, K5YPS, OY6FRA/A, PY2NE, SV0PN (Crete) using five watts, UF6FCO, UL7PBN, UA9YAR, VE2BPT, VE2BQT, VK1BE, VK2FU, VK3MR three times, VK3XB, VK5FM, WIQFI, W2JDC, W3WV, WA4SNI, YV1TO, YV4BE, ZL2AGY, ZL3VW, ZL4BB and 9J2WR.

Now to G2HKU who seems to have looked at the band occasionally and worked, on SSB, YV2AHN and YV5MO, plus CW to UM8MBA and W4VCI.

Interesting thought from G3CED—he says he gets *better* reports from U.K. stations if he doesn't tell them he is running QRP! Forty was not, this time, a heavily-used band, but most of Europe appeared in the log, and plenty of G stations.

Forty for G3ORP was a CW band: Peter raised K4KSB, LU9FAN, W1JF, W4CRW, WA4BUJ, UD6AR, K2TVY, WA3CNE, WA1NRF, K4BK/G2, LU9FAN again, PY7MAX, KP4BC, UM8MBA, YV5CKR, K4PQL and VE2L1/2, taking them in log order over ten sessions on the band all in the 2300 to 0030z range of time.

G2NJ had a couple of contacts with OT G2JL, the first when that station was /MA at moorings at Helford, and the second from the /MM call 47 miles south of Falmouth; for the third contact the call used was F0FR/MM and the location near Brest. This of course was Bob Albright, G2JL, on his annual summer cruise in his yacht *Reine de Mai*.

#### Here & There

Which is where we lump all the comments—printable ones, that

is!—in your letters and from other sources.

Readers may recall the bother G2HKU has been having with the hedgehog population digging up his radials. This problem has been solved by coming to an understanding with the hedgehogs whereby they get regular nosh laid out for them; but that was not, by any means, the end of Ted's animal problems with the aerial farm! The latest round in the battle concerns a rabbit which was seen chewing the coax feeder, copper and all(!).

Naturally G3CED is interested in aeriels and their designs; this time he mentions a thing called a "Levy" aerial and wonders if anyone has ever come across it and if so what the blazes it is—new to this old scribe and all his multitudes of books on aeriels.

G8HX mentions that, like so many others, he has acquired a MFJ audio filter for CW which he uses with his SB-301. At first he had it in the output leads of the receiver but then decided to try it wired in to the volume-control circuit, using the brace of spare phono jacks on the back of the receiver with screened wire so that although "wired in" it is still an outboard accessory which can therefore be unhooked easily when the time comes to change the receiver; this little mod gets rid of the tendency of the SB-301 to overload which is noticeable in the normal "phone socket" position unless great care is taken to keep the audio output down.

G2HLU mentions a QSO with a W8B on Twenty who sent a QSL card by airmail complete with a couple of IRC's—bucked Harold up no end and made him feel like a DX station again!

Comment from G2BY who gives a sure-fire method of raising a YZ station on Forty—just call "CQ VK/ZL!"

Another amusing—and revealing—comment came in from G2BJY (Walsall) who has been flogging away to stay at the top of the Top Band Counties Ladder, and as a result has operated far more Phone than ever before. He is determined to try and lift the prize, but just as soon as the time is up, he intends to go right back to all-CW work which he finds much pleasanter and *less tiring*. On a different tack, Geoff got himself a teach-yourself book on Russian and sent a letter and check list for one of their awards—he reckons it should give the folk at Box 88 a bit of a laugh!

An interesting letter—and a first one too, come to think of it—from G4CZE (Wigan) who started his amateur career at 16, back in 1973, as G8HGB, but very quickly became disillusioned with Two Metres, where he found not just a lack of DX but more to the point a lack of stations to work at all, and a lack of something to talk about when he *did* get a contact. Hence, by the end of the year Alan was getting stuck into the Morse seriously (he was already at about seven's) which resulted in a pass slip in February 1974, and the G4 callign. Early operation was all Top Band, with a bit of AM and CW, which was found to be great fun, and a reasonable amount of DX was knocked off; since January this year there has been SSB as well. The "over rate" has been about 70% SSB and the rest CW since then, and as Alan is with the BBC and being moved about all over the place during training, the little rig has been used more as JA than anything and usually with a bit of wet string as the aerial—so if you hear him, give him a shout, and if you are dithering over building a bit of Top Band gear, listen to G4CZE, and go ahead.

GD4BEG (Sulby) has a long letter with much of interest which is mentioned elsewhere in the piece; however, his tailpiece is to mention that Ellan Vannin is not a county and/or part of the U.K. but a *country*, and he wishes to shoot the gentleman who insists otherwise. Expatriate G's please to note!

G5AYL/A (Streatham) will have shifted site to the Epping Forest area ere this piece comes to be read; Morgan has been operating as and when the work pressures arise, using his FT-101 and Joystick, to push his total up to 64 countries in all continents save Oceania. It is understood that from the new QTH, it should be possible to get up some sort of a vertical aerial; meanwhile, when operating in the heatwave gets too tiring or frustrating, G5AYL/W4WFL has been cooling off with good English ale, and good cider—has he ever tried "scrumpy," we wonder?

G2CAS runs a 62 Set, modified on the PSU side, but admits to a chirpy note. (These equipments were never intended for CW working). In a QSO with G4EFD (Manchester) John was astonished to hear a rock-steady T9x signal, also emanating from a 62 Set. It seems that G4EFD has made other modifications to his "62" to make this possible. As there are many of these robust and economical transmitters in use, an article on the mods. would seem to be appropriate.

#### DX Notes

ZC4AU, ATLO, R.A.F. Akrotiri, BFPO 53 writes to let us know that since "the troubles" they have slowly been replacing the gear lost and damaged, and are still an active Club though not all that strong numerically, and would welcome any serviceman with an interest in Amateur Radio, also contacts with U.K. clubs. However, the

vital part of ZC4AU's letter, and the reason for giving Gerry's full address, is that he is now custodian of several hundred QSL cards addressed to virtually every ZC4 call ever issued since 1969. Thus, should any reader who has held a call care to write to ZC4AU, SSjt Gerry Brennan, at the address above, he will be glad to forward their QSL's on the receipt of the "necessary." The list of calls is too extensive for him to detail, or us to print.

From PY7AOR, and via Geoff Watts *DX News Sheet*, we hear about the revision of the PY call allocation, and also of their PY-DX-Group, covering the interests of DX'ers in PY. From June 6 this year, the arrangements have been by districts and the list has expanded to take in prefixes including PP1, PP2, PT2, PY3, PY4, PY5, PP5, PY6, PP6, PY7, PP7, PR7, PS7, PT7, PY8, PP8, PR8, PS8, PT8, PU8, PV8, PW8, PY9 and PY0; these prefixes will now be permanent and not, as in the past, issued largely on a "special-activity" basis other than PY. Novices have the same prefixes but have W, X, or Y as the first letter of the call plus two more letters, while reciprocal or foreign operators will be distinguishable by the Z after the prefix, for example, PY7ZAA. Mobile or portable operation will be denoted by the giving of the prefix of the area where operation is taking place as a suffix after the normal station call, i.e. PY7AOR/PP7, plus the /MM for maritime mobile, /MT for car mobile, and MA for aeronautical mobile. In DX terms, the hard ones to find will be PY9, PT8, PU8, PV8, PW8 and PY0.

That Mount Athos expedition, as many will know, hit snags, but nonetheless the gang racked up 4000 contacts in 110 countries. They started by burning-up the transformer in the TS-520 when by an error they let the generator output volts rise to 300. This wiped out one of the plate voltage capacitors and all-night work got the rig back on the air but at low power after modifications. Next morning when they fired up there was no VFO; this was also knocked out by the over-voltage, so all they could receive was WWV. Back to Athens for some more gear—three hours by donkey to the harbour, three more hours by boat to the mainland; three more hours to Thessalonika to the airport and then plane to Athens; get the new rig and turn right round and go back, knowing that the flight to Thessalonika is only twice daily and the boat likewise. By late on the Wednesday evening they had the brand new T599/R599 rig and although they had missed the good propagation conditions they carried on for 3½ days. Some idea of the difficulties due to propagation may be gleaned from the fact that with operators of the calibre of SV1GA and OH2BH, only two W6's found the way over on SSB—nevertheless, a fine show under extreme difficulties.

At this time, one seems to lack any real DX news, although of course the semi-rare ones which don't seem to stir up the publicity still carry on as ever. For instance the VK0AA reported as being around early in July seems to be another manifestation of Phoney Phred, who also popped up, we suspect, as "TA1DB" saying *QSL via ARRL*.

#### TOP BAND COUNTIES

October — September

Call sign	AM	CW	SSB	Total
GD4BEG	97	142	99	338
G2BJY	62	138	63	263
GM3YOR	39	130	49	218
G4CBQ (home)	56	46	68	170
G4CBQ (Univ.)	105	8	22	135
G4AKY	—	94	24	118
G4BOH	9	70	30	109
G4BWP	27	70	—	97
G4AYS	—	82	—	82
G5BHR	9	60	—	69

Each county may be worked once in each mode. AM contacts count three points, CW two points, and SSB one point. AM contacts made by changing over to AM from SSB are not allowed, neither are cross-mode contacts, saving that AM/SSB contacts will be allowed as two points for the mode the station was using, i.e. the SSB stations will claim his two points under the SSB heading and the AM end his two points under the AM heading. New U.K. County designations apply, as listed on p. 97. Starting date October 1, 1974, closing September 30, 1975.

DJ6TK, Wilfred Graeper, Am Hang 20, 4470 Meppen, Nr. Bremen, has an FT-101B and SB-220, with a two-element home built Quad for 14-28 MHz, a delta-loop on Eighty and an inverted-Vee for Top Band—and a cosy little shack!



The position as to PA01WH/S2 is that Wim is now back in Europe, and still waits for some of his gear to be returned to him; logs for 1974 are in his possession but the 1975 ones have been detained and there is doubt as to whether they will ever surface; likewise Wim's QSL's. As to the present licensing situation, it does seem that the P. & T. people in Bangladesh are not unsympathetic but the restraints are emanating from other more powerful areas of government.

The 9Q5 situation is still, to this writer at least, clouded in mystery, but there certainly are the odd 9Q5 calls to be heard. For example, one has noted 9Q5BG, asking for QSL's via Box 5202, Kinshasha, and 9Q5DM, apparently quite above board. One would think that the advice to any DX'er stumbling over one is the same as one would give to the guy hearing a ZA—work 'em and hope!

VR1AT is reported as saying he will become VR8A on January 1 1976, when the Ellice Is. become independent from the Gilberts and change name to Tuvalu Is. The Gilberts, where VR1AA, Danny, is now back in business, are also due to a change of name on January 1 next year.

If you want a look at an FB8 card on your wall, look around 0530z on 14105 kHz daily where most of them are congregated.

An interesting one, and maybe even a country in its own right, is Hutt River Principality, near Como, in Western Australia; they have a ruling house under Prince Leonard, and have applied for an ITU prefix allocation. Furthermore, the word reaches us that ex-KH6GLU, Ed DeYoung, is hoping to be able to operate from there in late December.

If you came across a U0 station, don't miss out on it. There is an expedition sponsored by *Komsomolskaya Pravda*, and so far it is understood that U0CR is Sverdrup Is., and the group consists of U0AEC, U0AER, U0AFD, U0AFV, U0CR, and U0GZ, operating from the Taimyr Peninsula and Severnaya Zemla. QSL's, of course, via Box 88 Moscow.

7Q7DW, Lilongwe, Malawi, writes that he will be back for leave in the U.K. from mid-September, returning thence in January for another three years (with a linear for the FT-101). He says that his QSL manager, G3AWY, has done a fine job for him—but the increased, and increasing, postal rates are making it too costly. 7Q7DW appreciates that there could be many U.K. operators awaiting a card from him and is trying to find out where cards for him have gone, as the local 7Q7 bureau arrangement "is somewhat obscure."

#### Twenty Metres

First we have G5AYL/A, from Streatham and using the Joystick. Among his more interesting contacts on Twenty, Morgan notes C31FO, C31GN, C31IQ, C31JF, DJ2HQ/OH0, EA8GX, EA8IT, HZ1AB, JW5NM, JY9CR, JY9GDC, JY9MS, LC1J, M1C, M1D, OJ0AM, OJ0MA, OF3B, OH5MJ/HBO, OE5CA/YK (Golan Heights), WA4PXP/KV4, 5B4CA, 5U7BA, 4Z4EC and FP0XX. The short-skip conditions shortened enough on one occasion to enable GC3DVC to be worked for Jersey and another new one, while the rash of summer activity from the Italian Islands yielded IB0JN,

IF9KZW, IH9LAW, IH9XGQ, IZ9LAW and I2YCZ/IA5. Oh, and not to mention SV1GA/A, who was hooked quite comfortably after being missed for each of the previous Mount Athos expeditions.

Twenty for G2BY was best, with contacts to JA, ZL and KH6 in the morning period 0700-0800z, the last-named being a fairly regular attender on the band, getting and giving 589 at this time. In addition, contacts have been made with 4J, OA, CE, 9M, YV, VQ9, and all the W districts.

G2HLU stuck largely to the key and only reports CW contacts, these being with FC9UC, LX1JT, U18, UJ8, UL7's, UA9's and YV4IR.

G3ZGC/MM reports that his results have been "the usual DX activity, i.e. those within about 1500 miles, such as PY, HK, LU, and such."

Both SSB and CW were tried at G4CXM. To take the SSB first, one notices C31GN, DU7DP, SV1GA/A, 5U7BA, 9M2AT, 9M8NK, 9V0SN (a special prefix from Singapore during August) and FP0YY. On the CW side, we see CX2AQ, HP1AC, JA2AQ, JA2BP, JA3BRB, K5ETA, KV4CI, LU9WA, LU8ADK, LZ1CY/6W8, PY1DID, PY2ZBU, UL7LCQ, U18CB, U18ACH, UJ8JAS, UM8FM, UA9's, VU2MCX, W5UQE, W5UQE, WF8HOF, WOPCO, WA0ODK, YV1AD, YV1ID, YV4AGP, YV4AMG, YV5AW, YR0A (YO-land), ZF1VW and VP9HO.

A new State for G2HKU was K7NUU (Utah), leaving only Wyoming for a WAS, but Ted has never even heard it! However, he still had some SSB left for MID and OJ0MA, while CW yielded W5FGO/MM off West Africa.

At G3ORP it seems to have been all SSB with the exception of the QSO's made with K4GSU, JA0CUV/I and KV4CI, on the evening of July 23, between 2158 and 2305z. Otherwise it was SSB all the way, with JY9CS, PY2EGM, 9H1CQ, 9H1DV, VQ9R, VE2ABF, ZP5JK, ZP5JS, VE3GSD, XJ3EHN, and a whole raft of East Coast W's.

For G3CED and his 500 milliwatts, we noted contacts with ISCZE, SM6GFS, DJ1HW, OE5AHL, OZ3LF, F8VH, F6AOH, SMCZQ, OZ7AN, I2ZKA, F6DUK, G6NK (real short-skip that one!), a half-QSO with UA1AAW as the UA faded just nicely to give S and T but no R to the report, and a miss with EA6DD, who was not only not hearing George but it would seem he was not hearing anyone else either!

#### Ten & Fifteen

Both have had flashes of activity; indeed, this cycle has seen more ten-metre activity over the poor period than G3KFE can recall since the War—on previous cycles one seemed to find people going for years with nary a smell of a contact or even a signal heard.

Fifteen was the highest band used by G3CED. YX2CEJ called him "the QRPP-est," HV3SJ, YZ3FS, HA3KMA, DJ7MY, SM0BMQ also being worked, all of course on CW.

SSB did a bit for G3ORP, who raised ZS1MI, ZS1EZ, PY4AEX and 9H1CW, all signals having very heavy fading.

G4CXM made a try at both bands. Looking at Ten it was all in Europe, with SSB to C31GN, DL7RT/OH0, OJ0MA and CW to

Interesting OT photograph, taken late in 1929, at the home of G6WN, Hanwell, Middx. There is some doubt about identities, those named being G2OL, G2IY (?), G2OW (?), G6RW and G2BY in the back row, with (maybe) G6JP at centre and G6CO, right. Some of these calls are no longer with us, so we would be glad to have positive identifications. G2BY found the picture in his archives.



DL7RT/OH0 and JX2HK. On Fifteen the CW yielded DL7RT/OH0, FG7AM, IS0BXL, JX2HK, KV4CI, OX5BW, and TF3AX, while a flip on SSB attracted C31GN, DL7RT/OH0, HZ1KE and KP4AST, who had a seven-element monoband beam at 150 feet!

A sked with G4CPY was successful on 21 MHz, reports G3ZGC/MM, on several occasions, too, but always the signals were poor both ways; so Richard decided to concentrate his efforts elsewhere, as already recorded.

G2HLU doesn't think much of his catch. However, there were some Europeans on Ten, even if nothing on Fifteen!

G2BY has a somewhat similar sort of feel for things. Bert found a few European openings on Ten but no beacons were to be heard, while on Fifteen the band was mainly dead save for the odd opening to South America; the band could do with some sunspots, concludes G2BY.

Since returning from the island trip GM3YOR found little at the home station, but he stuck at it on Ten and was rewarded with a crop of Europeans, both CW and SSB, while the beacons DL0IGI and 5B4CY were audible most times the band was open, with GB3SX also in evidence though not quite so often.

And, that gentle readers, leaves us just with . . .

#### Top Band

Here we start with G3ORP, who found it mainly a matter of lots of U.K. matters on SSB plus DK3BJ at 0200z worked SSB on 1-834 MHz, and a hearing, at RS23, of ZC4AK which didn't result in a QSO.

G2HKU had his regular QSO's with PA0PN on SSB, plus OK2BGW/P, OK2BTW, OK2PGF, OK3CWQ, OL8CDQ, PA7PE and PA9TB/P.

G2HLU refers to this writer's reversion to home-brew on Top Band and thinks it a Good Idea, but does not intend to follow suit as when he had the Vespa, Top Band didn't produce much of interest at the times he could get on. G2BY reports "nothing of interest." Simple and clear!

