

The

SHORT WAVE

Magazine

25p

VOL. XXXI

SEPTEMBER, 1973

NUMBER 7

BATTLE OF BRITAIN Wings Appeal

SEPTEMBER
10th - 15th 1973

HOME FOR THE
SEVERELY DISABLED
AT
STORRINGTON
SUSSEX



GIVE FOR
THOSE WHO
GAVE



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ON SATURDAY



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LOWE ELECTRONICS

119 Cavendish Road, Matlock, Derbyshire, DE4 3HE

Tel: Matlock 2817 or 2430 9 a.m. - 9 p.m.

John: G3PCY

Bill: G3UBO

Alan: G3MME

MAIN DISTRIBUTOR FOR YAESU MUSEN EQUIPMENT

Hours : Tuesday to Saturday 9-5.30 (closed 1-2 and all day Monday)

SERVICE AND SALES (evenings and weekends only) ; John G3JYG, 16 Harvard Road, Ringmer, Lewes, Sussex. Tel. Ringmer 812071. Sim GM3SAN, 19 Ellismuir Road, Baillieston, Nr. Glasgow. Tel. 041-771 0364. Alan GW3YSA, 35 Pen y Waun, Efail Isaf, Nr. Pontypridd, Glam. Tel. Newton Llantwit 3809. Peter Ward G3XWX, 47 Radstock Avenue, Ward End, Birmingham B36 8HD. Tel. 021-784-1318.

Sim, John, Alan and Peter will be happy to demonstrate New Yaesu Gear by appointment. They also have a pretty good selection of second-hand trade-ins at the right price.

ANNOUNCE THE OPENING OF TWO NEW BRANCHES 1st AUGUST

**LOWE ELECTRONICS
GORING ROAD
STEYNING
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**LOWE ELECTRONICS
SOHO HOUSE
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BIRMINGHAM**

These Branches, like Matlock, have

★ The Best Stocks in the Country

★ The Best Service in the Country

★ The Fastest Service in the Country

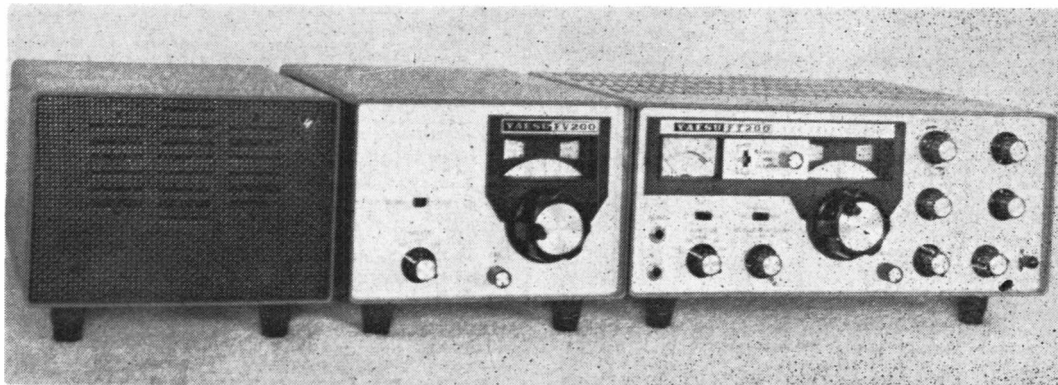
OPEN 9.0 a.m. to 5.30 p.m. TUESDAY TO SATURDAY

THE STEYNING BRANCH is just off the A283 on the Shoreham side of the village.

THE BIRMINGHAM BRANCH is just off the M5 exit 1. Follow the main road towards town for 1½ miles to the Regal (Bingo Hall) cinema. We are directly opposite.

NO PROBLEM PARKING AT ANY LOWE ELECTRONICS SHOP

If our Branches are still out of range, our Part-time Agents carry full stocks and are available evenings and week-ends.



There are several reasons why we feel the Yaesu FT200 is such a good buy. No attempt has been made to permit a CW filter to be fitted. The designer has not allowed any switching around the filter and thereby achieves maximum isolation between filter input and output. This accounts for the incredibly good skirt selectivity of the FT200. Skirt selectivity which, in our estimation is, for SSB, the best of the Yaesu range. We also like the pre-mixed oscillator chain which gives the superior signal handling and low noise capabilities of a single superhet while at the same time retaining a 9 MHz I.F. with its superb image rejection. Lots of other things add up to an unmistakable best buy. Stable, accurate, gear-driven solid state VFO, VOX, break in CW, CW sidetone monitor, RIT, 100 kHz marker, 300W SSB speech peaks, half microvolt sensitivity, etc. etc.

PRICES (INCLUDING VAT AND SECURICOR DELIVERY): FT200 £159-50, FP200 P.S.U. £49-50, FV200 VFO £46-20.

At Matlock, or any of our branches, you will find the best in Amateur Equipment and Accessories.

YAESU MUSEN EQUIPMENT

LINER 2 (2m. SSB)

BRAUN EQUIPMENT

2m. CONVERTERS

CRYSTAL FILTERS

MECHANICAL FILTERS

2m. "J" BEAMS

2m. WHIPS

G-WHIPS

H.F. BEAMS

H.F. VERTICALS

COAXIAL CABLE

TWIN FEEDER

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ROTATORS

ROTATOR CABLE

S.W.R. METERS

WATTMETERS

MORSE KEYS

KEYERS

C.W. OSCILLATORS

HEADSETS

MICROPHONES

VALVES

LINER 2 NEWS

May we respectfully point out that we are the Sole Agents in this country, our price is £120 plus V.A.T., and our Liner 2's are on the popular (145-25 to 145-48) segment of 2m. If anyone wishes to be a lone voice crying in the wilderness, we can supply the necessary crystal and dial for 144-10 to 144-33. The price of £4 includes realignment and unless you have a good spectrum analyser, please don't attempt realignment—don't even think about it!

By the time you read this we should have matching A.C. power supplies in stock at £15 including V.A.T.