We have already mentioned GM3YOR's trip to the islands, but Drew does not say a lot about the details; however, G2NJ worked him on the Isle of Mull and at Loch Tay and later had a letter from Drew apologising for the lack of prior notice and promising to give more next time round.

Over the past three months, G5BHK has found conditions much down on the earlier part of the year, although a couple of new ones have been worked and a score for the Tables has been sent in.

G4BOH (Bury) also makes an entry for the Table, even though his activity has been down considerably for various reasons. Chris has changed his receiver to an SX-100 which he really likes on CW, and so hopes to be in there this winter and really going; on a different tack he wants to know whether we will re-start the Top Band Table again in October—whyever not?

It is quite some time since last we heard from GD4BEG (Sulby) and Mike is most apologetic about this. Amongst all the interesting things he has to write about, we notice he has rolled up a score of 45 countries on the band since last October. In March, GD4BEG had a daily sked with ZL3RB, and it produced most interesting results, with ZL heard on twenty days and QSO's resulting on ten of them. The trans-equatorial tests were quite a disappointment, with only CX3BH, PY1RO, PY2FUS PT2FRU and PT9DM worked—this is borne out by the shortage of reports on the activity at this end this year. On the counties front, GD4BEG has put in a score which takes him to the top of the table; modestly he says he thought it was too high and double-checked to make sure. Finally, in this summary of Mike's news we mention this autumn's ZL tests which will be on an "open" basis. The times to try are local sunrise plus or minus 30 minutes, taking this time locally as it varies quite considerably over the U.K.; the dates September 20 to November 3, the Europeans transmitting on 1827 kHz +/- QRM and listening around 1875-1880 kHz.

At G2BJY (Walsall) there will doubtless be some gnashing of teeth at the thought of being pipped on the post by GD4BEG in the matter of the counties, but Geoff will take things sportingly as always, and be in there batting right up to the final bell.

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

### Other Points

Perhaps a couple of contests should be mentioned. The first is the VK/ZL/Oceania affair, 1000z October 4 to 1000 October 5 for Phone, and *ditto* but October 11-12 for CW. Score two for VK/ZL contacts, one for Oceania, with multiplier consisting of the sum of the VK/ZL call areas worked on all bands. Logs to be covered by summary sheet and signed declaration, to be in the hands of the committee by January 31 1976, addressed WIA Contest Manager, GPO Box 1002, Perth 6001, Western Australia; include an IRC for a copy of the full results.

The other one is the RSGB 21/28 MHz contest, 0700 to 1900z on October 12. RS plus serial number starting from 001. Details from G3MXJ, but get in there and *use the bands*—this sort of activity, even if the bands are completely dead, helps to keep those occupancy figures up. Use or Lose!

### Unusual One

Call sign T75AA, from Tikal in the middle of the Peten jungle is on from September 13-15, from the capital of the ancient Maya kingdom in South America; if you work 'em you get a Guatemalan Independence Commemorative card, but if you send a request and

two dollars U.S. you can have airmailed the Tikal certificate. Not a new country certainly, but a very interesting old one.

### Final

A letter from WA2TLQ, who is probably better remembered here as G5BIU, QRP operating from the Scillies until he was forced to leave; and he hopes his next return to U.K. will be permanent. David is now back on the air from Tallahassee with 30 watts DC input and a Drake 2B and just before his letter had got his 7 MHz dipole up to around 60 feet at last. David is looking for skeeds with Europeans and particularly G's, but is rockbound on 7037, 7045, 7051 or 7055 kHz, all CW. Drop a line to David Earl-Clark, WA2TLQ, Route 12 Box 541, Tallahassee, Florida 32304 U.S.A. Meantime, let us hope David gets a chance to re-activate G5BIU on a more permanent basis soon.

### Finale

The end of the show for another month, with a bit of material held over for next time as well. Next time is September 9, arrival, addressed as ever to "CDXN," *SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ. Till then, 73.*

## \* \* \* THE MOBILE SCENE \* \* \*

### CLOSE OF THE SEASON

With but four Rally events to be played off—Preston, Lancs. and Saundersfoot, West Wales, both on August 31, Peterborough on Sept. 21 and Harlow, Essex, Sept. 28—we have come to the end of an eventful and highly successful Mobile Rally Season.

Judging from all reports, attendances have been higher than ever before and in general traders who went to the trouble and expense of putting on "one-day stands" were generally satisfied with the volume of business done.

According to our records, the number of organised Rallies to date has been no less than twenty, making, with the four to come, the 1975 Rally Season the biggest and most successful yet—and there

would be few who would dispute that the marvellous weather has had something to do with it!

Sunday, July 20, saw two Rallies, at opposite ends of the country. For the Cornish event at Redruth we have no statistics, and only a brief report (in their *Newsletter*) from which we gather all went well. One would think that an organising Club's newsletter, at least, would carry a pretty full report about what happened at its (nationally publicised) Rally!

The Anglian Mobile Rally at Colchester, also on July 20, is reported to have brought in about 2,000 people, in rather dull Wx, there being 26 trade stands on the ground, with business reported as "satisfactory." The Colchester Radio Club, though let down by the caterers as late as the Thursday before the event, nevertheless coped by roping in

For the Cornish Rally on July 20, they had a section of the communications staff of H.M.S. "Seahawk," Culdrose, under Sub. Lt. J. Smith, R.N., with equipment for telegraphy working. G8JYL took a Morse Test successfully under the eyes of the team. On right is the president of the Cornish Radio Amateur Club, G3YVT.



"sweethearts and wives," who, in spite of the obvious difficulties at such short notice, put on what is described as "a really good catering service"—well done!

#### THE RALLY CALENDAR

**August 31:** Preston Amateur Radio Society Mobile Rally at Walton-le-Dale Secondard School, Brindle Road, Bamber Bridge (off M.6 at June 29) with talk-in on two metres and Top Band. Trade stands, bring-and-buy stall, refreshments and ample parking. Details: G. W. Earnshaw, G3ZXC, QTHR.

**August 31:** Pembroke & District Group annual "bucket-and-spade" party at Regency Hall, Saundersfoot, near Tenby, with talk-in on S20/FM and 144.30 MHz SSB. Discussion of the West Wales repeater project. Car parking free and venue near beach. Further information from: J. Hogg, 2 Pembroke Road, Pembroke Dock, Dyfed, West Wales.

**September 21:** Peterborough Mobile Rally at Walton School, Mount-steven Avenue, Peterborough, Cambs. Information from: A. H. Jackson, G8GNV, QTHV.

**September 28:** Harlow & District A.R.S. event at Netteswell-School, Harlow, with bring-and-buy and Trade stands, refreshments, free admission and parking. Details: C. West-Bulford, G8JXU, hon. secretary, Harlow Amateur Radio Society, Mark Hall Barn, Harlow, Essex.



"... it feels like being /M, without the expense ..."

#### "SWR INDICATOR FOR LOW-POWER WORKING"

G3RVJ points out that in his article in the July issue, some polarity indications were given incorrectly. In Figs. 1 & 3, the battery and M1 should be reversed, and in Fig. 3 diodes D1, D2 also shown the other way round. On the other hand, the circuit as given will work without these changes by using a silicon p-n-p transistor for Tr1.

#### PASSING OF A PIONEER

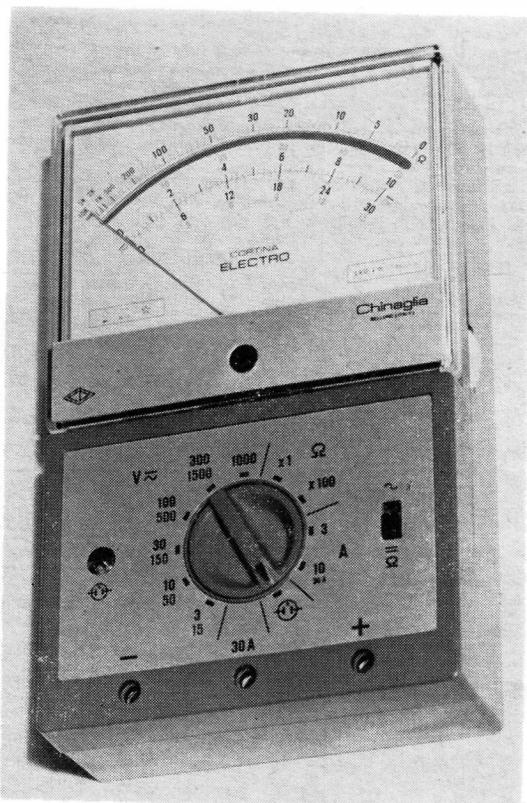
The death of Karl Hassel, at the age of 79, at Evanston, Illinois on July 7 marks the passing of a real pioneer—he was co-founder of the Zenith Radio Corporation, now one of the largest radio-electronics manufacturing organisations in America.

After service in the U.S. Navy during the Kaiser's War, he and his partner R. H. Mathews founded the Chicago Radio Co., in 1918—to build amateur transmitters and receivers, at the rate of one-a-week, literally off the kitchen table. Mathews' call sign was 9ZN—this was before the days of any international prefix system—and the trade-mark of the little company was "Z-Nith," hence "Zenith," as it is today. Hassel himself was the first operator of KDKA, Pittsburgh, which in the 1920's became famous all over the world of short-wave wireless. If you could hear KDKA on an O-V-1 you were in the realm of real DX!

From that kitchen-table in Chicago more than 50 years ago grew a great multi-million dollar corporation—and it all started because Karl Hassel and his friend Richard Mathews were enthusiastic radio amateurs.

#### J. A. WOOLLEY, G3ESR (RAIBC)

We very much regret to have to record the passing of Joe Woolley, G3ESR, Penselwood, Somerset, on July 28. With his wife Frances, G3LWY, he was for many years closely identified with the RAIBC, for which he was hon. treasurer. He had not long retired from the GPO service, as head postmaster at Wigan.



The Chinaglia Electro is a new 19-range multi-meter designed for electricians' use and general hard work. The voltage-current ranges go up to 1000v. DC/1500v. AC and 30 amps., resistances from 10K to 1M, with a continuity-check facility. Internal 1½v. batteries energise the resistance ranges.

# • • • SWL • • •

## SHORT WAVE LISTENER FEATURE

By Justin Cooper

### FACTS ON BAND SHARING — PROBLEMS OF NOISE — IDENTIFYING RTTY AND SS/TV TRANSMISSIONS — MEANING OF BEACONS — NEWS, GOSSIP, COMMENT AND THE HPX LADDERS

QUITE often we receive letters beefing about the noises heard on this band or that, and it gives one the impression that many listeners don't realise that sharing our bands with "other services" means just that and has been in force for many years. In every case, the basic principle involved is that amateurs are the "lesser breed" in the sharing situations, as any transmitting amateur who has been asked to shift a Top Band QSO will readily testify. In addition, of course, there are those bands which are *theoretically* exclusive to amateurs, but which are infested with broadcast stations—this latter is what the IARU Intruder watch is all about. Then, there are the natural noises, such as static on the low-frequency bands, the local man-made pollution by way of TV sets, central heating and other thermostat-controlled devices, rotating machinery among which the electric drill continues to be noted, not to mention the lathes, sewing-machines, washing-machines and other such. Going higher in frequency, we come to ignition noises from cars. And, finally, on all bands where a superhet is used as receiver—and that accounts for 99% of all SWL and transmitting station receiving gear—there are the spurious responses due entirely to the receiver itself. Such responses include internal beats between the harmonics of the various oscillators, image or second-channel signals, cross-modulation products, excess of gain in the receiver chain, and so on. Finally, did we say? No fear—what about the signals generated by the so-called "rusty bolt" effect—poor-quality house wiring acting as an aerial and harmonic generator and re-radiating noise into the receiving aerial system, noise picked up on "earth" systems (the inverted commas were quite deliberate!) or harmonics of broadcast stations generated by bad joints in an aerial itself?

In all these cases there are things which can be done to alleviate the problems, from a simple change of band through signal processing systems to designing a receiver whose image and cross-modulation performance are much better than that found on any commercially-obtainable Rx, which must be built within a rigid price constraint on the one hand and must appeal to the majority of potential buyers on the other. There is indeed an ever-increasing degree of commonness in constructing a better receiver than can be obtained commercially. But it is a *very* tall order!

#### The Mail

The newcomers first, and top of this pile is R. Montgomery (Lisburn, Co. Antrim) who used to have a FR-50B receiver but has now got an FT-200 transceiver and half-wave dipoles for Ten, Fifteen and Twenty, plus Europa transverter and eight-over-eight at forty-four feet for 144 MHz. RAE has been taken and the results are awaited, and in the meantime that old *dir-dah* stuff is being worked-on in preparation for a full-blown callsign—Good!

B. J. Mackness (Dagenham) started four years back with a Skywood CX-203 general-coverage job, but 18 months ago got a Yaesu FR-50B, used through a Joymatch to a Joystick save for Top Band where a 50-foot wire and PR-40 preselector feed the old Skywood box. An MFJ filter for SSB is used in addition, helping to cut down extra noise—such a device would be more of a help with a relatively unselective receiver than it would, say, on a receiver such as that found in the Trio TS-520. A Hy-Gain 12AVQ vertical is due to be added to the "farm" in a couple of months if all goes well.

G. Clegg hails from Deeping St. James, near Peterborough, and has a Yaesu FR-101D coupled to a 66-foot aerial at about twenty-five feet; the combination netted the required 200 prefixes in just six days; not bad going at that!

#### Technical Points

A letter came to G3KFE and to your J.C. on almost the same day, and on putting our heads together we reckoned the last time we saw that handwriting it was many years ago and from a different part of the country; J. H. Luxton (Fairlight Cove) was the writer and he is now G8GMI and listening hard with a view to getting his Morse pass and hence the G4 ticket. Jessie's letter to this piece raised some points

which are of general interest and so we deal with them here. "A series of Morse letter L's on 3570 kHz" are the first query—Heaven only knows, but probably some sort of "keeping-the-channel-open" exercise by a commercial sharer of the band. Next, continuous half-second dashes, which are probably something of a similar nature, frequency not specified. On Top Band, Jesse has found the various Hi-Fix beacons, which are a Decca gadget which seems to have various uses for the navigation wallahs. Now to some of the amateur noises. First, RTTY; this, at least on the bands up to 30 MHz, comprises a signal which moves between two frequencies, usually 850 or 170 Hz apart, of which the higher frequency is designated "mark" and the lower "space." Each letter of the alphabet comprises five units equal in length, as do each of the other symbols available on the machine keys. The keyboard is like the old-fashioned three-layer typewriter layout, and each key has a lower-case symbol, usually a letter of the alphabet, plus an upper-case symbol, either a figure or one of the other various things on the keyboard. This lot is added to by what may be called the "instructions" to the distant machine, which are Carriage Return, Line Feed, Word Space, Letter Shift, Figure Shift, and "All Blank." Upper-case characters may vary from machine to machine as happens with typewriters. The five units already mentioned are made up to seven by a "Start" unit, always a *space*, and a "Stop" signal which is always a *mark*, this last being at least 1½ units long, and may be longer if the operator is a slow typer. Since each "unit" is about 20 milliseconds a complete letter takes 150 milliseconds nominal. Now, each time an RTTY station sends a letter, the output of the transmitter will be a string of seven pulses which start with a space and end with a mark, in between which there will be five units which may be either mark or space depending on which letter is being sent. Thus the received signal comprises bursts of two tones in the receiver, spaced apart as each letter is followed by another at a rate depending on the skill of the operator on the 'printer, up to a maximum speed of about 66 words per minute. In theory, there is no break between each unit in the five, but, of course, there will be a

### HPX LADDER

(All-Time Post War)

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
W. Bingham (Carrickfergus)	1575	G. F. Gullis	
S. Foster (Lincoln)	1502	(Ogbourne St. George)	742
R. Shilcock (Kingswinford)	1475	L. Craven (Alvechurch)	727
K. Kyezor (Irechester)	1431	D. Sharred (Birmingham)	696
R. Carter (Blackburn)	1271	J. Dougherty (Sunderland)	690
J. Fitzgerald		M. Rodgers (Harwood)	680
	(Gt. Missenden) 1267	B. J. McCartney	
M. J. Quintin		(Wokingham)	676
	(Wotton-u-Edge) 1201	M. Pein (Liverpool)	662
P. C. Jane (East Looe)	1187	A. C. Roberts (Shepshed)	661
B. Hughes (Worcester)	1160	W. H. Smyth (Hartlepool)	640
K. A. Whiteley (Castleford)	1039	G. Lucas (Kennoway)	628
G. W. Raven		P. Rooney (Liverpool)	628
	(London, SE13) 1030	M. Eccles (Lancaster)	596
J. H. Sparkes (Trowbridge)	1017	J. Bell (Hampstead)	571
R. H. McVey		M. Rivers (Whyteleafe)	543
	(Weston-super-Mare) 1011	N. N. Graham (Gosforth)	541
M. Cuckoo (Herne Bay)	1010	R. C. Woolley (Ashbourne)	518
H. A. Londesborough		L. Gibon	
	(Swanland) 1000	(Barrow-in-Furness)	507
N. Henbrey (Northiam)	931	<i>CW ONLY</i>	
Mrs. J. B. Jane (East Looe)	928	A. Glass (Plymouth)	1135
A. R. Holland (Malvern)	887	N. A. Phelps (Devizes)	778
E. W. Robinson		H. A. Londesborough	
	(Bury St. Edmunds) 875		(Swanland) 730
H. M. Graham (Harefield)	872	G. Richards (Aberdeen)	466
N. Askew (Coventry)	865	A. F. Roberts	
E. Parker (Hove)	817	(Kidderminster)	404
C. K. Verstage (Old Basing)	800	A. W. McNeill (Newbury)	353
P. Barber (Sunderland)	796	J. D. Porter (Baslow)	247

Starting score 500 for Phone, 200 for CW. Listings include only recent claims.

slight pause, due to the mechanical relay armature moving from one contact to the other. The general effect on the Rx is of "jingle bells"!

Slow-scan TV next, and here, the best way to imagine it is to think of a TV signal as heard when the home TV is mistuned, compressed in frequency and extended in time; the sync. level is 1200 Hz on the receiver properly tuned, black is 1500 Hz, and white 2300 Hz. The 1200 Hz tone is heard at 15 points per second, these being the line sync. pulses, and the length is 30 milliseconds; frame pulses of 30 milliseconds occur every 8 seconds; thus, the total sound comprises lots of blips at 1200 Hz, plus the tone wandering from 1500 to 2300 Hz filling-up the spaces between the little blips. Sounds awfully difficult, but when it was described to this writer, in just about the same words, he recorded what he thought might be "it" on the band, took the tape to a friend equipped for SS/TV, and was pleased to see a picture emerge from his tape recording!