LOWE ELECTRONICS

119 CAVENDISH ROAD, MATLOCK, DERBYSHIRE, DE4 3HE

Tel. **MATLOCK 2817/2430**

MEMBERS OF THE AMATEUR RADIO RETAILERS ASSOCIATION

R. T. & I. ELECTRONICS LTD.

where equipment is fully overhauled

KW VESPA 2 and p.s.u.	£105-00 (£3-00)
HEATHKIT GR 64	£25-00 (£1-00)
KW/GELOSIO CONVERTER (into 4-5 MHz)	£16-00 (£0p)
LAFAYETTE HA350	£60-00 (£1-50)
LAFAYETTE HA800	£48-00 (£1-00)
HEATHKIT RAI	£35-00 (£1-00)
LAFAYETTE HE 80	£50-00 (£1-50)
HAMMARLUND SP-600-JX6	£135-00 (£2-00)
EDDYSTONE 770U	£160-00 (£2-00)
HEATHKIT DX 100 Transmitter	£45-00 (£3-00)
EDDYSTONE EC10 Mk. 2	£68-00 (£1-00)
KW 2000A with A.C. p.s.u.	£180-00 (£3-00)
NATIONAL NCX-5 with A.C. p.s.u.	£220-00 (£3-00)
TRIO TS 510 with A.C. p.s.u.	£150-00 (£3-00)
EDDYSTONE 960 Receiver	£120-00 (£2-00)
HEATHKIT RGI Receiver	£90-00 (£2-00)
TRIO JR-500-SE Receiver	£58-00 (£1-50)
RCA AR88D Receiver	£75-00 (£2-00)
TW I60 Communicator 12v. D.C.	£48-00 (£1-50)

WE CAN ALSO SUPPLY ANY MAKE OF NEW EQUIPMENT—and have pleasure in giving a few examples which are normally in stock:—

STOCKISTS OF YAESU MUSEN EQUIPMENT.

AVOMETERS, Model 7, Mk. 2, £37-60; Model 8, Mk. 5, £40-90; Model 9, Mk. 4, £40-90; Model 40, Mk. 2, £37-60; Model 72, £18-20; Multiminor, Mk. 4, £13-50; Standard leather carrying case (Models 7, 8, 9, 40), £6-50; Every-Ready ditto, £7-40; Multiminor leather case, £3-30; 10KV D.C. Multiplier for Model 8 or 9, £6-10; 30KV D.C. ditto, £9-90; Pair of Long Reach Safety Clips, £1-50; Models EA113 Electronic Avo, £82-00. All above post free in U.K. Trade and Educational enquiries invited.

S. G. BROWN'S HEADPHONES, Type "F", 120 ohms, 2,000 ohms, 4,000 ohms, £5-90 (25p); Rubber earpads for same, 45p per pair (5p). Type 3C/1100 Noise excluding (with superb fitting), high quality, electro dynamic, £7-55 (25p). Standard Jack Plugs, 24p (4p).

EDDYSTONE EQUIPMENT, Receivers, £30/7, £389-00; EC10/2, £86-00; 1000, £210; 1001, £330; 1002, £293; 1004, £280; 924 A.C. mains p.s.u., £7-75 (50p); Doublet Aerial, 731/1, £7-50 (50p); Plinth Speaker, 906, £6-20 (50p); General Purpose Speaker, 935, £5-55 (40p); Edometer, 902 Mk. 2, £29-50 (50p); Telescopic Aerial, LP.3126, £2-50 (25p); Die-cast Boxes from 45p (10p). Brochure on request.

CODAR EQUIPMENT, CR70A, £27-50 (65p); PR30X, £9-50 (30p); PR40, £8-90 (30p); Leaflets on request.

LAFAYETTE HA600 Receiver £50-00 (50p).
LAFAYETTE HA800, £57-50 (50p).

NOTE: We request that from April 1st 10% VAT must be added to all prices, new & secondhand, inc. carr. & packing.
 Carriage for England, Scotland and Wales shown in brackets.
 Terms: C.W.O., Approved Monthly Accounts, Hire Purchase and Part Exchange. Special facilities for export.

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- ★ We have EASY Packing facilities.
- ★ We welcome your enquiries for specific items which although not advertised, may very well be in stock.

FREE SHURE MIC. WITH EVERY KW TRANSMITTER or TRANSCEIVER purchased

PARTRIDGE "JOYSTICKS," "New Lightweight VFA" £11-00 (40p).
 "JOYMATCH" III, Aerial Unit, £11-00 (40p), LO-Z500, £16-00 (40p); ATU kit, £4-50 (30p); ATU assembled, £5-50 (30p); Artificial earth £4-50 (30p); Aerial Bandswitch, £4-50 (30p). Literature on request.

TRIO EQUIPMENT, Receivers: 5RS9DS, £49-50 (£1-00); JR 310, £75-00 (£1-00); JR 599, £185-00 (£1-50); Transmitter TX-599, £185-00 (£3-00); Transceiver TS 515 and PS 515, £210-00 (£3-00); Loudspeaker SP5D, £4-50 (50p); Headphones HS4 (equivalent), £6-00 (20p); Stabiliser, 60p (5p). Leaflets available.

SHURE MICROPHONES, 444T, £15-00 (40p); 444, £13-00 (40p); 401A, £6-50 (30p); 201, £5-40 (30p); 202, £6-00 (30p). Full details on request.

KEYNECTORS, piano key mains connector units, £2-95 (25p).

VALVES. Please state your requirements.

ADVANCE DMM2 DIGITAL MULTIMETER, £99-00 (50p), etc., etc. **TMK METERS**: TMK500, £9-00 (25p); TW20CB, £11-25 (25p); TPSSN, £6-25 (25p); 700, £18-00 (25p); also leather case.

PHILIPS PM2403 ELECTRONIC MULTIMETER, £49-00 (25p), etc., etc. We also supply **PHILIPS and KORTING COLOUR TV TEST EQUIPMENT**, including Colour Bar Generators, Converters, etc.

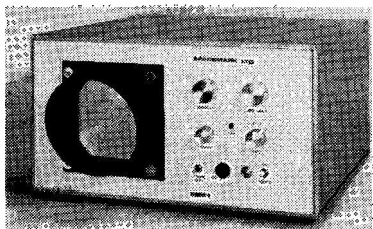
KW EQUIPMENT (Don't forget your FREE mic. with every Tx. and Txcr.!) KW2000B + A.C. p.s.u., £240-00 (£2-00); D.C. p.s.u. for KW2000B, £44-00 (50p); KW 2000B only, £200-00 (£1-50); KW2000E plus A.C. p.s.u., £265-00 (£3-00); KW ATLANTA + A.C. p.s.u., £190-00 (£2-00); Remote V.F.O. for Atlanta, £34-00 (50p); VOX unit for Atlanta, £7-50 (25p); Remote V.F.O. for 2000B, £36-00 (50p); KW1000 Linear amplifier, £135-00 (£1-50); KW202 Receiver with calibrator, £140-00 (£1-50); KW 202 Matching speaker, £8-00 (80p); KW204 Transmitter, £160-00 (£2-00); KW107 combined E-Z Match; VSWR indicator, dummy load, and ant. switch (4 outlets) 52 or 75 ohms, £46-00 (50p); KW103, VSWR and power meter, 52 ohms, £12-50 (45p); KW101, VSWR meter, 52 and 75 ohms, £8-25 (30p); also E-Z match, dummy load, trap dipoles etc., etc. Details on request.

R. T. & I. ELECTRONICS LTD.

Ashville Old Hall, Ashville Road, London, E11 4DX Tel: 01-539 4986

NOW THE NEW SPACEMARK

SLOW SCAN TV MONITOR SSM-I



Plug it into your receiver phones jack and watch SSTV pictures on the Monitor screen from DX stations all over the world.

If desired, SSTV pictures can also be recorded on an ordinary tape recorder for viewing again on your Monitor.

- All solid state except 5" CR tube with 7 IC's, 17 transistors.
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SSM-I MONITOR—£143 (includes V.A.T. and U.K. carr.)
 ... Why pay double for an imported Monitor?

ALSO AVAILABLE IN KIT FORM. COMPLETE KIT SSM-IK (less case), £82. SET OF PCB's only with full data, £7-50. Special transformer and some other parts available. Kits come with instructions, circuits, layouts, parts lists. SSTV TAPES and CASSETTES with sync. pulses and patterns for setting up Monitors, £1-80. COMING: SSTV Camera and Fast Scan Sampler.

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- COPIES 850/400/170 HZ SHIFTS
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- F.S. KEYER FOR TX (AND OPTIONAL AFSK)

Complete and ready-to-go for send-receive RTTY with TX, RX and teleprinter.

- Advanced circuitry. 6 IC's, 25 semi-conductors. ● Input matches receiver outputs 3-8 or 500-600 ohms. ● 3-pole Butterworth input bandpass filter. ● Switched 850/400/170 Hz Amateur/Commercial shifts. ● 2-pole low-pass filter. ● Tuning meter. ● Monitor scope outputs. ● Mark Hold and Normal/Reverse shift switch. ● Built-in loop PSU—Instant switch-selection of single- or double-current printers. ● Narrow-shift CW identification. ● F.S. Keyer output for TX. ● Socket and circuitry already fitted for optional plug-in AFSKeyer module, 850/170 Hz. ● Manual. ● Two-tone pvc-coated case, 9" w x 3 3/8" x 14" d. Weight: 7 lbs

SRD-1, £54-45.
 (Optional plug-in AFSK module, SRD1-AK, £6-32. SRD-1 complete with SRD1-AK, £60-50).

RTTY CONVERTER-KEYER Model TTU, £132. **ST-5** PCBs and datasheets, £4-56. **ST-6** PCBs and datasheets, £12-92. **ST-6 KIT** complete less case, with datasheets, £68-75. **88 MH TOROIDS**, 38p each plus 10% VAT. **SAMSON ETM-2b**, £26-18. **ETM-3b**, £28-54. **JUNKER** Precision hand key, £10-72. **BAUER** keying lever, £4-18. **SSB 90° AUDIO PHASE SHIFT NETWORKS**, £3-24. **PRINTSET** Basi kits.

ALL PRICES INCLUDE V.A.T (except Toroids - add VAT please).

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Heathkit 2-Metre FM Equipment

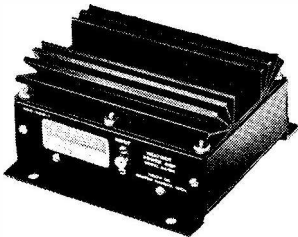
HW-202 TRANSCEIVER

All solid-state design—can be completely aligned without instruments.

Multi-channel capability—-independent pushbutton selection of 6 transmit and 6 receive crystals.

10 watts minimum output—designed to operate into even an infinite VSWR without failure.

Kit K/HW-202 £89.10 Carr: 66p (VAT £8.16 incl.)



NEW HEATHKIT 2-METRE FM AMPLIFIER, HA-202

40 watts nominal out for 10 watts in—requires only 12v DC supply. Perfect match for the HW-202 Transceiver—also gives fully automatic operation with any 2-metre exciter delivering 5-15 watts drive. Solid-state design—all components mount on single board for fast, easy assembly.

Kit K/HA-202 £38.50 Carr: 44p (VAT £3.54 incl.)

NEW HEATHKIT VHF WATTMETER HM-2102

Perfect operation—has built-in SWR bridge. 50-160 MHz range—covers 2-way commercial, aircraft and amateur communications.

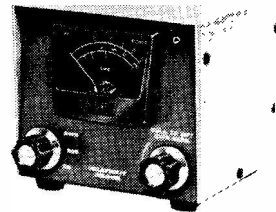
Kit K/HM-2102 £19.80 Carr: 44p (VAT £1.84 incl.)