Next, FSK. This may be taken to mean RTTY, which we have already discussed, or it *could* mean a signal being keyed in Morse where the key-down conditions put carrier on one frequency and key-up some other frequency. This, thank Heaven is obsolete on the HF bands, and if you happen to tune in to the *wrong* frequency, it's a bit like reading an Aldis lamp off the side!

Finally, Jesse wants to know about *beacons*, what they are, how they work, and what they sound like. A Tall Order! To look at the amateur beacons for the moment, these are just a radiated carrier on a closely defined frequency, on Ten or at VHF, usually identifying by sending a Morse identification in the form of a call-sign. GB3VHF springs to mind immediately, on 144-150 MHz. On the question of their use, they provide markers for amateurs with accurate receivers to listen for and so assess whether the band is open, which occurs if a beacon which is normally out of range becomes audible, for a quick check on receiver calibration, and so on. Scientifically, they are helping us to unravel some more of the mystery known as "Propagation." Outside Amateur Radio, a radio beacon has many uses, a typical one being those involved in air traffic control, which a pilot uses as he approaches an airport—ILS tells him he is heading in at the right angle and direction, and as he comes in he gets a pip of tone which warns him he is over the outer marker, the inner marker, or at the end of the runway. Other beacons can be D/Fed on to lead him in the right way to get on to the ILS beam or tell him whereabouts in the country he is on a cross-country. Loosely, many things which tell an amateur how conditions are, or where he is on a band, tend to be called "beacons" when they are not; Hi-Fix on Top Band is a typical example of this, or DHJ, which is used as an indicator of Top Band Trans-Atlantic conditions by the W's.

\* \* \*  
C. McEwen (Lewisham) has a couple of points; the first is basically a prefix one, and harks back to that "G7IXV" heard by K. Kyezor last time. He is dead agin' our theory that it might be a commercial call duly issued—but that doesn't alter our conclusion, which was that it *doesn't* count as an amateur prefix! As to his other point, about DSB not being allowable under the terms of a U.K. licence, while it is true that this bar *does* appear in the "small print" of the licence, it is also true to say that it was quite extensively used at one time by amateurs in many countries. (Its omission from the present Licence schedule was probably no more than an error which crep' in!—Editor.)

A Trio 9R59DS which "eats" its BFO valves is a problem for M. Law (Chesterfield), his receiver having seen off four 6AQ8's in ten weeks! We would humbly suggest that Michael has fallen for the hoary old idea that a valve is a less reliable item than any other component. What has happened here is that the valve has been changed but the fault was *not* the valve—its failure was the result of the fault and not the cause. Without a circuit of the 9R-59DS BFO it is hard to say what is at fault—but J.C. will be ready to bet a pint of old-and-mild that a check of the *pin voltages* will show a marked fall in the anode volts, and possibly a slight positive reading on the grid—and the answer will very likely be a leaky capacitor!

#### Prefixes

Lots of people have come back at us over the ruling that VQ9SS/C could be counted as a C9 the C9 prefix having just been allocated to Mozambique to replace CR7. However, having taken a lot of thought on the matter—see HPX Rules Three and Five, not to mention previous rulings on various VQ9 expeditions (an example of which appears on p.492, November 1974), it would be inconsistent of us to change at this stage a Rule which was admittedly quite arbitrary right from the word "go." No, VQ9SS/C will count as a C9 for HPX purposes. Anyone in doubt, claim it according to your interpretation of the Rules, and leave it to us to disagree if we want to—it's part of the game that we have the last word!

Perhaps the biggest query of all came from B. Hughes (Worcester) who had no less than nine prefixes to question as a result of that

VQ9SS/C question of last time—but all can be dealt with under the existing rules. On a different tack it is noticeable that chaps who QSL find that, over the years, they can build up to about a 66% return rate; Bernard has managed to push his up to 75%, but only by the great expense of using *direct air mail* for all the important ones. It just goes to show that for the *average* chap the QSL Bureau system still has much to offer, provided he can curb his impatience.

A variation on the theme of suffixes is mentioned by A. Roberts (Shephed) as 7X2BM/S, in which the S suffix is a commemoration affair, making the thing into a "new prefix" in Andrew's way of thinking. He has a borderline case here for sure, but again on the strict interpretation of the Rules out it goes.

4J9A is doubted by K. Whiteley (Castleford), he wanting to know is it a "special" or a phoney. A special it is, and from Russia as the operator's name Vlad indicates.

The question of a change of location arises for J. D. Porter (Baslow) who is taking his FR-50B to Germany for five weeks and would like to count his bearings there into his Baslow score. This one is covered by a previous ruling where we said that a move of up to fifty miles was fair enough, but beyond this distance you have to start again. Practically, many cases have cropped up where chaps have moved and just started again regardless.

S. Lawrence (Market Harborough) had a bit of a snag when his aerial trimmer capacitor packed up in the middle of logging a DX prefix and shorted the whole works out. Mending it was, in a way, a chore, as it occurred at the run-up to RAE, results of which are awaited eagerly. The RA3 and RQ2 prefixes queried by Stephen are of course the Russian "VHF" prefixes used by their equivalents to our G8 licensees, allowed over there on the bands from 28 MHz up. Finally, Stephen mentions that he noted in previous "SWL" pieces that there was a chap from Kettering reporting, and would like to make contact with him.

KY9ITU came out of several lists last time round, but goes back in again as a result of QSL's having been received—H. A. Londesborough (Swanland) is one who benefits in this connection.

E. W. Robinson (Bury St. Edmunds) queried C31GN, PE2EVO, SJ9WL, OF3B—all good ones and true—and also mentioned that IMOCBM was located on Maddalena Is. off the north coast of Sardinia.

#### General Points

Does anyone know of an Amateur Radio Club in the area of Middlesbrough? We know there was one at Billingham, but they have not been heard of for some years. If anyone can help, please drop your J.C. a line, giving the name and address of the Secretary and the meeting-place or other details which will enable an SWL reader to make contact with kindred spirits.

Although he has a job which puts him on a very irregular shift system, W. Purdy (Derby) is still quite determined to get a licence. What is more, we notice that SWL Purdy has been in contact with four of the local amateurs including G2CVV, and they have all helped a lot. Where there is a will, there is always a way; the thing is to try and remember this at the times—and there will be some before the ticket is gained—when one feels it is all too much of an effort without a class-teaching background to the study. One recalls, many years ago, an SWL who suffered from exam. nerves and fluffed his Morse five times; and five times he tried to sell the writer his rig. Persuasion got him back on the rails and eventually he passed and got his call. Now, all but twenty years later, that same amateur is a full member of RAIBC, which makes J.C. doubly glad he "forced the issue" a bit all those years ago.

Oh dear! W. Bingham (Carrickfergus) and brother Joe are "getting on" to Dad in the matter of an especially-fancied receiver, and they want J.C. to advise whether he agrees with them. It really is not "on" for someone at a distance to give meaningful advice on the sort of receiver which will suit a particular SWL; the various factors that come into play are so personal to the operator and to his site and aerial facilities that any attempt by J.C. to say "buy receiver X" is about as much use as the spin of a coin. Changing direction a little, Billy had to drop his RAE class because of transport difficulties, but hopes to try again later; meantime, the effort was not wasted as much was learned.

SS/TV is still a great interest for P. Barker (Sunderland), and he has recently received pictures from DK4NA on Ten and OE9IM on Forty, neither of whom are mentioned by anyone else. Paul has recorded pictures now from all continents with the exception of Oceania (and no doubt that would also have been received had conditions been even slightly better).

M. Barton (Market Deeping) has managed to get hold of a circuit diagram of his HA-600 but now can't find any equivalents to the transistors needed, even though much searching has been done. Here the answer is to get your local library to procure the latest

(Autumn 1975, probably) edition of the *Transistor D.A.T.A. Book* from Technical Indexes Limited, Ascot, Berks., plus the *Discontinued Transistors D.A.T.A. Book* from the same source. You should be able to find your transistor listed, and then if you take care you can probably track down a transistor near enough—or by taking the essential "gen" from its columns find a more easily obtainable replacement or alternative.

The usual nice long letter comes from *H. M. Graham (Harefield)*, for whom the biggest surprise was to book in a new country on Ten, namely DU8KJ; on Fifteen it has been mainly South America at "useful" times, and included hearing the Fernando de Noronho expedition PUØYS and PVØAKL. Twenty, as so often, was full of European mush with the interesting stuff buried layers deep, if only you had the persistence to dig under—and Maurice did!

Often we hear of people taking exams. in engineering or accountancy or whatever, but a new one comes to light when *C. Verstage (Old Basing)* mentions his preoccupation with his horticulture exams. as a reason why he should have not reported in; and what better reason could there be—after all those exam. passes will be a secure basis for a very satisfying lifetime.

No doubt about it, doing a bit of construction and learning as you go along is a great additional satisfaction to one who had previously been purely a listener, says *V. L. Banting*, who wrote in from Amsterdam where he is staying temporarily. However, V.L.B. is doubtful about a ticket, on grounds of age and difficulty over aeriels. Why worry? After all, one who has done a bit of construction is already a mile ahead in the RAE learning race, while many and many a DXCC has been made with only a loft or indoor aerial. Have a go!

*A. W. McNeill (Newbury)* sticks to his CW, for which the rig is an old R1082 and a 14 MHz dipole at ten feet, and a data-processor. Mac held a call at one time, although where he wrote it on the foot of his letter the ink smudged and made it hard to read the first letter of the suffix.

It's always worth while checking all bands, opines *R. Carter (Blackburn)*, Ben having thus "tripped over" three very good ten-metre openings; and he also changes from lazy man's listening hours, and records DX on Eighty at 0430. On a different line, Ben is a member of WAMRAC, and when that organisation invented an award, Ben was made the manager—as he says "keeping occupied is the main thing for retired gentlemen!" How right he is, and long may Ben be able to go on doing it.

It was very nice indeed to receive a card from *Jock Inglis of Alloa* on holiday—but it's so long since Jock last wrote that we have lost his address! Sad to say, Jock has been ill again for four months but is now "back in harness"—which includes radio.

*P. L. King (R.A.F., Akrotiri)* disappears at regular intervals and then pops up a few months later from a new spot, and starts all over again! This time he is somewhat saddened to find few operators there for ZCAAK because of the aeriels—a TA33 for the HF bands and a Delta Loop for Eighty and Forty—being wasted with non-use.

In *Malvern, R. Holland* has been finding work cuts into his listening time. However, he offers a philosophy about "conditions" when he advises "If one band is flat, try another!"—another in Roy's case being two metres, where things have gone very well for him.

Having been the first to top the 1000 mark on CW, *H. Glass (Plymouth)* is finding it hard to rake up new ones and wonders whether to "call it a day" or send in *nil* reports if needed and stay in the list. All J.C. is inclined to say is that Bert would not be alone among the over-1000 contingent if he submitted *nil* results in any month—it would be hard *not* to with the band conditions as they are and so high a score!

New definition of Twenty from *J. Fitzgerald (Gt. Missenden)* who reckons it is "a good band used by the wrong people!" John also refers to the modulation so often put out from a certain South European country as being of the "strangled-cat" type. Forty, John reckons, would repay further investigation, but he has not had the time as yet to disentangle the good stuff from the Lands of Eastern Promise noises. As for Eighty, the openings have been too late and so little of consequence has been logged.

Like so many of us, *R. H. McVey (Weston-super-Mare)* has been enjoying the summer weather to the exclusion of SWL'ing—who could blame him? However, a week of holiday was used to find a large proportion of the new ones, showing yet again what a great thing it is to change listening times when the HPX score gets a bit bogged down.

Instead of operating—it is a *nil* return this time—*A. Darragh (Cowthorpe)* has enjoyed the sun on the one hand and the rebuilding of the shack ready for the winter on the other—all systems will soon be "go" again.

## ANNUAL HPX LADDER

(Starting date January 1, 1975)

SWL	PREFIXES	SWL	PREFIXES
A. C. Darragh (Wetherby)	425	B. J. Mackness (Dagenham)	352
G. Ridgway (Kettering)	414	M. Barton	
J. Aspinall (Leeds)	413	(Market Deeping)	329
D. Taylor (Harborne)	403	P. L. King (Akrotiri)	286
M. Law (Chesterfield)	391	G. Clegg (Deeping St. James)	233
R. A. Elliott (Brentwood)	386	M. Kelly (Lisburn)	205
R. Staples (Lymm)	382		

Starting score 200, in accordance with the HPX Rules. All Prefixes in this list to have been heard in 1975. When a score of 500 is reached transfer to the All-Time Table will follow, at which time prefixes heard outside the period of this table may be added to the score. HPX Rules, see p. 000.

### Aerial Vs. Noise

Re-reading this script before posting it off, it occurs to your scribe that we have never considered the influence of the aerial itself in the context of noise and static pick-up. The aerial polar diagram shows in which direction it best operates to pick up signals; and in these same directions the aerial will best respond to natural noises coming from a distance. Where rain static is concerned—that familiar S7 roar that sometimes comes up with a rainstorm—the vertical aeriels are far more prone to respond than horizontals, such types including the trapped verticals, ground-plane designs, and mobile whips. Where local, man-made noises are concerned, the picture tends to be a bit different. A thermostat contact connected to the mains, particularly where the latter run overhead, is rather akin to a spark transmitter connected to a long-wire aerial, and will radiate accordingly, but inefficiently. However, in the local area, the magnetic field comes into the picture as well as the electric; and the magnetic field around the wire may be by far the strongest offender close in, although its effect tails off very quickly within a wavelength or so. Thus, one may have a situation where an aerial is picking up a comparatively "clean" signal, which is being fouled by magnetic pick-up on the way down to the receiver. Hence, one tries to use coaxial feeder from the aerial down to the rig, as in the narrow-band dipole, or the wide-band transformer-coupled systems which used to be marketed by, for instance, Belling-Lee; the argument was that while the wide-band transforming reduced signal pick-up it also reduced noise pick-up much more on the way through the noisy area (electrically) of the house to the receiver. If one is using a dipole in this fashion, one should have it within a few per cent of its design frequency, and keep the VSWR down. While a balun (balance-to-unbalance transformer) does not have any significant effect on polar diagrams or signal pick-up, it may well have an important effect on noise pick-up on the feeder proper, the more so when the house is well laced with electrical gadgets which can spray noise all round the feeder run but don't reach the aerial proper in significant strength.

However, that's not much help to the end-fed wire exponents, who are far the most numerous. For these chaps, the rules are, first, to have a coax-coupled ATU to feed the receiver, locating the ATU where the aerial is brought in rather than right at the receiver position; thus the noisy area is fed with coax cable and pick-up within the house is minimised. The earth connection to the ATU should be entirely separate from the mains earth and made as good as may be within one's resources. If it is not likely to be good enough to provide the "safety" earth to the receiver, then the mains earth must not be disconnected from the receiver on safety grounds; but it may still be shown by a bit of experiment to be bringing in a significant amount of noise. If this is so, then it can be fed to the receiver by way of an RF choke in a screened box, at the receiver end, making quite sure that the choke is of such low DC resistance as not to reduce the ability of the earth to blow the mains fuse in case of failure; while on this subject, check to make sure the mains fuse is the smallest rating the traffic will stand, or at least the maker's recommended rating, rather than the proverbial tenpenny nail.

### Q RT Now

That's all for this time; we hope it has been useful, not just to those who have written in, but to the greater number who just read and think. For next time, the deadline will be September 26 latest, addressed as always to "SWL," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ. Enjoy the Wx. but keep hoping for sunspots!

## FIVE WATTS ON FORTY

USING ONE TRANSISTOR

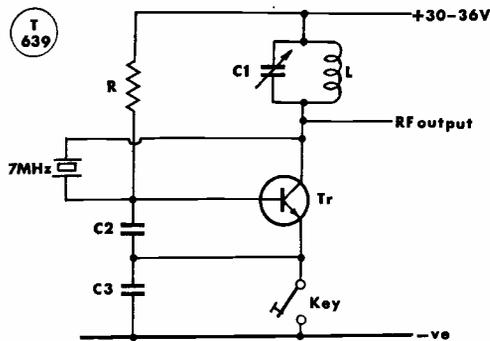
S. S. POLSON (GM3RFR)

**T**HIS little transmitter is about the simplest possible, costing little in money and time, and its very simplicity makes it a worthwhile experimental project. No soldering was used in the construction, the parts being assembled on a screw-together terminal block.

First experiments were with BFY51 transistors, but these were dropped in favour of the BD124, which gives a much higher RF output. The BD124 is supplied from a series of PP9 batteries, and works quite well on 30-36v., giving a collector current of about 150 mA, *i.e.* about five watts power input.

Results on 40m. CW, using a vertical aerial, have been surprisingly good. To date, eleven EU countries have been worked, with reports varying from RST-549 to 589 from UQ. There is no doubt that given patience, time and reasonable conditions all Europe could be worked with this light-weight pocket portable.

The transistor Tx is directly coupled to the aerial feeder through an SWR meter, adjusted for maximum forward reading. Tuning and loading should be such



Circuit of the Transistor Transmitter for Forty. Values can be: C1, 500 pF, variable; C2, 250 pF; C3, 500 pF; R, 20K; L, 30 turns 26g. (or heavier) on 1/2-in. former, or as required to tune band. Transistor is BD124 (see text) and crystal for 7 MHz CW.

that the crystal "follows" the keying smoothly and accurately.

For setting up, a flash-lamp bulb across a length of twin-feeder or coax plugged into the output of the SWR meter is a very satisfactory way of checking what is happening—if the TTx is functioning as it should the bulb will glow brightly when the Tx is correctly tuned.

## FREQUENCY MODULATOR FOR VHF TRANSMITTERS

SUITABLE FOR CAMBRIDGE AND VANGUARD TYPES

A. C. TALBOT (G8IMR)

**M**ANY VHF operators run surplus "Vanguard" or "Cambridge" transmitters modified for two metres. However, most of these use low-level amplitude modulation. While suitable for local contacts, it is not very efficient for DX work. Though it is possible to produce, by preamplifiers, the 90% or so modulation needed, this increases the risk of TVI and hi-fi interference.

The solution is to use frequency modulation of one form or another. It has been found that one of the best

ways of modulating these transmitters is to amplify the audio to some 20-30 volts peak and feed this into the screen grid of the crystal oscillator, as in Fig. 1. An ECC83 valve amplifier was first tried, but trouble arose due to hum pickup, and insufficient gain. Although these problems could eventually be overcome, it was decided to build a transistorised version of this circuit, this being less prone to hum pickup.

### Circuit Operation

The modulator circuit is shown in Fig. 2. It consists of a straightforward three-transistor amplifier, the third transistor being a high-voltage BF258. These transistors are designed for video output stages of television receivers and work happily at up to 200 volts. The amplification of the modulator is quite high and the deviation control, RV1, need only be about a quarter way from the earthy end of the track. The function of C1 is to prevent RF from entering the first stage of the modulator and causing oscillation and distortion. The upper frequencies are reduced by the feedback loop formed by C9 and R10, plus the 180  $\mu$ F capacitor C3. This capacitor also reduces the possibility of RF feedback.

### Construction

Layout is not critical and either *Veroboard* or printed circuit construction can be employed. A suitable PC layout is shown in Fig. 3. If the transmitter is used off a twelve-volt supply then the unit can be run off this, taking precautions against noise from the inverter. If a mains power supply is used then the circuit of Fig. 4 may be used. In both cases, the 300v. feed can be taken from the HT supply to the crystal oscillator.

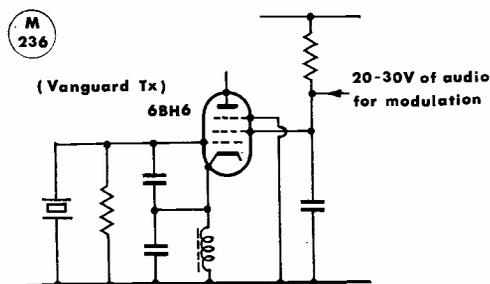


Fig. 1 Method of frequency modulation employed

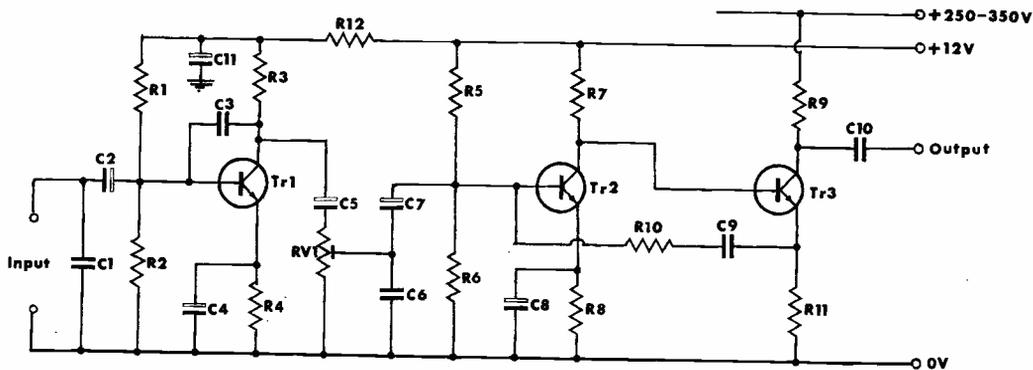


Fig. 2 Circuit diagram of Modulator

M 237

**Table of Values**

Fig. 2. Circuit and Fig. 4, PSU

C1 = 20 $\mu$ F	R5, R10 = 100,000 ohms
C2, C5 = 180 $\mu$ F	R6 = 15,000 ohms
C7 = 5 $\mu$ F	R7, R11 = 5,600 ohms
C3 = 180 $\mu$ F	R8 = 1,000 ohms
C4, C8 = 20 $\mu$ F	R9 = 150,000 ohms
C6 = 0.22 $\mu$ F	R13 = 100 ohms
C9, C10 = 0.1 $\mu$ F	RV1 = 10K pre-set
C11 = 100 $\mu$ F	D1, D2, D3, D4 = 1N4001, or similar
C12 = .001 $\mu$ F	Tr1, Tr2 = 6X4 or 6X5
R1 = 220,000 ohms	Tr3 = 6X6 (see text)
R2 = 33,000 ohms	
R3 = 10,000 ohms	
R4, R12 = 1,500 ohms	

operator even wished that his commercial rig could sound as good!) A point to note is that if the output is displayed on an oscilloscope a slight asymmetry of modulation may be noticed. This is normal for this type of modulation and introduces only 1% or so distortion. The microphone used is a 300-ohm dynamic insert, obtainable from advertisers in this *Magazine*, but any low to medium impedance type is suitable.

**Some Practical Points—**

— A centre-fed aerial of the dipole or doublet variety can be quickly contrived from a suitable length of flat twin lighting flex, of the sort having a clear plastic covering. The aerial is formed by separating the flex into two arms to give the correct roof-length, e.g. 8 feet each arm for 10 metres, and the feeder is then the remaining length of twin flex. The T-point is bound with polythene cord, or whatever, to prevent further separation when the aerial is hoisted. To make a 28 mc aerial, Tx or Rx, having a 30ft. feeder, and allowing for end insulators, about 13 yards of flex would be required. The impedance of the feeder can be taken as “low”—anyway, not more than about 100 ohms. Such an aerial is light, strong, cheap and virtually Wx proof.

— Very neat plug-in coils of the two-terminal type, ideal for GDO's and similar circuits, can be made by filing the lugs off a ¼in. Aladdin former (ex junk TV set) to make a snug fit in the thimble of a coax plug. One end of the coil winding is soldered to the plug body and the other to the centre pin.

— High-voltage type silicon diodes can be used for speech-clipping by inserting the diode in the PA HT lead, in the direction to prevent the anode going negative. One 800v. p.i.v. diode is sufficient for normal high-level AM modulators. You still need the filter (see *Handbook* circuits) for harmonic suppression.

— The plastic spools from Kodak 126 “Instamatic” film are ideal for coil formers, these being about 1¼in. by ¾in., with a hollow centre and flange

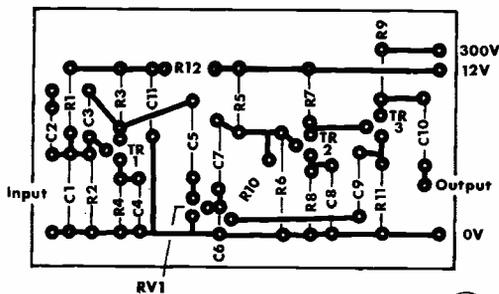


Fig.3 Suitable printed circuit layout

M 238

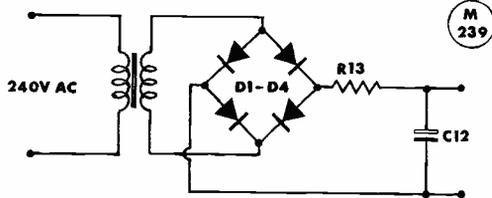


Fig.4 Suitable power supply

M 239

**Performance**

This modulator has been in operation in the author's transmitter, a Vanguard, for several months and all reports of modulation have been excellent. (One

at each end. One flange can be used for fitting to the chassis and the other for the coil connection anchorages. Any local photographic dealer who processes on the premises would probably be glad to supply "for free" if asked, as normally these spools are thrown away.

— A small quantity of *Valspar* black enamel thinned down to a weak solution makes a good reconditioning agent for black-crackle finishes that have become dulled with age (and dust particles). The solution should be applied sparingly and worked well in with a stiff brush, so as to avoid filling and so losing the crackle effect.

— Any milliammeter or microammeter is easily converted to a DC voltmeter by putting a suitable resistor in series. Divide the voltage range required by the original meter scale, the result being the value of the series resistor in thousands of ohms. For instance, to get an 0-250v. reading with an 0-500 micramp (0.5 mA) meter, the series resistor would be  $250 \div 0.5$ , giving 500K. Only slight inaccuracy is introduced if the nearest preferred value (in this case 470K) is used.

— When using an audio filter on the output end of a receiver—peaked at 1000 c/s for CW reception—considerably louder signals can be obtained by using low-resistance headphones, such as the ex-Army type sold as surplus. The cheap 35-ohm speakers used in some transistor radios will also be found to have a fairly pronounced peak at around 1000 cycles.

— Lightning protection, always very important, becomes essential if a transistor receiver is in use at the station. The RF transistor in an EC-10 was

destroyed by surge on the aerial from a nearby lightning flash which was far from being a direct hit on the aerial. A safety measure is to wire in an aerial relay, operated off the Rx, which opens automatically when the receiver is not in use.

— It is a good thing, every time you construct some piece of apparatus, to stick a self-adhesive label somewhere inside with the issue of the *Magazine* from which the design was taken. It is then an easy matter to check for future reference. It is also a good idea, with any equipment, to keep a record of valve replacements or circuit changes on a card inside the set.

— When building beams using aluminium tubing carried on stand-off insulators, rather than drill the tube to fit the stand-off's (which often leads to misalignment and fracturing) it is better to mount *Terry* clips on the s/o's to hold the elements. These clips should be of the plastic-coated variety now obtainable, as this will prevent corrosion. Any local D-I-Y store or ironmonger should stock coated *Terry* clips.

— An effective method of obtaining negative bias from an existing power pack is to connect two silicon diodes to the HT transformer secondary in the opposite sense to the main HT rectifying diodes. Use the same values of condenser and choke as for the positive supply, to ensure even voltage distribution in the pack.

— If you are without a GDO, a signal generator will make an excellent substitute. Simply wire a diode, a 500K resistor and an 0-500  $\mu$ A meter in series with a small pick-up loop, feed the output from the sig. gen. across the resistor—and you have a GDO.

## HALF-SIZE QUAD FOR TWENTY

TESTED DX ANTENNA

P. E. DAY (G3PHO)

A FULL-SIZE 20m. Quad measures about 17ft. along each side. Two such square loops mounted on an 8-foot boom make a real monster, liable to be blown inside out in the annual gales. Though the Quad is fundamentally a high-gain beam, its mechanical instability makes it a not-very-attractive proposition in most locations under average Wx conditions.

The beam described here is loaded to almost half size and seems to work as well as many of the popular tri-band beams on 20 metres. It can be constructed fairly easily by one person and is far less conspicuous than its full-size counterpart—often a factor in some neighbourhoods.

At (X) herewith is illustrated the Quad spider. The cross-arms and boom assembly must be strong—flimsy construction just will not do. The arms should be as rigid as possible, using materials that will not snap off in high winds, e.g. bamboo poles. Metal arms must *not* be used, since obviously any metal in the field of the loops will cause weird and undesirable effects. (Incidentally, bamboo poles can often be had from shops selling carpet rolls, the bamboo forming the solid piece

on which the carpet is rolled!)

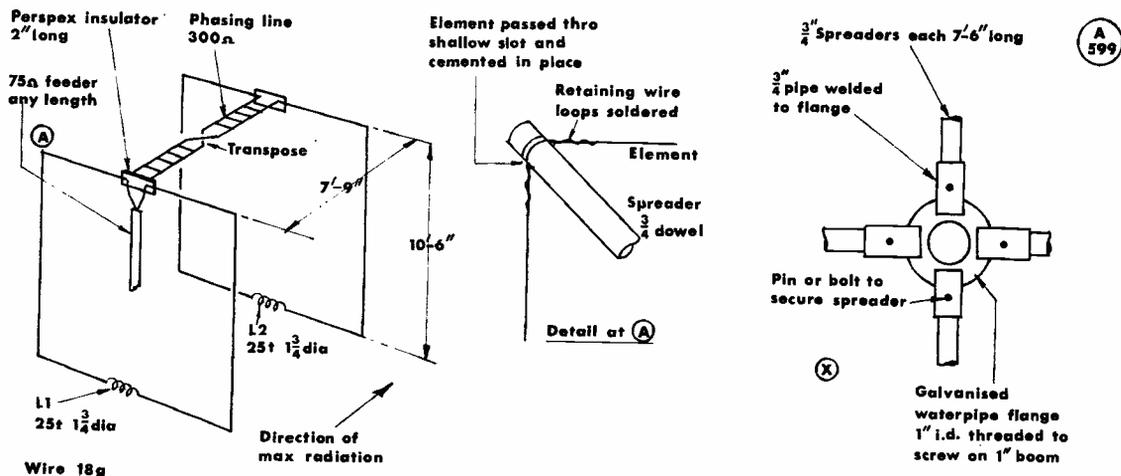
The loading coils can be wound on p.v.c. tubing, obtainable as off-cuts from builders' merchants. It is as well to have them threaded on a lathe to give a grooving of 12 turns per inch. When the coils are finalised, they should be weather-proofed with *Holt's Dampstart*.

### Adjusting the Antenna

Obviously, this must be done carefully. Compromise types such as this Quad cannot afford to lose even half-a-dB. The essential test items are an SWR indicator and a calibrated GDO. Connect the 75-ohm feeder to the beam and hoist the antenna up as high as it can be reached (using a step-ladder) consistent with easy access to the coils. Trim the coils till the GDO shows resonance at 14.0 MHz for the forward element and 14.250 MHz for the rear section. It should be possible to "preen" the coils without adding or removing turns by using 3-in. lengths of ferrite rod, dipped in *Bostik* or some similar adhesive. Slide the rod in until the GDO dip shows resonance, and then leave the adhesive to harden.

### Performance

The writer used this antenna from his ZL2BDA location during the years 1966-'68. It enabled him to maintain weekly skeds with U.K. stations, running 100w. p.e.p. Signals from this beam were nearly two S-points up on a 5/8th-wave vertical, which in itself is an excellent



DX antenna. Relative to a dipole at the same height, this mini-Quad was always several S-points better at DX. Naturally, the front-to-back ratio is not as good as a full-size Quad, being typically 18-20 dB at low angles, but less at higher angles. On the other hand, it is relatively easy to build as a gainy beam for some desired direction.

*Editorial Note:* This article is based on details appearing in a recent issue of the Sheffield Amateur Radio Club Newsletter.

It seems that almost any small transformer will do for the purpose since its duty is to extract the ripple from the DC micro-amp. component and the choice will depend on what 'scope is available to display the audio wave. A capacitor across the secondary will cut out the high-frequency noise so that a non-fully quieting signal can be observed.

The circuit as set up is outlined herewith. The step-up transformer T can be a miniature mains-to-12v. secondary type and the capacitor C1 .001 μF, or by experiment having regarded to its function.

On the 'scope, the trace will be either a "line of noise" in the no-signal condition, or a carrier-line with the Tx unmodulated, or a modulation wave-shape under FM conditions, varying in amplitude according to the deviation, e.g., the difference between 3 kHz and 10 kHz deviation will be obvious. As suggested, the identification signal from a good repeater could be taken as the calibration standard.

It would be interesting to hear what readers who try this circuit make of it under true FM transmitting conditions.

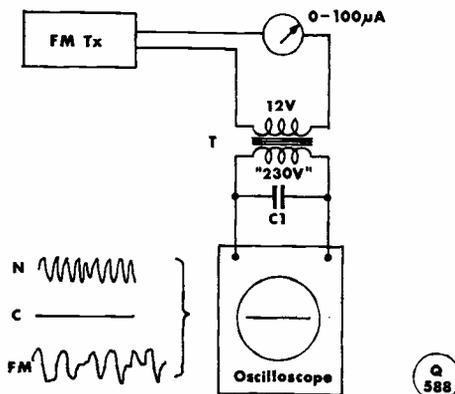
## CHECKING FM DEVIATION

### A SUGGESTED CIRCUIT

R. J. REDDING, C.Eng., F.I.E.E.

THE text books tell of measuring deviation by checking on the nulls as one tunes across the signal, but this has never been found to work! However, accidentally, the writer seems to have stumbled on an indication which appears to give a fair representation of how wide the signal is and this is offered below in case someone can say whether or not it is a true measure.

Many rigs, e.g. the FT2 series, have test points at which one can connect a micro-ammeter which gives a centre-zero current indicating how far the received signal differs from the reference in the receiver and this is a help in lining up a transmitter (provided that you know that your "receive" crystal is correctly adjusted). If you put the primary of a transformer in series with this micro-ammeter, then the AC component of this deviation signal will appear across the secondary. If you now put an oscilloscope across this secondary you see a noise-pattern which changes to an audio wave when a modulated signal is received. The amplitude of this modulation display appears to be a measure of the deviation. All we need now is some means of calibration and the identification signal for a repeater is one yard stick that is available.



A 599

Q 588

## COURSES FOR THE R.A.E.

## Second List

**FURTHER** to the information given on p.333 of the August issue, in which 15 centres were listed at which instruction is offered for the Radio Amateur Examination (Subject No. 765, C & G.) the following additional courses have since been notified to us.

It will be seen that most courses start during September, aiming to cover the ground, by evening sessions once or twice a week, before the May 1976 examination. There are no age limits, students commonly ranging from 17 to 70 years, nor is any qualifying standard required. Some further information about Subject No. 765 was given on p.333, August.

**Bangor, Co. Down:** At the Technical College, starting in Sept., two evenings a week. Further details from the College or the course tutor, C. A. Billington, G13WSS, *QTHR*, telephone *Hollywood 4277*.

**Beckenham:** At the Adult Education Centre, 28 Beckenham Road, Beckenham, commencing Wednesday, Sept. 24, 7.30-9.30 p.m. Enrolment at the Centre Sept. 15-16, or on first attendance. Course instructor J. M. Tripp, G3YWO.

**Bedford:** On Wednesday evenings, at Westfield School, starting mid-September, Morse instruction also to be available. Full details from Headmaster, Westfield School (*Bedford 67353*) or from the course tutor E. Eilsley, G3YUQ, *QTHR*, telephone (day) *65171*.

**Birkenhead:** At the Technical College, Borough Road, on Thursday evenings, 6.30-9.0 p.m., lecturer L. Roberts, G3EGX, 38 Croxteth Avenue, Wallasey. Apply early Sept. to the College or to G3EGX.