HEATHKIT REGULATED AC POWER SUPPLY

Kit K/HWA-202-1 £15.40 Carr: 44p (VAT £1.44 incl.)

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Kit K/HWA-202-2 £12.10 Carr: 44p (VAT £1.14 incl.)



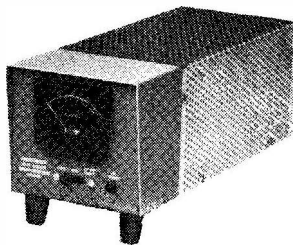
NEW HEATHKIT RF LOAD/WATTMETER HM-2103

50 Ohm non-inductive load—with less than 1:2:1 SWR for frequencies of 1.8 to 30 MHz.

0-200 and 0-1000 wattmeter range with + 10% of full-scale accuracy or better. No oil coolant required—features overload indicator lamp with built-in test circuit.

HM-2103 SPEC: Frequency Response: 1.8 to 30 MHz. Wattmeter Range: 0-200 and 0-1000. Wattmeter Accuracy: $\pm 10\%$ of full scale reading. Power Rating: 175 watts continuous, 1000 watts maximum. Overload Indication: Thermal switch activated (requires 9v battery, NEDA #1604). SWR: Less than 1:2:1. Load Type: Non-inductive. Load Impedance: 50 Ohms nominal. Connectors: UHF type 80-239. Dimensions: 6in. H \times 5 $\frac{1}{2}$ in. W \times 13 $\frac{1}{2}$ in. D.

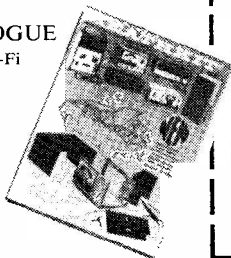
Kit K/HM-2103 £31.90 Carr. 44p (VAT £2.94 incl.)



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THOUGHTS ON RECEPTION

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

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

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

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

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

HAMGEAR ELECTRONICS

2 CROMWELL ROAD, SPROWSTON, NORWICH, NOR 65R.
(OFFICE ONLY)

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

FREE

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

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

PARTRIDGE PACKAGE

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

NOTHING MORE TO PAY!

Access/Barclaycard orders accepted by 'phone

JOYSTICK VFA £13.75; JOYMATCH Tx/Rx A.T.U. 111A 1.6 32 MHz £13.75; JOYMATCH A.T.U. 111 Rx only 500 kHz 32 MHz £13.75; JOYMATCH A.T.U. LO-Z500 Tx/Rx 500w SSB (PA input), built in RF meter £19.91; Communications 8Ω headphones (suitable TRIO, EC10 etc.) £3.14; Matching Speaker (with instructions for internal fitting in 9R59DS and JR310) £2.00; TRIO: Linear Amplifier TL911 £172.15; TR2200 2m personal transceiver £87.45; TR7200 2m car transceiver £142.45; Spare set valves for 9R59DS £2.35; OA2 Mains Stabiliser 74p.

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

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

PARTRIDGE BUDGET LINE

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

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

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

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BOX 4

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492 miniature spring ...	£1.92
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Reducers ...	£14.85
TE 7-01 Antenna noise bridge ...	£21.45
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2/XD crossed dipoles ...	£5.06
2/UGP 2m. ground plane ...	£3.52
SPM portable mast ...	£4.89
70/MBM 46 element multibeam ...	£11.55

KW Electronics	
2000E tcvr. with AC power supply ...	£292.00
202 Receiver with speaker ...	£163.00
204 Transmitter ...	£176.00
2000B Tcvt. with AC power supply ...	£264.00
101 VSWR meter 50 or 75 ohms ...	£9.10
103 VSWR and power meter 50 or 75 ohm ...	£13.80
107 Antenna tuning unit ...	£51.00
108 Monitor scope ...	£65.00
E-Z Match 10-80m. A.T.U. ...	£18.20
Dummy Load 52 or 75 ohms ...	£8.80
Low Pass Filter 52 or 75 ohms ...	£8.30
Balun 1:1 dual impedance 52/75 ohms ...	£2.60
Antenna Switch 3-way ...	£4.70
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Trap dipole 97ft. coax feeder ...	£18.20
Trap dipole 97ft. coax feeder and balun ...	£20.40
Trap dipole with HZP balun ...	£24.30

CDR Rotators	
AR20 suitable for 2 and 4m. beams ...	£22.00
AR22R suitable for 3 band beams ...	£27.50
TR44 ...	£49.50
HAM-M ...	£77.00
8-core control cable ... (per yard)	24p
4-core control cable ... (per yard)	15p

Polyquad	
2 element poly tri quad ...	£37.50
3 element poly tri quad ...	£56.50
4 element poly tri quad ...	£75.00
Spare instruction manual ...	£1.00

Copal Digital Clocks	
Model 601 24 hr. with day and date ...	£11.50
Model 222 24 hr. ...	£5.50

Shure Microphones	
Model 201 ceramic ...	£5.50
Model 202 noise-cancelling ceramic ...	£6.05
Model 401A controlled magnetic ...	£6.60
Model 444 controlled magnetic ...	£13.20
Model 4405 controlled magnetic ...	£18.00
Model 275SK ceramic ...	£4.95
Model 510B controlled magnetic low Z ...	£1.25
Model 510SB controlled magnetic low Z ...	£1.50

Trio	
9R59DS Receiver ...	£54.45
JR-310 Receiver ...	£82.50
SP-5D Speaker ...	£4.95

Superex	
CQ communications headset 16 ohms ...	£9.90
CQH communications headset 600 ohms ...	£11.00
APS-11 communications headset 16/600 ohms ...	£13.30
MBH-3 high Z boom mic for above ...	£6.10

Caringella	
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ACA-1 Audio compressor kit ...	£28.05
STR-1 Standard time Rx. 5/10/15 MHz ...	£52.50
STR-1 Standard time Rx kit ...	£38.95