**Birmingham:** At Holte Adult Education Centre, Wheeler Street, Hockley, starting in September, Wednesdays 7.15-9.15 p.m. (Morse) and Thursdays same time for R.A.E. Theory. Course tutor K. Frettsome, G4ABV, 116 Rowood Drive, Solihull.

**Boreham Wood (Herts.):** At the College of Further Education, Elstree Way, 7.0-9.15 p.m. on Wednesdays, starting Sept. 24. Enrolment at the College, Sept. 11-12, 4.0-8.0 p.m. Instructor G. L. Benbow, G3HB.

**Burgess Hill (Sussex):** At the Area Adult Education Centre, Marle Place, Leylands Road, 30-week course commencing Sept. 23, 7.30-9.30 p.m., course fee £10.50. Lecturer F. R. Canning, G6YJ.

**Bury:** R.A.E. classes at Bury & Rossendale Radio Society Hq., The Mosses, Cecil Street, Bury. Apply for details, J. Marrow, 12 Halcombe Road, Tottington (*4434*) Nr. Bury.

**Crawley:** On Monday evenings 7.0-9.0 p.m. at the Ifield Evening Centre, starting on Sept. 22, enrolment at the Centre 7.0-9.0 p.m. Further details from the course tutor, R. Scrivens, *QTHR*, telephone *Crawley 22540*.

**Glasgow:** At the College of Nautical Studies, 21 Thistle Street, C.5, on Tuesdays and Thursdays 7.0-9.30 p.m., starting Sept. 9. Course fee £3, payable on enrolment, with reduction for juniors and OAP's.

**Hemel Hempstead (Herts.):** At the Dacorum College of Further Education, Marlowes, on Tuesday and Friday evenings, 7.0-9.0 p.m., starting on Sept. 16. Enrolment Sept. 8-9, 6.30-8.30 p.m. Details from course tutor, C. Burke, G3VOZ, *QTHR*, telephone *Hemel Hempstead 833300*.

**Ilkley:** At the Grammar School, Mondays 7.30-9.30 p.m., starting Sept. 22. Enrolment Kings Hall, Sept. 15, evening. Tutor D. B. Appleby, G8FUW.

**Kirkcaldy:** At the Technical College, Monday and Tuesday evenings for R.A.E. Theory and Morse. Details from the Principal, or H. Cook, G8FXZ, *QTHR*.

**London (Acton):** At the Technical College, High Street, on Wednesdays 6.30-9.30 p.m., enrolment at the College Sept. 11 or 17th, 6.15-8.15 p.m.

**London (Eltham):** At Eltham Hill School, Eltham Hill, starting Sept. 23, 7.30-9.30 p.m. Enrolment either by post before Sept. 3,

or personally Sept. 15-19. Instructor, J. M. Tripp, G3YWO, *QTHR*.

**London (Harrow):** At the Hatch End College of Further Education on Wednesday evenings, registration Sept. 24, course to start October 1. Details from D. T. Busby, G8ELB, at the College or ring *864 4411, extn. 39*.

**London (Holloway):** At Shelburne Youth Centre, Hornsey Road, classes to begin Sept. 1 at 7.0 p.m. Low-keyed course for those interested in electronics and Amateur Radio.

**London (Holloway):** At the Holloway Institute, Archway Annexe, to start Sept. 22, 7.0-10.0 p.m. Course lecturer, B. C. Bond, G3ZKE. For further information ring *485 7065*.

**London (Islington):** At the De Beauvoir Institute, Tottenham Road, Balls Pond Road, booster course for those having already taken the R.A.E. without success. Enrolment Sept. 15, course tutor F. Burns, G3AGP.

**London (Purley):** At the Further Education Centre, Technical College Annexe, Tamworth Road, West Croydon, commencing on October 2. Enrolment Sept. 20, 10.0 a.m. to 3.0 p.m. at the College Annexe. Further details from the course tutor, P. L. Burton, G3ZPB, or ring *669 6700 (day), Downland 51413 (evenings)*.

**London (Wembley):** At the Evening Institute, Copland School, Cecil Avenue, course commencing Sept. 15, 7.0-10 p.m. in two streams, for Theory and Morse. Enrolment Sept. 8-11, 7.0-9.0 p.m. at the Institute, course fee about £4, with reductions for seniors and juniors. Instructor, I. Bayliss, G8CZQ, *QTHR*, or ring *81 (West Drayton) 47258*.

**Loughborough:** At the Technical College, Radmoor, on Tuesday evenings 6.0-7.0 p.m. for Morse and 7.0-9.0 p.m., Theory and Practical. Start on Sept. 16, enrolment Sept. 8-11, 6.0-8.0 p.m., course fee £5.35, lecturer D. R. Doughty, G3FLS.

**Northampton:** At Upper School, Booth Lane South, Weston Favell, evenings 7.0-9.0 p.m., starting Sept. 24, enrolment Sept. 8-12, course fee £5, and instructor B. Hayes, G3JBU, *QTHR*, or ring *Northampton 43020*, evenings, for further information.

**Perth:** At the Technical College, Crieff Road, every Monday, 7.0-9.0 p.m., starting Sept. 15. Course tutor D. Morris, GM3YEW, details from the Principal at the College, or ring *Perth 27044*.

**Peterborough:** At the Technical College, starting in September, two evenings a week, course tutor G. W. Morris, G3SGC, *QTHR*, or ring *830 (Ramsay) 456*.

**Pontefract:** At Knottingley High School, starting Sept. 17. Instructor A. E. Ashby, G3HCW.

**Princes Risborough (Bucks.):** At the Adult Education Centre, Merton Road, starting Sept. 22, 7.0-9.0 p.m. (Theory), lecturer R. E. Whiting, G3POF, and Sept. 25 (Morse), instructor S. Ford, G4ACV. Enrolment at the Centre, Sept. 10-11, 7.0-9.0 p.m.

**Rolleston (Staffs.):** At the District Adult Education Centre, Forest of Needwood High School, on Tuesday evenings, 7.30-9.30 p.m., starting on Sept. 16. Enrolment Sept. 11, 7.0-9.0 p.m., fee £1.33 per term for 2½ terms.

**St. Helens:** At the College of Technology, Mondays and Thursdays, 6.45-9.15 p.m., enrolment Sept. 4-9, 6.0-8.0 p.m., further information from E. H. Lewis, G3PII, Dept. of Electrical & Electronic Engineering, at the College.

**Sheffield:** At the King Edward VII School, Darwin Lane, Sheffield 10, starting in October on Friday evenings. Further details from J. Bell, G3JON, *QTHR*, or ring *732333 (office), 367774 (evenings)*.

**Swinton (Manchester):** At Moorside High School, East Lancashire Road, on Thursday evenings, commencing Sept. 25. Details from P. Whatmough, G8BFP, *QTHR*, telephone *061-794 3706*.

**Wigan:** At the Mesnes High School, Parsons Walk, enrolment Sept. 1, 6.30-8.30 p.m., for course to commence Sept. 22, 7.0-9.0 p.m., with a second evening if required. Course fee will be £5.10, three terms of 10 weeks each. Course instructor T. Austin, G3RCA, *QTHR*.

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Independent, Unsubsidised and now in its 33rd volume.*

## Contests

Results: Although conditions were generally poor for the 23 cm. contest on April 27, five operators managed scores of over 1,000 points. Best DX was between G3JVL and G3KMS—a distance of 332 km. It is interesting to note that this QSO was made when both stations were running fairly low power—JVL with 10 watts and KMS 15 watts. Both used the G3JVL Loop-Quad antenna. Leader and runner-up were G3WDG/P, operating with G5HD from a site near Andover, and G3JVL, both of whom have done so much to popularise this neglected band.

Considerable use was made of 70 cm. for setting up contacts on 23 cm., and this seems desirable, having regard to the highly directional antennae used on the upper frequency band, unless the contest rules are interpreted as permitting skeds to be arranged in advance. Using 2m. for the talk-back link can be misleading, and therefore time-wasting, for assessing the possibilities of a long path at UHF since the propagation conditions are so different. It may also be inconvenient since, apart from SSB operation, it is the 70 cm. gear which usually provides the RF on 23 cm. via varactor triplers.

The RSGB Region 1 VHF contest in June attracted a record entry this year—the good propagation conditions and fine weather being contributory factors. The multi-operator section was handsomely won by the North Liverpool Radio Club from the Liverpool and District Club, with Ainsdale taking third place. The single operator leader was GD8EX1 with GD2HDZ as runner-up, and the "Outside Entry" section produced an easy win for G4CDF.

Reports: Conditions could hardly have been better for the Jubilee contest on July 5/6 unless it had been held a couple of days later. There was plenty of EU activity—they had a concurrent event—and several operators were able to complete a first contact with SM and OZ on both 2m. and 70 cm. Several G/EU contacts were also made on 23 cm. Propagation was probably best to the East and North-East from most of the country. It was remarkable that very little activity was heard from GW and the North-West over which territory the high pressure system, then centred over Northern Germany and Scandinavia, had only just passed. It pays to check the beacons and scan the weather charts rather than aiming highly directional beams haphazardly!

Conditions for the 4m. Portable Contest on August 10 were fair to good and activity seemed higher than usual. A few GM and GI contacts were made in the South (on CW) and GW portables were good signals for most of the time. G3JYP/P near Hexham in Northumberland was a reliable signal during the morning and must have put up a good score. The best heard was that of G3UKV/P, from The Wrekin, who had 95 contacts just before the end of the event. This also indicates a good level of activity.

**Forthcoming Events:** September 5/7—VHF/NFD, which coincides with the IARU Region I Contest; and the UHF Open on October 5-6. The BARTG VHF RTTY contest is slated for 1700z-2300z on September 13 and 0600z-1200z, September 21. This is a 2m. contest only and logs should be sent to G3HR, QTHR.

## VHFCC Awards

Just the one award this month which goes to Peter Tucker, G8IKO/G4DWZ

# VHF BANDS

A. H. DORMER (G3DAH)

(London) who gains Certificate No. 245 for his operations on Two. He was first licensed in March, 1974 and obtained the full ticket just one year later in March, 1975. Early contacts were made using just five watts of AM, but this was soon replaced by various SSB rigs. Peter's radio activities now cover quite a wide field, he being QRV on 70 cm. and 23 cm. and is just getting started on 4m. also. He has already had five contacts on that band using 250 mW of SSB to a dipole and higher powered gear is now under construction. Plans for erecting some sort of beam for 4m. are well advanced.

## View from GM

Propagation during July is reported as having been poor in most areas with the exception of the East Coast of the country where the bands opened up to Scandinavia and the South of England for long hours towards the end of the month. They can't have been too bad during the Jubilee Contest since GM8FFX (Aberdeen) had over 500 contacts and GM4DMZ/P (Mull of Galloway) had over 300. GM8AKB (Glasgow) worked OZ5TE/A at this time but heard no other Continentals.

A letter of encouragement to users of indoor beams comes from GM8HDB (Paisley). He runs a Liner to a five-ele. Yagi in the loft and since March this year has worked well down into G. as well as into GI and GD. His best EU contact has been with OZ5TE/A. So, take heart!

GM4CXP (Roxburghshire) now has an FT-101B driving a "Magnum 2" transverter on 2m. with very pleasing results—as shown by the increase in his score in the Annual Table! GM3DIE had now returned to Edinburgh from the Island of Coll whence his Liner + 40 watt linear and 10-ele. beam radiated some potent 2m. energy. Both he and GM3BQA know how to use these linears without the all too dreadful results to be heard on the band these days. From Caithness, GM8BPL/P has also been putting a good 2m. signal into the South of the country when his researches into life under the ocean wave permitted.

One often hears comments about portables who run 400 watts p.e.p. into a pair of Multibeams during contests, suggesting that this doesn't give low power users much of a chance, and GM8AKB comes up with the idea that there might be a power limitation

imposed on them for a couple of contests. This would meet with some stiff opposition, even though the QRM would be reduced and the chance of G/GM/GI contacts bettered. Incidentally, 'AKB has now moved from Glasgow to Pennicuik and will be QR I for a time, but he considers the new QTH to be better from a VHF point of view than the old one.

The date for the commissioning of the Central Scotland repeater seems to have gone back again, and the latest news from GM8FM is that it looks like being September this year before the Licence is granted, let alone the construction completed.

Finally, we learn from GM8FFX that tickets for the Scottish VHF Convention are now available from him or GM4BKV. September 13 looks like being a big day at the Tree Tops Hotel, Aberdeen, for both amateurs and traders who will be there in force.

## Three Centimetres

Congratulations go to those concerned in the "First" G/PA 3 cm. contact on August 3. G4ALN and G8FJG set up their gear at Burnham-on-Crouch. Essex and made contact with PA0KKZ/PA9ALY (Dain Evans, G3RPE) over a 240-km path. The Essex end ran 10 mW into the G4ALN "dustbin lid" dish, while at the site between the Hague and Haarlem, 6 mW was fed into a 3ft. dish. G3THQ and G8APP operating from Walton-on-the-Naze, also made it with the PA0. This achievement is a fine example of super-refraction and ducting over an all-sea path. One feature of this operation which may be new to those accustomed to the lower UHF frequencies is

## TWENTY-THREE CENTIMETRES

## ALL-TIME TABLE

Station	Counties	Countries	Total
G4BEL	38	10	48
G3NHE	24	5	29
G3DAH	23	4	27
G3JVL	21	4	25
G4BYV	17	7	24
G3OBD	20	3	23
G3ARM	20	2	22
G4ALN	19	3	22
G3JXN	19	1	20
G3COJ	15	3	18
G8AOD	11	2	13
G5DF	11	1	12
G8FMK	11	1	12
G8FJG	7	1	8
G8ABH	7	1	8
G8AII	5	2	7
G8GNZ	4	2	6
G8EOP	1	2	3
GD2HDZ	2	1	3

that it became apparent that propagation was at it's best when the wind lay along the duct and worst when across it. Odd!

G8BDJ and G8JBN set up 3 cm. gear at Chanctonbury Ring at 782ft. a.s.l. on the North Downs above Worthing on July 5/6 and succeeded in establishing contacts with G3JHM (Alton, Hants.) over a 30-mile path. The Tx used a klystron, as did the Rx, the Rx aerial was a dish and the Tx beam a horn, the output power being 30 mW. They also contacted G4BRS/P at Star Point, Devon from a location near Birling Gap at Beachy Head, a QRB of 175 miles, with both ends of the QSO at 30ft. a.s.l. They are now planning a QSO with PA0UNT from a location on the Kent coast.

It is with great regret that we learn that George Burt, GM3OXX, who has done so much to make this band popular, is suspending operations. We hope this decision is only temporary.

### Twenty-Three

Good news for the DX'ers on this band. GD2HDZ is now QRV with a 2C39A tripler. It will be some little time before he has everything tidied up and change-over relays installed, but he has already had a contact with G3KMS in Greater Manchester, with whom he has had frequent cross-band QSO's in the past, and it has just been learned that he has made it with G4BEL in Ely. (That's why we have increased your claimed score for the 23 cm. Table, Arthur!).

The recent good conditions were responsible for the huge addition to the 23 cm. Table score of G4BEL, which now includes three GW, two GM and one GD. The 10 countries worked are: G, GW, F, PA, ON, OZ, OE, DJ, DM and GD. Fine going.

G4ALN has now worked G3KMS to push his score up by one.

How about a few more claims for this Table?

### Seventy Centimetres

This band yielded some outstanding results during July and early August, at times superior to the DX available on 2m. What must be getting on for a tropo. record is the contact between G3COJ (Bucks.) and SMSLE in QRA JT51j, a distance of 1455 km. He also raised SM5DSN in QRA IT08b.

G3XDY, operating portable in the Lincolnshire Wolds during the July contest worked 10 countries—G, GD, GC, PA, DL (in Berlin), DM, SM, OZ, ON and F. He logged the Danish beacon, OZ6MBA on 432.45 MHz, at S9+30 dB and was copying OZ1ALS and SK6UHF as well. One is tempted to think about ducting under these circumstances, but the broad front over which signals were heard would belie this.

An outstanding signal on 70 cm. during the openings came from SK6AB in Göteborg. Although only running low power, he contacted 43 G, 20 PA and three ON. When on high power, he runs a BFR91 pre-amp installed at the top of the antenna tower with 2/4CX250B's yielding 500 watts to 8/46-etc. beams. Don't look for him before 2100z though, as this sort of power plays havoc with other radio equipment at the University and he can only work late at night. SM6CEN is one of the operators at SK6AB and he sends along the following additional information on the 432 MHz beacons mentioned in this Column last month: SK6UHF runs 10 watts with 4/HB9CV antennas, LA1UHF uses a N/S

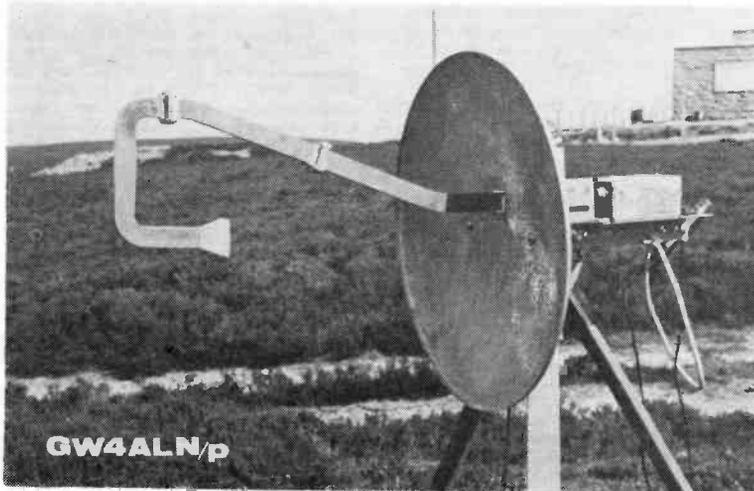
## THREE BAND ANNUAL VHF TABLE

January to December 1975

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	
GD2HDZ	41	4	66	11	35	6	163
G3ZMD	34	3	64	16	32	9	158
G3DAH	42	4	48	9	38	11	152
G2AXI	32	3	49	11	29	8	132
GM8FFX	—	—	93	14	6	6	119
G4BYP	38	4	60	11	—	—	113
G3BHW	—	—	55	16	30	9	110
G4BWG	4	3	57	14	1	1	110
GM4CXP	18	4	60	15	5	2	104
G3FIJ	38	3	44	9	6	3	103
G3BW	—	—	57	11	27	5	100
G4CZP	—	—	78	15	—	—	93
G8IAT	—	—	76	12	—	—	88
G8BKR	—	—	63	14	7	2	86
G5DF	41	4	—	—	31	9	85
G4AJE	—	—	50	13	17	5	85
G18HXY	—	—	66	9	5	3	83
G3FPK	—	—	63	15	—	—	78
G8ABH	—	—	40	11	21	5	77
G8EOP	—	—	40	12	20	4	76
G4CIK	—	—	56	15	—	—	71
G13JLA	6	5	42	11	3	3	70
G4AEZ	11	3	20	9	18	7	68
GD3YEO	—	—	55	12	—	—	67
G8INL	—	—	58	9	—	—	67
G8GLS	—	—	54	10	—	—	64
G8GHZ	—	—	50	9	3	1	63
G8FMK	—	—	26	2	25	4	57
G8FWB	—	—	47	8	—	—	55
G8GII/P	—	—	47	7	—	—	54
G4DNJ	—	—	45	8	—	—	53
GW8HVP	—	—	45	7	—	—	52
G4AIR	29	4	7	2	—	—	42
G4AGE	—	—	23	9	6	1	39
G8JKA	—	—	32	5	—	—	37
G8JAJ	—	—	29	6	—	—	35
GW8GLG	—	—	30	3	—	—	33
G3EKP	7	3	15	5	1	1	32
GW8FKB	—	—	—	—	18	6	24
G4BKY	—	—	8	2	—	—	10

The Table shows claims to date from January 1, 1975 and will close on December 31, 1975. All claims should be sent to: "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ as soon as possible after the start of a new month.

In the July "VHF Bands" we reported some 3 cm. tests across the Irish Sea. These pictures show the equipment at the G4ALN/G8FJG end, with which contacts were made with three countries. The gear consists of a 3ft. dust-bin lid as reflector, giving 31 dB gain at this frequency, energised by a 16 WG feeder (lower left). Behind the dish is a 10 mW Gunn oscillator and mixer diode, into a standard FM Rx. In the upper picture we see (at left) the G8FJG gear, similar to that of G4ALN, except that he uses a 12in. horn giving about 22 dB gain.



dipole, also with 10 watts, and OZ7IGY on 432-015 MGz is located in QRA GP32 near Copenhagen.

G3OHH (Mow Cop) logged GB3GEC for the first time at RST-569 on the night of August 3 and was copying G3BHW and G3DAH in Kent at 5 & 9, G4BEL in Cambridge at 5 & 9+ and ONSQW at 5 & 7 during the same evening. G3LQR, G3BHW and G3DAH, among others probably, worked LA9T in QRA FI44g, South of Oslo, on August 8, just before the Wx changed and the band folded.

This was undoubtedly one of the best openings on 70 cm. for a very long time.

#### Two Metres

The call for comments on outstanding achievements on this band during the superb openings since the end of June has brought a flood of replies, so many in fact that it is not possible to include them all in full, and so a much abbreviated summary has been made which should, nevertheless, give a

complete picture of the situation.

In the last few weeks, G3FPK (Purley, Surrey) has made 509 QSO's on the band, of which 121 were outside the British Isles and comprise 27 DL, 15 OZ, one DM, 27 PA, 20 F, 8 ON, 19 SM and four LA. How's that for DX? He urges, as we have done so many times, portable, /A and those operators whose calls are not yet in the *Callbook*, to announce their locations when calling "CQ" (as indeed the Licence requires). It is also helpful to give the beam heading at the same time. Norman is QRT on SSB for the time being while the commercial rig is being overhauled.

The Jubilee Contest weekend brought 25 SM, eight OZ and one LA to G3ZMD in Luton. Best DX was SM4AXY in HT55c at 1250 km. G4CZP (Carnforth, Lancs.) notched up 14 PA, one F, two ON, 47 DK, one DM, three each OZ and SM. Best DX for G8BKR (Bristol) was SM7AED in GQ56b at 1125 km. He also succeeded in working *Lundy Island*, G4DHK/P, which

is a pretty rare one. He had several contacts with GM during the QRP contest—nice going from there. G3XDY was operating /P from the Lincolnshire Wolds during the Open contest and worked 15 countries on 2m. SM4AXY was again the best DX at 1120 km. and strongest copy was the signal from DM2CPA/P who was S9+40 dB! He made a total of 368 QSO's, running 200 watts p.e.p. to a 14-ele. Parabeam at this time. G3POI (Tunbridge Wells) accounted for 75 SM stations, six LA and scores of OZ during the contest. His best DX on July 6 was undoubtedly OH1NI, although his contact with SP1CDT must rank high also. Both these on CW, of course!

On July 2, GM3JNW (Duns, Berwick) heard ZB2VHF on 2m. at RST-539 and copied him from 1200z-1500z, although QSB was bad. GM8ILE/P and GM8IAP both worked into PA on July 4 and GM8IIO made it with DL on the same day. G3MYI and G4CIK, both in Leicester, had good CW contacts with LA8OJ. On Sunday, August 3 G4BAH (London) worked HB9 in the early hours of the morning. (His linguistic abilities have brought him many EU contacts which might otherwise have been missed due to language problems). An unusual contact was that between G8ILR and PA0IHHD on July 31 which was completed while 'ILR was pedestrian-mobile with a KEN KP202.

From the other end of the DX comes a letter from SM6CEN, one of the operators at SK6AB. He reports that the University

station was only running low power during the Jubilee contest but that SM6CKU, who had high power (500 watts to a 4/20-ele. colinear stack), worked 135 U.K. stations from one "CQ"!! This figure includes three GC and one GW, which is very fine going.

As if all this tropo. weren't enough, we have also had some remarkable E's on 2m. One June 1, SM7DEZ and SM7BYU both worked 9H1CD and G4CZP and G4CDF both heard ZB2VHF. On the same day, G3JCQ/P raised OH1 and F2YP worked UB5OD, so there was extended tropo. about at the same time. On July 1, LA9DI, QRA FT62I, worked IS (Sardinia) which again must have been E's. Sporadic-E was about, albeit sporadically, from July 1 to July 6.

A few items unrelated to the openings: Amateurs in Monaco are setting up a beacon with proposed characteristics as follows: QRG, 144-149 MHz and 28-175 MHz. FSK keying with 100/200 Hz shift. RF output power about 5 watts to an omnidirectional antenna. Location will be on Mount Agel in QRA DD18f. Confirmation when parameters firm.

DA4BM (ex-G8HQA from Shrewsbury) runs high power to a 10-ele. antenna from Rheindahlen in QRA DL62C and has a nightly contact on 144-26 MHz (+ or - QRM) with DC9KU near Aachen in QRA Dk11b at around 2200z. They are both looking for G contacts. 4BM hopes to be QRV on RTTY shortly.

G8JAJ, pretty new to the band, as his callsign testifies, is having trouble in getting out with his Liner and 14-ele. Parabeam, and at 15 years of age this is disappointing. Difficulty is with the Chilterns running from NE through S to SSW. How about turning the beam towards Woodmancote, Cheltenham for a few evenings?

#### Four Metres

Conditions on this band during the contest of July 5/6 were also excellent. G3XDY/P operating from the Lincolnshire Wolds with 100 watts p.e.p. to a 4-ele. beam made 34 QSO's, in spite of devoting most of the time to 2m. and 70 cm., and this total included five countries. G3LVP (Benfleet, Essex) found the outstanding signal during the contest to be that of G3FDW/P (Co. Durham) who was pushing the 'LVP S-meter to f.s.d. This was about 20 dB up on GB3SU at the time. He found G4AIR (Macclesfield) and G4BYP (Liverpool) to be good signals in the early morning,

as was G2SU/P (Halifax). GC3YIJ/P from Guernsey was also good on SSB. Best DX for Ken was with GM4DMZ/P in Wigton at 1025z, although he was not as strong as was GM3ZSX/P on SSB from the same site during the corresponding event last year. Although 'LVP does not go in much for contests, apart from monitoring them and producing some very interesting statistics, he has pushed his all-time score for the band up to 61 countries, of which 31 were worked this year (plus 4 countries). He, and many others, are waiting for Willy McClintock, G3VPK, to make another trip to GI to activate that country.

G3OHH (Mow Cop) found activity low during the contest due to the competing attractions on 2m. and 70 cm. However, he made it with GM4CXP (Roxburgh) on July 10 and also with GW8JCI/P in Fishguard. G4AIR (Macclesfield) contacted GM3YDN/P on July 10 and GM3ZBE on July 26.

G4BYP (Liverpool) is now mobile on 4m. with 90 watts from an FT-101 and Europa. He puts a 5 & 9 signal into the Midlands with this combo.

#### General

An A/TV Convention at Aston University on October 11 has been organised by B.A.T.C. Times are 100-1800 clock, the entrance fee is 50p, and tickets and further details may be obtained from G8DLX or G3WW, both QTHR.

G4CIK was one of the members of the Cambridge University expedition to GM during June and reports that an equipment failure prevented operation on 70 cm., but they worked over 200 stations on 2m. and about 30 on 4m., best DX on that band being G3LVP (Essex) and G5DF (Berks.). This has stimulated him into building a transverter for 4m. and he should shortly be QRV on SSB and CW from Loughborough.

The trouble at the GB3VHF site at Wrotham has now been traced to 11MHz broadcasts getting into the 12 MHz stage of the beacon exciter. As indicated last month, remedial action is being taken and the beacon should be back in operation towards the end of this month.

G4AOT has obtained official access to the Oracle system of digitally coded messages superimposed on certain TV transmissions and has been able to get an abbreviated form of Amateur Radio news bulletin transmitted through this medium. At present only

Thames and LWT transmitters carry this information which, it is hoped, may be extended to include such data as *Oscar* predictions, beacon and repeater information, propagation conditions and the like. Not many amateurs will possess the necessary decoder to enable the Oracle information, which at present appears as a couple of rows of white dots dancing across the top of the screen, to be read but if this becomes a permanent feature of certain TV transmissions, it is to be hoped that some genius will produce a design suitable for amateur construction. One imagines the official gear to cost a bomb! Thanks to G8FYO for the information.

#### Deadline

Deadline for the next issue is September 6. All news, views, claims and comment as usual please to: "VHF Bands," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ.

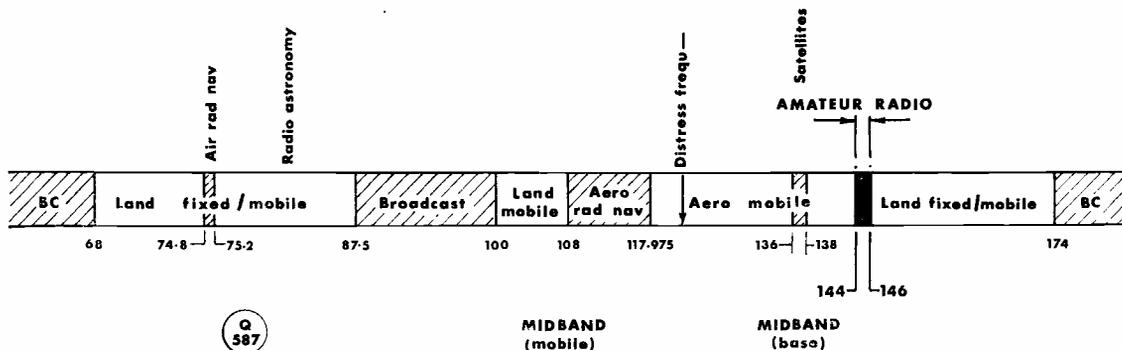
So that's it again for another month. Till next time, vy 73 de G3DAH.

#### Vale

For personal reasons, your scribe feels that the time has come for him to lay down his pen and relinquish, with regret, the compilation of this Column. The last seven years have been most rewarding in that they have provided the opportunity to gather, and disseminate, news and views covering the whole VHF/UHF spectrum of Amateur Radio activity. Sincere thanks are offered to all those who, by their ready and continued support, made this possible. Good luck and vy 73 de G3DAH.

*Editorial Note:* Naturally, we very much regret this decision and would like to put on record—as surely most readers of "VHF Bands" would agree—that G3DAH has, over the years, made a most notable contribution to the VHF scene. Certainly, he has applied himself with vigour and determination to every aspect of VHF activity, having equipped his station with gear for all bands 4m. to 23 cm. So far as *SHORT WAVE MAGAZINE* is concerned, he has been a valued contributor and a respected and most helpful colleague.

At the moment of writing, it is not known who will be taking over "VHF Bands" w.e.f. the November issue—A. J. Devon says it won't be him! A.J.F.



Allocations in the frequency area 68-174 MHz, showing where our two-metre band comes in this range in relation to neighbouring VHF services.

## THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for October issue: September 5)

NOT so long ago, the writer was asking a certain well-known amateur why he did not belong to his local club or group. His reply contained the scornful phrase "all clubs are alike!"

How wrong his assessment was is possibly hard to see clearly, other than from a position from which one can be aware of what goes on in lots of groups over a period, such as the writer of this piece; however, from where we sit, the variations are not only there but they are amazingly great. One is fiercely competitive, another would not enter a contest at any price; a big, booming Club will have a catchment area in which one would not expect to find enough interest to sustain a small outfit, and a dying club will be based in a big city with major electronic interests providing much of the employment; one will feel a failure if a talk or film show or whatever is not available for every meeting, and another will thrive on no such activity at all. One will reckon on a monthly session being as much as they can run to, and another will be active on three or four evenings of each week. We have mentioned differences of outlook; there are also differences in *people*: one happy crew will have a prize gang of odd-balls, and another, unhappy set-up will have a large majority of decent nice fellows with just one anonymous letter-writer to emit the festering poisons in his mind and so ruin friendships and the club spirit—oh, yes, your scribe has received them both as relates to this piece and as relates to his own local Club, the latter before ever he had taken to the pen. About all that is common to all groups is the fact that any attempt to get *all* the members to "have a say" or support activity of any sort, or to take part in committee work, is doomed to failure! But a good Club is a great thing to belong to, *good* being defined as "letting you participate as much or as little as you wish."

Here endeth the sermon for another month; now to look at the reports!

### Beginning—and Ending

A new one is formed at Peterborough; no details are given, save that it is to be called "Greater Peterborough Amateur Radio Club," and further information is to be obtained from the hon. treasurer, whose address for the moment appears in our Secretaries' Panel, until we receive that of the appointee.

Another new one is up in Scotland; called Pioneer, and foregathering every Tuesday evening in the Churh Hall, Ravenscroft Street, Gilmerton, Edinburgh, the lads will welcome their first guest speaker on September 9, in the form of GM3OXX. Again, either contact the Hon. Sec.—see Panel—for more gen, or drop in one Tuesday evening.

To these two new Clubs, our best wishes for success. Now, we must turn to the other side of the coin. A sad letter comes in from the Secretary of the Mid-Herts club, which will be better remembered by many as the old Welwyn Garden City show. He reports that at a recent E.G.M. it was decided to wind up the Club owing to very small attendances and rising costs of the club room. Perhaps the saddest person there would have been Jack Hum, G5UM, who was one of the founder members and intimately concerned with the organisation in the club's great days. There will be a farewell dinner at the "Plume of Feathers," Tewin, on September 19 to which ex-members will be very welcome—contact G3HEA at the address in the Panel, as soon as possible.

### Up North

If we include the new formation mentioned above, our GM reporters are more than for many a day. A new Secretary is introduced by the scribe at Lothians, and of course he appears in the Panel. In addition we hear that the group will be getting together on September 11, for the president's address by GM8GEC, and on the 25th a Surplus and Junk Sale will be held. The venue is at Riddles Court, off High Street, Edinburgh.

West of Scotland have been keeping quiet about their activities of late, doubtless being fully occupied in the hunt for new premises. However, GM3RHR is still in the "hot seat" and he tells us that they are very much alive and kicking, every Friday evening from eight p.m. at Robertson Street, Glasgow, with a programme which includes talks on Amateur Radio and related topics.

Now to Northern Heights, who have sent us a copy of the *News-letter*—very interesting but it gives us no hint of the goings-on at meetings or of dates and venues! However, we understand they get together on Wednesdays at the Peat Pitts Inn, Ogden, and past experience says there is usually something of interest laid on.

Increased membership at White Rose has enforced the need for structural changes to the Hq., which for the moment are limiting facilities—however, that doesn't stop 'em welcoming visitors or new members. Try any Wednesday evening at 7.30, at 83 Town Street, Armley. An interesting outing is fixed for September 21—a cruise on the Manchester Ship Canal.

Now this is *really* something! At the Easingwold Gala, not only did York have a station to show the multitudes, but also G3XFM doing constructional work while being watched by visitors—what courage the lad must have! They foregather on Thursdays at the British Legion Club, 61 Micklelegate, York, and doubtless some of the time will be spent getting ready for the station they will be putting on at the opening of the new York Railway Museum, for a week from September 27.

The first Thursday in each month is the date for East Lanes, and on September 4 they have taken the Ex-Servicemen's Polish Club, Sheerbank Road, Blackburn, for the "Aerial Circus" lecture to be given by Dud Charman, G6CJ. Local clubs have been invited to come too, and "unattached" people who are interested will also be welcome, although a charge of 20p a head is necessary to help cover the expenses. This, of course, is a special venue—in other months the Hq. is used—the YMCA, Sheerbank Road, Blackburn.

### Wales and West

A somewhat "hopeful" heading insofar as at the moment of starting there was nothing at hand from G.W.-land!

Yeovil have every Thursday evening at the Youth Centre, 31 The Park, Yeovil, starting at 7.30. Highlights of the month will be on September 11, when they have a tape and slide talk on Semi-Conductor Devices, and 25th, set aside for G3XFW to give a dissertation on Construction Techniques. Incidentally, we note and congratulate the faithful Yeovil scribe, J. W. Howard, on his new callsign, G8JWH.

At Chippenham they have every Tuesday evening booked at the Boys' High School, Hardenhuish Lane. In September, apart from operating in VHF/NFD, they have reserved the 9th for a Monster Junk Sale, to which everyone is invited.

Further West still now, to Cornish, who will assemble on September 4 at the SWEB Clubroom, Pool, Camborne, for an illustrated talk on the Post Office Tower. In addition to the main Club there are also VHF and West Cornwall groups affiliated to them.