Dot Line Mobile Filters	
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VF-225 voltage regulator filter ...	£2.36
AF-104 alternator filter ...	£2.36
C-40 bulkhead feedthru coax filter ...	£1.98
C-70 bulkhead feedthru coax filter ...	£2.31
C-20A bulkhead feedthru coax filter ...	£1.32
C-20 feedthru coax filter ...	£1.32
C-10 bypass capacitor filter ...	77p

Polythene Rope	
10 metres 110lbs strain ...	72p
100 metres 240lbs. strain ...	£1.37
100 metres 500lbs. strain ...	£2.20

Waters	
Model 372 Clipreamp speech processor ...	£10.50
Model 359 Compreamp speech processor ...	£15.75
Model 590G 5-way coax switch ...	£8.25
Model 550A 5-way coax switch ...	£5.75
Model 375 6-way coax switch ...	£9.50

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MO-2 foldover mast bumper mounting ...	£8.25
BM-1 bumper mount—stainless steel ...	£5.35
C-29 stainless steel spring ...	£2.50
C-32 ball mount complete with hardware ...	£3.30
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RM-15 resonator ...	£5.90
RM-20 resonator ...	£5.99
RM-40 resonator ...	£7.70
RM-75 resonator ...	£7.99
UHT-1 2m. mobile antenna (140-500 MHz) ...	£5.15

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Model 70 monitor ...	£220.00
FI-4 macro lens ...	£49.50

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Duobander 160/80m. ...	£9.90
Ranger single band 160m. ...	£8.80
Multimobile 71 10/15/20m. ...	£13.75
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2m. 3/4 G-whip ...	£4.67
Flexiwhip basic 10m. model ...	£9.46
Coils 15/20/40/80/160m. ...	£4.67
Basemounts ...	£1.59
Telescopic whip ...	£1.10

Kokusai Mechanical Filters	
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MF 455-15CK ...	£13.80

Mosley	
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TA-31 JR Triband dipole ...	£17.05

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Model C3005 SWR and power meter ...	£8.25
Model C3041 Field strength meter ...	£3.71

Model C3043 RF field indicator ...	£4.90
Model SE406 mini SWR meter ...	£5.11
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Model G1105 headphones 2000 ohms ...	£1.50
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Apollo 1KW Dummy load/Wattmeter ...	£58.02

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PM-2B low-power 20,40,80m. Tcvt. ...	£13.30
PM-3A low-power 20 and 40m. Tcvt. ...	£13.30
KR-10 15/20/40/80m. Receiver ...	£39.93
KR-40 Electronic squeeze keyer ...	£28.05
KR-1 Paddle assembly ...	£52.50
KR-5 Single paddle keyer ...	£38.95
Argonaut 5 band 5 watts Tcvt. ...	
Model 405 Linear ...	
Model 250 Power supply ...	

Used Equipment	
Collins KWM-2 and 516F2 P.S.U. ...	£698.50
Hallcrafters SR2000 and P.S.U. ...	£396.00
Hallcrafters SR400 and P.S.U. ...	£143.00
KW A.S.U. and P.S.U. ...	£210.00
KW 2000E and P.S.U. ...	£176.00
Drake R-4B Receiver ...	£250.00
Drake SPR-4 and amat. band kit ...	£71.50
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Eddystone EC10 Mk. 2 ...	£37.50
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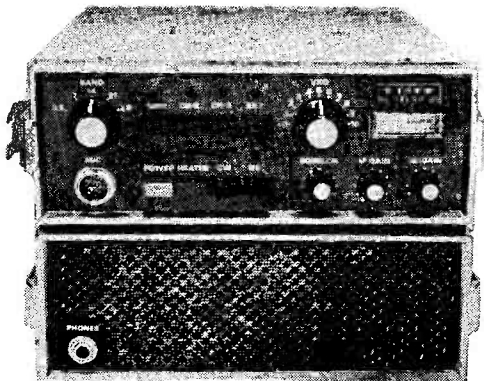


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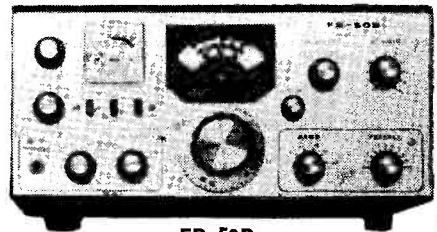
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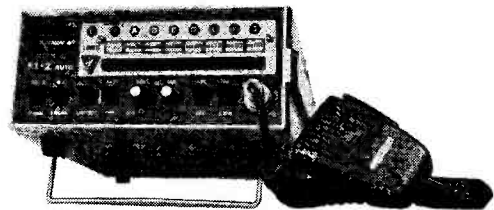
FT/FP 75



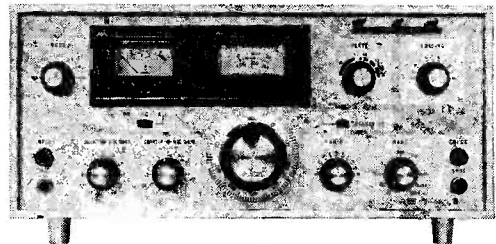
FR 400



FR 50B



FT-2 AUTO



FL 400

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

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

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

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

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

NEW

2m. FT-2 AUTO SCANNING TRANSCEIVER

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

WARRANTY

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FP-75	£22.50
DC-75	£22.50
FT-101 Mk. 1	£229.00
FT-101 Mk. 2	£280.00
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FT-401	£265.00
FT-501	£335.00

HF TRANSMITTERS

FL50 + VOX	£79.00
FL400	£160.00

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FP-2AC PSU	£27.00
FR-ACB + Batts.	£39.00
FT-2AUTO	£157.00