On August 30, the Torbay crew and their visitors will be listening to a talk on QRP by G3LHJ, and on September 27 they will hear all about Rock Climbing (!). RAE lectures at the Hq. start on Tuesday, October 7, with enrolment on Tuesday, September 2. The Hq. around which all this activity centres is in Bath Lane (rear of 94 Belgrave Road), Torquay.

### Specialists

Here, undoubtedly, we must first mention the G-QRP Club, whose Hon. Sec., G3RJV, notifies us of a change of address which appears in the Panel. We gather that the membership list is now up to 150—not at all surprising in view of the interesting *News Letter* put out at regular intervals, and the reprint service which is so handy for anyone interested in the QRP aspect of Amateur Radio.

WAMRAC is the group for any licensed amateur or SWL who is of the Methodist persuasion or sympathetic; quite a lot of news-and-views in the regular *Newsletter*, nets on Eighty, an information service, an award, and so on; for more details contact G3AGX at the address in the Panel.

For the mobile amateur operator, we would think membership of A.R.M.S. would be a "must," no matter what bands he works—details from the Secretary—see Panel.

### WARNING—M C C !

With rules and timing much as last year, the 1975 Top Band Magazine Club Contest will be played off over the week-end November 15-16. Start thinking now ! Rules in the next issue, due out on September 26.

## Midlands

Coventry will be appearing in VHF/NFD, this year with more than the two keen types who stuck it out last time despite the awful weather. In addition, at the Hq. at Baden-Powell House, there will be the usual Friday evening sessions—details from G3HDO, see Panel. Or why not just turn up?

Hereford are in residence at the County Control, Civil Defence Hq., Gaol Street, on September 5 and 19. The first date is down for a "Club Meeting" which one supposes to mean a general get-together rather than any formal lecture; and on the 19th Jonathan Steele will be discussing Basic Theory on Receivers.

At South Manchester they get together every Friday evening at Sale Moor Community Centre, Norris Road, Sale, 7.30 for the Morse class and 8.0 p.m. for the main meeting. September 5 sees the Hon. Sec. talking about "Light," and on the 12th they receive a visit from the local TAVR Royal Signals. G2AMV is their guest and speaker on September 19, and on the 26th there is a Surplus Equipment Sale.

Our next is a group of Clubs, based on Sheffield. The group comprises the Sheffield University and the Polytechnic clubs, both in recess at the time of writing, Sheffield group proper, and Workshops. September 15 is the date for the Sheffield town club, and the subject is Morse—Teach, Revise, Learn. Several teaching aids will be on display. The venue appears to be the Sheaf House Hotel. Worksop's Secretary forgot to send his details in to the Association newsletter compiler, so we can't tell you what they will be getting up to! Finally, if there are any amateurs or potential members who are going to start their courses in University or Poly. this autumn, please get in touch with G8DNF—Sheffield 303758—for details of Amateur Radio activity in the city and for any help that can be given in finding accommodation. That's all for the moment, but looking forward to October 6 there will be a Trade Fair and AGM for the Association; 6.30 to 8.30 for the trading, 8.30 onwards for the AGM, at Sheffield Polytechnic, Room 3106.

Mid-Cheshire have their place in the Technical Activities Centre, Grange Lane, rear of Verdin Comprehensive School, Winsford. Here, on September 10 they will have their AGM, and on the 24th there will be a Slide Quiz, conducted by G8KIX. For more details of what goes on on Wednesday evenings, get in touch with G3SIQ, as Panel.

An early letter from Solihull tells us that the September 16 date sees them entertaining G2CVV from Derby, who will be talking about Interference, at the Manor House, High Street, Solihull.

It's all there in the letter from South Birmingham. On September 3 they have E. C. Naylor-Strong, G2RQ, giving his lecture on the Life of Marconi. The Hq. address for this one is Hampstead House, Fairfax Road, West Heath, Birmingham, 31.

What about a "TV Evening with G6RKU/T?" That's the fare for Midland on Tuesday, September 16, all the latest gen, video recordings, and, hopefully, a live Amateur TV sked contact. All this is from the Midland Institute in Margaret Street, Birmingham.

Mosses Community Centre, Cecil Street, Bury, is the place where the Bury & Rossendale fellows foregather each Tuesday. The "big one" of the month is always the second Tuesday when something formal is set up. On a different tack, in addition to Morse classes, this season will see an RAE class in being.

An intriguing title comes up for mention now: "Tweaking, or, How to love your daughter's Transistor Radio." Crikey! In fact, G2FOS, the Wirral chairman, is going to demonstrate how simple it is to convert any transistor portable covering Medium Wave to make it go on Top Band, and, which is maybe more important in the indicated circumstances, how to convert it back again after the D/F Hunt. This was a sample of August's fare, so it should be worth a trip to the Sports Centre, Grange Road West, Birkenhead, on the first and third Wednesdays in each month.

Weekly get-togethers at Sherwood Community Centre, Mansfield Road, Nottingham, are the routine for the Nottingham chaps. We have it that September 4 is a Forum plus preparations for VHF/NFD, while a Mobile Run will occupy the 11th nicely. Activity Night is September 18—presumably with G3EKW on the air—and on the 25th, D. Molyneux, G3YUT, will be talking about the manufacture of PCB's.

## South and East

At the moment of writing, this part of England appears to have been transposed magically to the Equator!

There is a great big Question Mark hanging over things at Verulam presently, concerning the Hq. address; thus it is that the *News letter* does not go as far ahead as September, and this is also why we suggest that you get in touch with G3YHY—see Panel—before making any firm plans to visit.

Brief and to the point is the letter from the Crawley scribe. It tells

us that Hq. is still the United Reformed Church Hall, Ifield, Crawley, and the date September 24, for a Junk Sale.

Saturday is an unusual day for club meetings, but it has been popular at Crystal Palace for as long as your scribe can remember. This time at Emmanuel Church Hall, Barry Road, London, SE22 (the date is September 20), G300U will be treating HF Aerials and Matching Units.

Silverthorn have a good *Newsletter*, but, alas, it doesn't tell us on what evenings of the week the gang can be found at their "stately home" Hq., Friday Hill House, Simmons Lane, Chingford, E4; for that vital bit, we refer you to G4AJA, as in Panel. Their G2HR has notified us of their Summer Bank Holiday Week-End Camp, now a regular feature of Silverthorn activities. They will be operating GB3SRC on the HF/VHF bands, from Carrol's Farm, Sewardstonebury, near Chingford, Essex (visitors to park in Bury Road).

September 18, at the Library, Cheam, is booked for Sutton & Cheam, although we do not at the time of writing know what is to happen in detail, there being a change of Hq. in the wind also. For the very latest information, get in touch with the Secretary, G4BOX.

Always an interesting *Newsletter* from Surrey, but this time they forgot to include the advance information for us! However, deduction tells us the venue is the Ship Inn, Croydon, and the third Tuesday in each month as the routine; this makes it September 16.

For September at Southgate we have to read into the small print, but we get it that the Home Office TV Detector people are coming along to tell all the trade secrets and even to let the lads look inside those ominous-looking vans of theirs. September 11 is the date for this one, at the Scout Hut, Wilson Street, Winchmore Hill Green.

The most important meeting of the year for *any* crew is the AGM, and this is precisely the thing that Milton Keynes have booked for September 8, at Lovat Hall, Silver Street, Newport Pagnell.

Holiday radio-activities are to be reported on by the members of the Acton, Brentford & Chiswick set, for the entertainment of the others. Tuesday, September 16, is the date for this one, and the venue as always Chiswick Trades and Social Club, 66 High Road, Chiswick, London, W4.

It is a quite nice *Newsletter* they put out from Edgware complete with crossword and cartoon. There are no activities booked for August, we see, but the goings-on for the autumn season start on September 11, when G3TDR will be talking about single-conversion receivers for both 144 and 70 MHz use.

Reigate next; here they start the month with an informal at the "Marquis of Granby," Hooley Lane, Redhill, and follow up with the main meeting on September 16, at St. Mark's Church Hall, Alma Road, Reigate, at which G3ZPB will talk about the Amateur Radio Bulk Buying Group.

It looks like the first and third Thursdays for Cray Valley in September, but at the time of writing we don't have details of the goings on at Eltham United Reformed Church Hall, 1 Court Road,



"... of course, here we use a halo ..."

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

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W3 8LB.  
 A.R.M.S.: N. A. S. Fitch, G3FPK, 40 Eskdale Gardens, Purley, Surrey, CR2 1EZ.  
 BISHOPS STORTFORD: C. W. Harlow, G8BTK, Thorn Cottage, Old Mead Lane, Henham, Elsenham, Bishops Stortford, Herts.  
 BURY & ROSSENDALE: M. Howarth, G8ECM, 11 Worthington Avenue, Heywood (6591J), Lancs.  
 CHESHUNT: R. E. Chastell, 4 Fairley Way, Cheshunt, Herts.  
 CHIPPENHAM: J. Stevens, G3UFW, Langenhoe, Rowde, Devizes, Wilts.  
 CORNISH: H. Webster, G3XTF, Crandale, Gillyfields, Redruth (6905), Cornwall.  
 COVENTRY: B. W. Arnold, G3HDO, 159 Oldfield Road, Coventry, West Midlands, CV5 8FQ.  
 CRAWLEY: A. V. H. Davis, G3MGL, 41 Gainsborough Road, Tilgate, Crawley (20986), Sussex, RH10 5LD.  
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 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, SE23 3BN (01-699 6940).  
 EAST LANCs: C. R. Winstanley, G4CDR, 16 Glenluc Crescent, Shadsworth, Blackburn (663362), Lancs.  
 ECHELFORD: J. H. Ellis, G2FNK, 18 Georgian Close, Leacroft, Staines (54828), Middx., TW18 4NR.  
 EDGWARE: P. D. Ling, 42 Greencourt Avenue, Edgware, Greater London (01-952 2495).  
 FARNBOROUGH: R. C. Bagwell, G8ECO, 33 Frimley Green Road, Frimley, Camberley, Surrey.  
 GREATER PETERBOROUGH: R. Smith, G4DXW, 251 Coneygree Road, Stanground, Peterborough, Cambs., PE2 8LR.  
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 LOTHIANs: B. W. Flynn, GM8BJF, 8 Corrennie Drive, Edinburgh, 10 (031-447 5527).  
 MID-CHESHIRE: A. Greenwood, G3SIQ, 83 Ash Road, Cuddington, Nr. Northwich, Cheshire.  
 MID-HERTS: J. U. Burke, 15 Daltry Road, Stevenage, SG1 4AW.  
 MIDLAND: A. L. Walton, G3ZKQ, 243 Barnes Hill, Birmingham, B29 5UJ.  
 MID-SUSSEX: J. Brooker, G3JMB, 20 Farnham Avenue, Hassocks, Sussex.  
 MILTON KEYNES: T. M. Rabbitts, G8HUH, 39 Vandye Close, Woburn Sands (583706), Milton Keynes, Bucks., MK17 8UU.

NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44329), West Yorkshire.  
 NORTH KENT: R. Wells, G4ARQ, 12 Bulbank Road, Belvedere, Kent.  
 NOTTINGHAM: M. C. Shaw, G8IPH, 50 White Road, Nottingham, NG5 1JR.  
 PIONEER (EDINBURGH): A. Sinclair, GM4BWT, 32 Burdiehouse Street, Edinburgh, EH17 8HB (031-664 6570).  
 QRP CLUB: Rev. G. C. Dobb, G3RJV, 8 Redgates Court, Main Street, Calverton, Notts.  
 REIGATE: R. Wells, G3RIN, 5 Cronks Hill Road, Redhill, Surrey (Reigate 47659).  
 SHEFFIELD (Clubs Association): P. Day, G3PHO, 39 St. Albans Road, Sheffield, 10 (306956), South Yorkshire.  
 SILVERTHORN: C. J. Hoare, G4AJA, 41 Lynton Road, South Chingford, London, E4 9EA (01-529 2282).  
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 SOUTH MANCHESTER: C. Scholefield, G8GDM, Silverdale, 57 St. Werburghs Road, Chorlton-cum-Hardy, Manchester, M21 1UN.  
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 SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Sutton, Surrey.  
 TORBAY: M. Yates, G3UIQ, Top Flat, 23 Waverley Road, Newton Abbot (3025), Devon.  
 VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford (25633), Herts., WD2 5JQ.  
 WAMRAC: L. Colley, G3AGX, Micasa, 13 Ferry Road, Wawne, Nr. Hull, HU7 5XU.  
 WEST OF SCOTLAND: K. Drinkwater, GM3RHR, 41 Southesk Avenue, Bishopbriggs, Glasgow (041-772 3085).  
 WHITE ROSE: K. R. Robson, G3VTY, Flat 7, 34 St. James Drive, Horsforth, Leeds.  
 WIRRAL: H. I. Crofts, G3DLE, 3 Barmouth Road, Wallasey, Merseyside (051-638 2515).  
 WORKSOP: D. L. Rush, G4CRE, 87 Rydal Drive, Worksop, Notts.  
 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset.  
 YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

London, SE9.

Over to Echelford who are booked in on September 8 and September 25—the former is not yet settled, but on the 25th, G3HDJ talks about Transmitter Techniques Old and New. However, one thing that doesn't appear is the Hq. address, and this old scribe's memory is not to be trusted in such an important matter, so, sad to say, we must refer you to the Hon. Sec.—see Panel.

At Bishops Stortford the exact nature of the doings remain obscure at the time of writing, but we can say that whatever is to happen will happen in the committee room at the British Legion Club, Windhill. Prior to the meeting, Amateur Radio talk can be heard in a corner of the bar down below, the while members "get tuned in" to the more formal activity aloft.

Back to their old home go Farnborough, they having switched Hq. back to the Railway Enthusiasts' Club, Access Road, off Hawley Lane, Farnborough, on the second and fourth Wednesdays of the month—all members and prospectives or visitors please to note.

Cheshunt seem to be moving ever upwards of late; they are at the Rosedale Sports Club, Andrews Lane, off Goffs Lane, Cheshunt, Herts, starting at 7.0 p.m. so that the lecture can get a prompt start at eight o'clock—a sound idea. On the 3rd it is CW practice and a Members' Forum, and on the 10th more CW practice plus operation of the HF-bands station. September 17 is down to a talk on RTTY by G8CDW, Ted Double, from Enfield, who is perhaps better-known

as awards and contest manager for BARTG. On to the 24th, when CW practice is resumed, this time linked with a Junk Sale (SSB gear being tossed out in favour of CW rigs?) and on September 31 the tale will be of "Drake's Progress," by G3GBL.

North Kent are quartered in St. Mary's Institute, 2 North Cray Road, Bexley, where they can be found on the second and fourth Thursdays of each month—details for September are not available at the time of writing.

G3MXJ is certainly getting around, and telling the clubs all about the Warsaw meeting of IARU; he is doing it again at Mid-Sussex on September 11. Then on September 25, it will be a case of "seeing ourselves as others see us" when the gang entertain the members of the Burgess Hill Cine Club—slides, a film of interest to both sides, chat, and a shared experience—it *must* be a good thing. All this is at Marle Place Further Education Centre, Leylands Road, Burgess Hill.

**Wind-up**

Which is where we make our closing remarks, such as that your next crop of letters, all containing October dates and doings, Hq. address, Hon. Sec's name and address plus, where possible his home 'phone number, should be fired at your "Club Secretary," *SHORT WAVE MAGAZINE*, BUCKINGHAM, MK18 1RQ, so as to hit the target on or before September 5 first delivery. 73 to all who follow this piece.

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- Operating Modes: AM-CW-SSB-FSK-RTTY, all with built-in xtal filters.
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3.5- 4.0 MHz (80m.)  
7.0- 7.5 MHz (40m.)  
14.0-14.5 MHz (20m.)  
21.0-21.5 MHz (15m.)  
27.0-27.5 MHz (11m.)  
28.0-28.5 MHz (10m.) A  
28.5-29.0 MHz (10m.) B  
29.0-30.0 MHz (10m.) C

also 15.0-15.5 MHz for WWV/JJY only for receiving

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OUTPUT FREQUENCY													
144-030	b	b	b	b	b	b	b	b	b	b	b	b	a
144-4/433-2	b	b	b	b	b	b	b	b	b	b	b	b	a
144-480	b	b	b	b	b	b	b	b	b	b	b	b	a
144-600	b	b	b	b	b	b	b	b	b	b	b	b	a
144-700	b	b	b	b	b	b	b	b	b	b	b	b	a
145-000	a	a	a	a	a	a	a	a	a	a	a	a	a
145-050/R2T	a	a	a	a	a	a	a	a	a	a	a	a	a
145-075/R3T	a	a	a	a	a	a	a	a	a	a	a	a	a
145-100/R4T	a	a	a	a	a	a	a	a	a	a	a	a	a
145-125/R5T	a	a	a	a	a	a	a	a	a	a	a	a	a
145-150/R6T	a	a	a	a	a	a	a	a	a	a	a	a	a
145-175/R7T	a	a	a	a	a	a	a	a	a	a	a	a	a
145-200 Rnet	a	a	a	a	a	a	a	a	a	a	a	a	a
145-350	b	b	b	b	b	b	b	b	b	b	b	b	a
145-400	b	b	b	b	b	b	b	b	b	b	b	b	a
145-500/S20	a	a	a	a	a	a	a	a	a	a	a	a	a
145-525/S21	a	a	a	a	a	a	a	a	a	a	a	a	a
145-550/S22	a	a	a	a	a	a	a	a	a	a	a	a	a
145-575/S23	a	a	a	a	a	a	a	a	a	a	a	a	a
145-600/S24	a	a	a	a	a	a	a	a	a	a	a	a	a
145-650/R3R	b	b	b	b	b	b	b	b	b	b	b	b	a
145-675/R3R	b	b	b	b	b	b	b	b	b	b	b	b	a
145-700/R4R	b	b	b	b	b	b	b	b	b	b	b	b	a
145-725/R5R	b	b	b	b	b	b	b	b	b	b	b	b	a
145-750/R6R	b	b	b	b	b	b	b	b	b	b	b	b	a
145-775/R7R	b	b	b	b	b	b	b	b	b	b	b	b	a
145-800 Rnet	a	a	a	a	a	a	a	a	a	a	a	a	a
145-950	a	a	a	a	a	a	a	a	a	a	a	a	a

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## VHF COMMUNICATIONS

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**Selling:** FT-101 with CW filter, £220. Eddystone EA-12 receiver, £150. Liner-2, £130. Man-pack carrier for Liner, £4. Motor-cycle battery, 12v., £7. Vertical antenna 14-AVQ, £15. TA-32 beam, £20. Creed Type 7B 'printer, £12. FT-75 with DC/PSU, £135. FV-50 VFO, £35. Mark HW-3 Heliwings for four bands, with base, £9.—Heaton, G3UGX, Worston House, nr. Clitheroe, Lancs., BB7 1QA.