HF RECEIVERS

FR50 + CAL	£69.00
FR400DX	£135.00
FR400SDX	£175.00

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FV-101	£42.00
FV-401	£42.00

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SPI01, 400, 40l	£11.00
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Codar PR40 Mint ...	£7.00	KW Vespa, excellent +	
Codar Remote T/R unit ...	£1.00	PSU ...	£75.00
Codar PR30 v. good ...	£5.00	KW2000A v. good ...	£149.00
Codar speaker mint ...	£2.00	KW 204 Superb ...	£100.00
Eddystone 750 ...	£45.00	KW204 v. good ...	£100.00
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Trio JR599 mint ...	£130.00
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Trio JR500 excellent ...	£45.00
Trio JR500 excellent ...	£45.00
Yaesu FT-100 10-160 AC + DC ...	£100.00
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Yaesu FL2100 mint ...	£130.00
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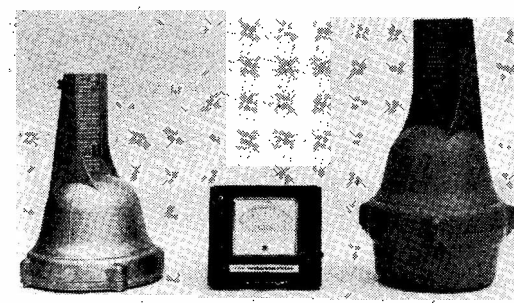
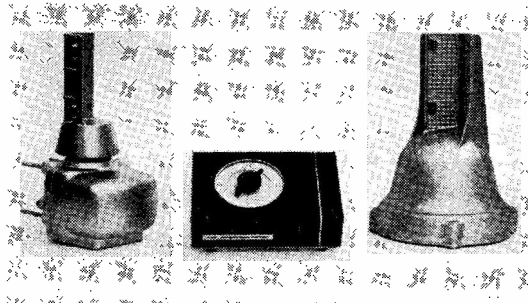
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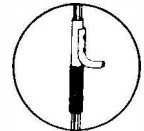
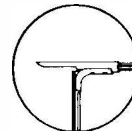
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hinge and
sleeve clutch
mechanism.



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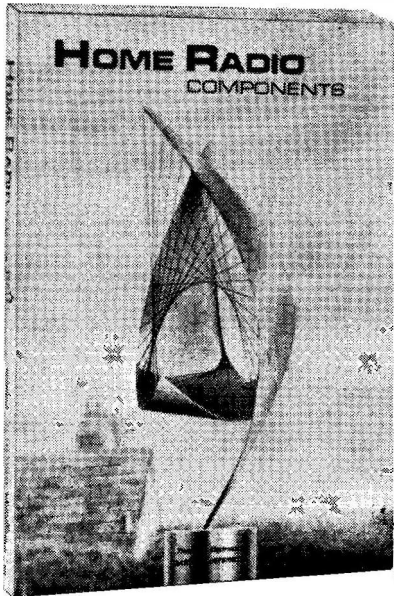
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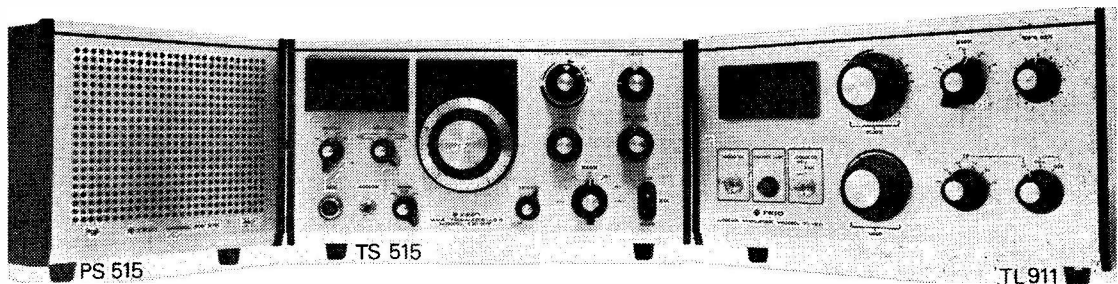
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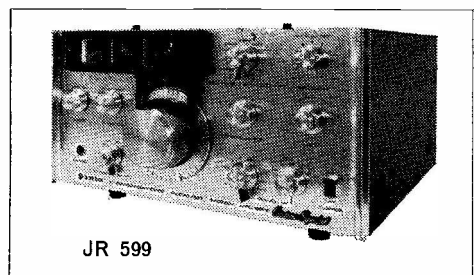
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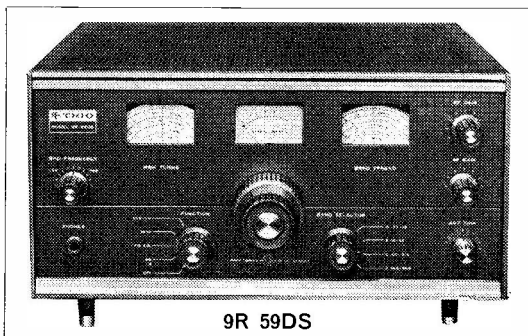


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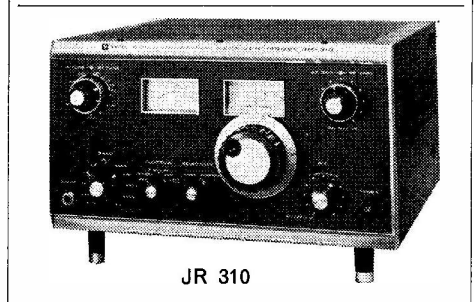
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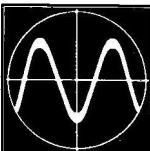
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SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXXI

SEPTEMBER, 1973

No. 359

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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The
SHORT-WAVE
Magazine

E D I T O R I A L

Neglected

We have large areas of frequency which are insufficiently populated, or hardly used at all, having regard to the total number of U.K. amateurs now licensed (getting on for 19,000).

The ten-metre band—even if at present in the doldrums as a reliable source of exotic DX—is yet of immense value as a QRM-free area for local net and mobile working over very respectable ranges within the U.K. Much of the fixed-station traffic hitherto carried on noisy Top Band could well be transferred to Ten, always with the possibility of working some reduring its DXI occasional openings.

Similarly, we have two fine experimental bands—70 centimetres and 23 centimetres—both urgently in need of greater occupancy. It is true that each shows a certain amount of activity by the dedicated few who are interested in experimental and exploratory work for its own sake, and the overcoming of the difficulties associated with the actual making of QSO's. Both these bands offer relatively large frequency areas and are of far greater experimental value and interest than any other in the context of amateur development.

There is nowadays much sound published literature on VHF/UHF and the techniques for getting home-constructed gear going are well known and fully explained.

With ten metres, it is rather a different matter, in that what is wanted is activity by operators who, in the main, already possess equipment for the 28.0-29.7 MHz range. The excellent 10-metre beacon system, now operating on practically a world-wide basis, is itself of great value in assessing the potentialities of the band at any given time.

In short, we are not making full or proper use of all the facilities open to us. It is high time this situation was rectified—otherwise, we might find ourselves without these valuable frequency areas.

Austin Forsyth
G6FO

WORLD-WIDE COMMUNICATION

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

SOME people have commented on and wondered at the spectacular drop in conditions this year as compared with last. Certainly the trough has been very marked, but nothing has happened that could not be explained by a look at the charts in retrospect—last year conditions were better than predictions indicated, while this year we have seen a drop in the sunspot count to its predicted level plus some pretty major disturbances.

So what? Quite a lot! In previous cycles we have never had the beacon service to tell us about practical, DX, conditions on Ten. From what we are seeing now, it becomes more and more clear that the late G2DC's dictum that that band is rarely dead, only depopulated, applied to Ten, is more true by far than ever we had expected. Even at its bad periods, when sunspots leave it right behind, there are still many of the VHF types of opening available, at all sorts of odd times—if there is a lift on Two or Four, it's a good bet that there is a lift on Ten if only someone is there to take advantage of it. Likewise, ground-wave coverage when the band is *really* dead is such that a simple beam or dipole and a few watts will work a lot farther than is generally believed. One wonders why, now that so many amateurs in this country are equipped for CW/SSB operation on *all* the HF bands, by way of commercial rigs or transceivers, some of our activities are not, at least in part, transferred to Ten. Likewise, many of the local nets which on Top Band and Two suffer from noise or directional-aerial difficulties could well be transferred with advantage to 28 MHz, all stations then being able to use a dipole in the loft or other such simple skywire and still maintain satisfactory contact.

The Bands

From the above it *might* be inferred that G3KFE is a little dissatisfied with life and suffering from a bit too much of Murphy's Law. Too right.

Having built a large, QRM-piercing linear amplifier, and tested it out on the bench, when he came to hook the thing to the rig it was discovered that the vital pair of wires which should cause the relay inside the linear to flop up and down to order had been completely overlooked. At that point he despondently went into the garden with a mower for a bit of honest toil—only to find himself moving copper wire which should have been up in the air. All this being resolved, he fires up the rig, tunes it up and gets the customary indication of an outgoing signal on the F/S meter—only to find the bands dead.

G3RFG (Henlow) is a regular investigator of Ten, and this month Stan mentions the Beacon frequencies. Allocated frequencies are 28150 by 5 kHz increments to 28170 kHz (all unused at present). 28175 kHz is for VE3TEN, Ottawa; 28180 kHz, ZC4CY, Limassol (which it is rumoured may soon be moved physically from Limassol); 28185 kHz is of course our own GB3SX, located at Crowborough, Sussex; 3B8MS is on Signal Mount, Mauritius on 28190 kHz; and DLØIGI, Mount Predigtstuhl, Salzburg on 28195, but moving to the common frequency 28200 kHz at 15-20 and 45-50 minutes past each hour. Eventually, all the beacons will move to 28200 periodically. However, in addition to this, one observes that JA1GY is sitting on 28200 fixed at the moment, and yet another beacon, namely DL7AZ, is believed to be on 29000 kHz, outside the beacon allocation of frequencies. However, it would be very interesting if someone with a bit of time and the means to set accurately to frequency, could monitor and plot out *all* the beacon reception from dawn to dusk at, say, 30 minute intervals over the period of the bottom of the sunspot cycle, and up the rising side to an equivalent point on the cycle to where we sit now. One feels it would tell us much about ten-metre

propagation that could be used by DX operators.

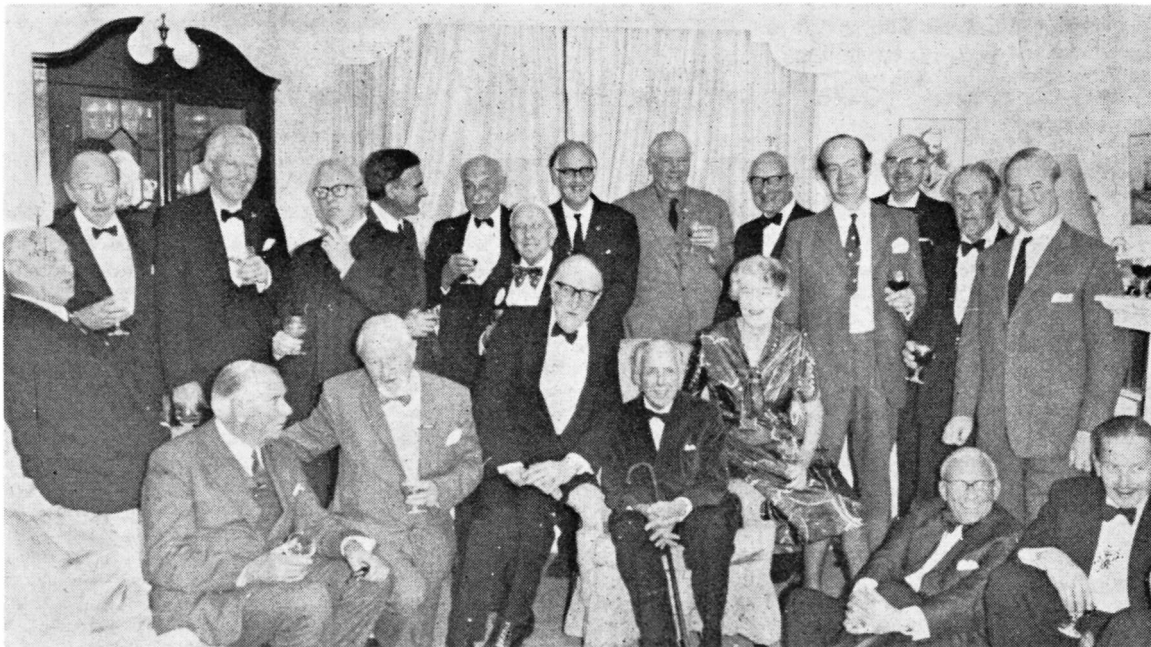
G3NOF (Yeovil) has been restricted in his activity by the holidays and also by TVI but he did find some short periods to listen round on Ten. However, nothing was heard.