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Yaesu FT101B Tcvr	£330.00
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Yaesu FT 201 Transceiver	£290.00
Yaesu FRI01S RX	£245.00
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**For sale:** Trio QR.666 receiver, with Joystick, Joy-match Mk.IIIB ATU and headphones, all in mint condition, £140. Also second-hand DX-100U, working, with manual, free to buyer collecting.—Parr, 32 Paxton Avenue, Carcroft, Nr. Doncaster, South Yorkshire, DN6 8EG.

**Selling:** Telford TC5 two-metre Tx, 2w. AM/FM, with TC6 external VFO, including xtal for 145.5 MHz, mic./p-t and aerial c/o relay; TC6 VFO covers whole two-metre band, A3/F3; both items in excellent condition, £50. Heathkit HA-201 two-metre FM amp., 10 watts output for 1.5w. in, brand new, £10. Heathkit miniature oscilloscope OS-2, complete with probes for RF, demod. and general-purpose low capacity, with built-in attenuator probe, in brand new condition, £27.50. "Solid State Modules" two-metre converter, IF 4.0-6.0 MHz, £10. Am looking for a nice cheap Liner-2 or any two-metre SSB transceiver.—Smyth, GM3XNE, 4 Afton Place, Ardrossan, Ayrshire, KA22 7JD. (Tel: 0294 67326, after 6.0 p.m.)

**For sale:** National HRO, with seven GC and three BS coil packs, and PSU, £30. Also Class-D wave-meter Mk.II, £5, and home-built speaker cabinet with Axiom 301, £5.—Ring Newport, Great Milton 502 (Oxon.)

**Offering:** G.E.C. R.410/RC general-coverage HF receiver, takes all modes, fully synthesised with Nixie read-out, as new with accs., handbook, etc., price £350 or offer. Bendix BC-221 frequency-meter, complete with PSU and handbook, in mint condition and "spot on", £25 or offer. Would consider your present receiver in **part-exchange** for G.E.C. Rx if genuine deal envisaged.—Hounslow, 445 Wellingborough Road, Northampton (31362).

**For sale:** Trio JR-599, unused and as new.—Ring Whyman, Maldon (Essex) 54132.

**Sale:** Very nice Trio JR-310, with 10-AZ SSB filter, SO-259 socket, SP5D speaker, "Microwave Modules" two-metre converter, new, £85 the lot, carriage extra. **Wanted:** KW-2000A, 2000B, TS-515 or similar SSB Tx/Rx.—Ring Falkner, Wellingborough (Northants.) 3761.

**For sale:** G.E.C. BRT-402E receiver, in excellent condition, with manual, £55. PA for 70 cm. 4CX250B in brass coax line, precision-made as 19-in. rack unit, with meters, blower and 1 kV PSU, £50 the lot. Buyers collect.—Dykes, G8CKH, QTHR, or ring 01-644 2687 after 7.0 p.m.

**Sale:** KW-2000E, with AC/PSU and some spare valves, price £300, buyer to collect or pays carriage.—Sykes, G3NFV, QTHR, or ring Leatherhead (Surrey) 75204, after 6.0 p.m.

**Selling:** R.209 Rx, in good condition, with spare valves, manual, two-metre converter and PSU, £25. Home-built two-metre AM/FM Tx, 20A in final, with PSU, xtals, etc., £25. Pye "Westminster" FM driver strip, converted to two metres, 1w. output, £2. Seven-element Yagi with 25 ft. UR-67 coax, £4. All items "or near offer".—Lancaster, G8HDR, QTHR, or ring 0423 (Harrogate) 89091.

**Wanted:** Avo Valve Tester VCM-163. Valve Voltmeter TF.1041C. Output meter TF.839A. Digital Voltmeter TDM.70. **For sale:** Antenna rotator for the largest beams, £25. Collins miniature mechanical filter, U/L sidebands, 2.7 kHz, 500 kHz IF, £10 each. Good price paid for Jan.-Apr. 1975 "QST's" and Dec. '71 "Ham Radio".—Fletcher, 62 Moorbridge Lane, Stapleford, Nottingham (0602 397446).

**Offering:** Portable VTR, National NV3082, with camera, batteries, charger, RF output; little used, for sports training. No. 12 Stuart-Turner water-pump, 210 watts. Theatre "pre-focus" lamp, 1000w. Trio 2200 with nicads. Transceiver, 70 cm., C.432 with two xtals and nicads. Aldis 303 35 mm. slide projector. Toei magnetic strip recorder attachment. —Jarvis, GM8APX, Dall, Rannoch Station, Perthshire. (Tel: 08822 379).

**For sale:** Telemost, 50 ft. telescopic mast with rigging, £20. **Wanted:** IF coil for G.E.C. BRT-400E receiver.—Burgess, 10 Somers Way, Bushey Heath, Herts. (Tel: 01-950 1687).

**Selling:** TE.20 signal generator, 120 kHz to 260 MHz, £16. Shure 444 mic., unused, £10, "G8AEV" two-metre converter, IF 28-30 MHz, £8. All post paid.—Denman, G3MEW, 24 Ascot Road, Copnor, Portsmouth (20315), Hants.

**For sale:** Complete Station, comprising Collins KWS-1 Tx, runs legal limit on 10-80m. bands, with home-built PSU to Collins spec. Collins 75A-4 Rx, with matching speaker. KW-107 ATU. Shure 444 mic. All items in excellent condition, and with manuals, The Lot at £420. (Also an operating desk, if required).—Wright, G4BEK, QTHR, or ring Harlow 22222, extn. 57, normal working hours.

**Shack clearance:** National HRO, very clean, £20. R.107 Rx, super condition, £20. GPO Morse Test practice records, £1.50. WW.II type ATU, work of art, weighs 90 lbs., £10. Pye F.27AM 2-metre base station Tx, complete with three xtals and manual, almost as new, £30 (no offers). CKB frequency meter, made in U.S.A., with genuine calibration book similar to BC-221, only better, £20. Old Klaxon-type car hooter, £7. **Wanted:** Eddystone 750 or similar Rx, exchanges welcomed, W-H-Y? Write first. — Box No. 5438, Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H 0HF.

**Selling:** Wattmeter, calibrated 0-10 watts, £8. — Partridge, G3CED, QTHR.

**Wanted:** T.1154, HE-30 or Skywood 203, unmodified. P11 compass. R.1155-type D/F loop. GPO Morse key, Circuit for HE-40 or RX.60N. — Box No. 5439, Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H 0HF.

**Wanted:** Beginner-SWL requires good amateur-band receiver. — Ring Moore, 01-530 4934 (Woodford, Essex).

**Sale:** Drake R4 receiver with Top Band coverage, £120 or near offer. DX-100U Tx, delivered to 70 miles, £35. Trio JR-59 receiver, £35. Heathkit Two-er, £17. Also Codar AT-5 with mains and (12v.) mobile PSU's. — Rabjohns, G3YBG, QTHR, or ring Exeter 74607.

**Wanted:** F.27AM base station, also Cambridge, Westminster or similar. Details and price, please. —Green, G3TRL, QTHR, Tel: 051-355 2017.

**Wanted:** Marine transceiver, AM operation, 100w. or over and crystal-controlled. — Freeman, P.O. Box 1551, Athens, Greece.

**October Issue:** To appear September 26, single copies at 45p post free will be despatched first class mail on receipt from printers. Orders by September 24, with remittance to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H 0HF.

**Selling:** Trio 9R-59DS general-coverage Rx, with mains stabilisation, also speaker cabinet, in mint condition, £45.—Sanderson, G3UQZ, QTHR, or ring 021-373 8806.

**For sale:** Eddystone EC-10 Rx, very good condition, with Joymatch Mk.III ATU, £45.—Ring Bigley, Wellingborough (Northants) 78495, after Sept. 1st.

**Wanted:** BC-342, -347, -348 or -312 receiver. Will pay cash for suitable model in reasonable condition.—Ring Banks, 0744 (Billing, Merseyside) 892519, any evening, reverse charges if preferred.

**Shack clearance:** Space needed, all must go! X-Band gas noise source, with mains PSU, apparently working, £6. UHF signal generator Type 710A, 117v. operation, coverage 370-560 MHz, £6. Stabilised PSU, mains 230v. in, output 30v. 10A twice (adjustable other voltages) rack fitting, £12.50. R.1359 Rx, tunes 130-520 MHz, needs attention, £3. Transformer, mains 230v. in, output 5v. 15A, c-t, £1.75. Radar strobe unit, 400-cycle, with PSU and full of EF50's, £1.50. Klystron oscillator assembly, coverage 2.5-3.5 GHz, with circuitry, £3.50. Intercom. amplifier and switch-board unit, usable separately, mains powered, £2.50. CRT 7BP7A, 7-in., blue-yellow trace, £2 or exchange for 5CP7A. Prefer buyers to collect. **Wanted:** APR-4 tuning units, especially in range 38-300 MHz. Also Spectrum Analyser No. 1 TF.984, Ref. No. 10S/16147, either mains or high-cycle version. And unmodified 12v. R.209 Rx. —Clyne, 78 Halford Road, Ickenham, Middlesex, UB10 8QA, or ring Uxbridge 30006, evenings after 7.0 p.m.

**For sale:** Two-metre Tx, 15w. AM/FM, xtal, VFO controlled FM, with p-t-t mic. and aerial change-over relay, £30.—Jones, G8DYV, QTHR, or ring 01-633 6302 day, or 01-472 3134 evenings.

**Sale:** Liner-2 with preamp, professionally aligned for 144.10-144.33 MHz coverage, £120. FT-200 with FP-200, mint condition, £180. YD844 desk mic., £12.—Hunt, GW4CBR, QTHR.

**Wanted:** Eddystone 850/4 receiver. Also NCR T4 teleprinter, TDMS.70 and Airmec C.864 receiver.—Passfield, 30 Greenleaf Close, Tulse Hill, London, S.W.2. (Tel: 01-674 5825).

**Wanted:** Electronic keyer, Ten-Tec, Katsumi or similar. — Elliott, G3ZOG, QTHR or ring 0783 (Sunderland) 280080, 6.0-8.0 p.m.

**Wanted:** Trio 9R-59DS Rx. **For sale:** "G4MH" two-metre Tx RF section, £4. Xtals, 10XJ, 8107, 8071, 75p each.—Dennison, 44 Cross Lane, Birkenshaw, Bradford, West Yorkshire.

**Offering:** 150 MHz divide-by-ten pre-scaler, £15 or near offer. Also 1750 Hz tone-burst unit, £2.50; and Pye "Vanguard" Tx/Rx tweaked on two metres, with two Tx xtals, £25, or offer?—Ring Gamblen, G8HHJ, 01-505 1994 (Buckhurst Hill, Essex).

**For sale:** FT-101 transceiver, in outstanding condition, fitted SSB and CW filters, complete with mic. and handbook, £298. Heathkit desk microphone, HDP-21A ("Electrovoice") as new, £21. Heathkit HW-101 transceiver, with PSU and manual, mint, offers?—Ring Becker, G3WY, Evesham 45497.

**Wanted:** General-coverage receiver, Trio 9R-59DS or similar.—Brown, 12 Golfhill Drive, Bonhill, Aberdeenshire (54607).

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**Wanted:** A 62 Set out of the first thousand models if possible, but not essential. — Peters, 28 Shetland Road, Southmead, Bristol (G22050).

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**For sale:** KW-2000A CW/SSB Tx, fitted 6146B's, with AC/PSU, Shure mic., K.W. SWR bridge and K.W. E-Zee match, in very good condition, £165 complete. Also a TA-33Jr., £30. — Roberts, G3VKH, QTHR, or ring Derby 701638.

**Wanted:** Collins 75A-4 or 75S-3, also AR8516L Rx. Items must be in perfect and immaculate condition. **For sale:** Manual for Hartley 13A 'scope, £2.50 plus postage. — Box No. 5442, Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H 0HF.

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**For sale:** SB-102 transceiver, coverage 10-80m., complete with AC/PSU, HM-102 SWR/Wattmeter, dummy load unit, cabling and manuals. This equipment is in mint condition, six months old, and DX performance is very good. I offer a personal guarantee; fair consideration given to all reasonable offers. — Box No. 5440, Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H 0HF.

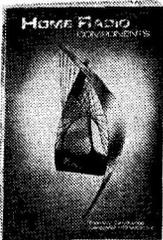


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**GREENPAR (GE3001S).** Chassis Lead Terminal tions. (These are the units which bolt on to the chassis, the lead is secured by screw cap, and the inner of the coax passes through the chassis), 30p each, 4 for £1.00.

**BULGIN FLAT 2-pin FLEX CONNECTORS.** None reversible, 40p each.

**MAINS LEAD AND SOCKET** as used on Continental Test Equipment. New, 50p each.

## HANDY-PACKS

**EDGEWISE METERS,** 50 microamp FSD, centre zero, but can be left hand zero'd display area 1 $\frac{1}{2}$ " x  $\frac{3}{4}$ ", smart modern appearance, £1.50 each.

**1 $\frac{1}{2}$ " Polystyrene chassis mounting fuseholders,** 6 for 30p.

**LES Lamps,** 24v. 1-2W. 10 for 40p.

**MULTITURN POTS,** 10 turn,  $\frac{1}{2}$ " spindle (ex-equip.), following values available, 2 Kohms, 5 Kohm, 400 Kohm, £1 each.

**24v. MIN. REED RELAYS,** encapsulated single-pole make, 2 for 50p.

**Ferrite Coils on  $\frac{3}{8}$ " dia. ferrite rings,** 3 for 50p.

**Heatsinks.** (Approx. 3" x 4" x 2" high). 12 fins (drilled for 1 x T03 transistor). Brand new, 45p each.

## ALL BELOW — ADD 8% VAT

**NEW MULLARD SCOPE TUBES, DN7-78,** 3" face, complete with CRT base and mu-metal screen, £8.50 each.

## VALVES

**QQV03/10** (ex equipment), 75p each.

**2C39A** (ex equipment), £1.00 each.

**QQV02/6** (ex equipment), £1.00 each.

**4X25B** (ex equipment), £2.10 each.

**4X250B** (ex equipment), £1.50 each.

**DET-22** (ex equipment), 2 for £1.00.

## HANDY-PACKS

**SILICON RUBBER SLEEVING, 25yds. for 25p.**  
**XTAL OVENS, 80°C. or 10°C., state which, 35p each.**

**BASES FOR XTAL OVENS, HC6U or 2 x HC25U, state which, 10p each.**

**VALVEHOLDERS, mixed bag of 10 for 50p.**  
**MIXED BAG OF GROMMETS, 50p.**

**ARROW 10A, 250v. black plastic rocker switches, 4 for 50p.**

**16-DIL IC SOCKETS, 4 for 50p.**

**MINIATURE MICROSWITCHES, with roller spring, 2 for 50p.**

**EDDYSTONE 3146P black knobs,  $\frac{3}{8}$ " dia., 25p each.**

**LEAD SUPPRESSORS** (10 k ohm) for mobile, plug leads, 4 for 50p.

**MIXED WASHERS, per pack, 15p.**

**5A MAINS CIRCUIT BREAKERS, 75p each.**  
**HASH FILTERS** (for mobile supply leads), 2 for 40p.

**HEAVY DUTY 15-way turret tag-strips, 5 for 30p.**

**SPEED NUTS, per pack, 20p.**  
**PERSPEX COIL FORMERS, 1 $\frac{1}{2}$ in. x  $\frac{1}{2}$ in dia., 5 for 25p.**

**TURRET TAGS,  $\frac{1}{8}$ " dia., 25p pack.**

**ROTARY SWITCHES, min. 4 pole 2 way, 2 for 50p.**

**TELEPHONE TYPE EARPIECE INSERT, 50p.**

**REEDS** (for reed relays). Single-pole make, 5 for 30p.

**MULLARD TUBULAR CERAMIC TRIMMERS, 1-18pf, 6 for 50p** (as featured in Rad. Comm. Jan, page 25).

**ICs, some coded, 14DIL type mixed, untested, 20 for 25p.**

**BLACK PLASTIC KNOBS,  $\frac{3}{8}$ " dia.,  $\frac{1}{2}$ " spindle, 4 for 50p.**

**RING MAGNETS, 7mm. outside dia., 20 for 50p.**

**25-WAY ISEP PLUGS AND SOCKETS, 40p set** (1 plug + 1 skt.). Plugs and sockets sold separately at 25p each.

**T03 TRANSISTOR INSULATOR SETS, 10 sets for 50p.**

**VHF RF chokes** (wound on 2-2K 1W resistors) 5 for 35p.

**Small Chrome handles,  $\frac{1}{2}$ " dia., 1 $\frac{1}{2}$ " between holes, 1" clearance, tapped 4BA (with screws and washers), 2 pair for 40p.**

**Relays, single pole change over, 12v. DC, approx.  $\frac{3}{8}$ " x  $\frac{1}{2}$ " x 1 $\frac{1}{2}$ ", 35p. each.**

**AT LAST WE HAVE A STOCK OF THE TRIMMERS YOU'VE ALL BEEN ASKING FOR!**

**2-6pf., 100m. circular, ceramic trimmers** (for VHF/UHF work), 3 pin mounting, 5 for 50p.

**3 pin min. MAINS PLUG AND SOCKET, 40p set.**

**PC BOARD WITHDRAWAL HANDLES, mixed cols., 8 for 50p.**

**SOLDER, 20SWG, 60/40 alloy approx., 9 yds., 25p.**

**COILS on  $\frac{1}{2}$ " dia. 1 $\frac{1}{2}$ " long paxolin formers, 5 for 20p.**