G5QA (Exeter) writes to let us know he is still around on the bands and working the stuff. He listened around on Ten and mentions that he believes it is well worthwhile to try a CQ call on an apparently dead band—on August 1 nothing was audible until he put out a couple of long CQ's, which promptly raised a UA, a YU and a lonely PY7!

Fifteen Metres

This is another band which has been in the doldrums. G8HX (Mansfield) has been off work lately with conjunctivitis, involving having his eyes filled, alternately, with chloromycetin, so that Frank has, in the main, been able to use one eye at a time—but that's enough to write in the log, tune up the rig, and read anything vital, so naturally some of the time has been passed in the shack. However, while there has been DX on other bands, about all G8HX could find on Fifteen was teleprinter noise. On an entirely different tack, Frank was in QSO with a German amateur who seems to have hit on a way of keeping his XYL quiet about his hours in the shack. The scheme is that he gives her a DM. for every new country—Frank suggests that for U.K. readers, the scheme could well be 5p per country up to the first thirty, and ten for each one after that, maybe offering a further rise after 100 countries were worked—perhaps that would be a way of getting some activity on the lesser-used bands.

G3VLX (Chislehurst) seems to have found the early evening period best on Fifteen, with CR7IZ worked straight after tea, EA6BY an hour later, and CE3AIU, YV4YC, KV4CI, C31GN and PY6AOA between thirty minutes and an hour



Douglas Johnson, G6DW, Stylehurst, Capel, Dorking, Surrey (a well-known voice on the 80-metre band), recently celebrated, with some OT friends, his 50 years as a licensed radio amateur. Seated at centre (with stick), he is surrounded by, among others, G4MT, G6MB, G2DX, G2YL, G3BX, G6LL, G5YH, G6XN, G5YN, G5YK, G5CS and G2KV. We salute them all—and we gather it was a pretty good party!

later still.

On now to G3ZPF (Dudley) who still seems to be finding time for construction in between his DX exploits; David's absence last time was due partly to lack of DX and partly to the work being done on an electronic keyer and counter, the audio processor previously mentioned having been completed and found to be of help when signals are weak or the other chap is suffering a high level of noise—but, as '3ZPF remarks sagely, it does *not* replace a good aerial! Reverting to the keyer, it works well saving only for the disappointment at the poor quality of the purchased key paddle. This last time, stations worked on SSB included OHØMAS, 5H3TL, PY1BHW, PY7BSD, YV9AF, YV3WB, EL2DO, OJØAM, ZC4MM and 9X5SP.

The short skip still seems to be prevalent, says G3NOF, who found little else on the band—there were quite a few G stations, which indicates the true short-skip condition as against that other state where one is hearing one-hop stations at normal, or near-normal, distances for a single-hop.

Twenty Metres

Little or no *real* enthusiasm about even this band appears in the letters this time; however, we can take heart from the indications that the large disturbances earlier in the year have more or less worked themselves out, and so things should be a bit better in the coming period.

G5QA started his regular skeds on 14 MHz back in 1936, and they are still going strong, ZL2OU now being 78 years of age and Herb 73 and some. G5QA has found the best time to be between 2300 and 2359z, with ZL usually coming in around S8; ZL2ACN, otherwise known as G6XJ—Arthur Edwards of Eddy-stone, now in retirement—has been worked on several occasions at these times, and one evening G5QA made a WAC between 2300 and 2359z, albeit he had to ring up a local G to provide the European QSO to make up the set, as the EU's in general had "gone out."

Gardening and painting have cut into the time for G2HKU (Sheppey), as usual at this season of the year, but Ted connected with VE5YA on CW one evening, when he tried 20 metres. Among other points

G2HKU mentions that PAØYRS is active on 14340 kHz as Y41 YRS.

Having worked G5NX/LA/MM several times on his round tour of the world, G2NJ (Peterborough) had the pleasure of an eyeball QSO when G5NX dropped in on July 23. Incidentally, the G5NX/LA/MM QSL card is a model of what such a thing should be, a fold-out card with a picture of the ship on the front page, the QSL data on the back, and the inner sides filled with details about the ship and its electronics and communications gear. By a coincidence, G2NJ added another station to his collection of /MM calls when he found HA5TX/MM sitting on the exact frequency on which he had a sked with G5NX /LA/MM.

G3DCS (Ipswich) comes in at this point, complaining bitterly about the jingle-jangle thing that plasters every 5 kHz or so of the band. However, RTTY was used to hook up with VE3CTP, and CW to work JA1QOW ZL2ACN/4, CH1EO and various W's and VE's. Enver remarks that it is a darned sight harder to work any decent DX now than it was, say, a couple or three

years ago, with even W and VE sometimes refusing to accept the preferred bait! G3DCS has been in the electronics industry for twenty-five years, and recently *bought* his first commercial BC receiver. As he says, the state of the industry can be gauged from the fact that his new radio cost four pounds and came from Woolworths!

K. Parker (Hayes) is so little interested in his call sign that he didn't bother to mention it in his letter. Ken is, for the moment, off the air, and fills in time by listening round, mainly on Twenty, and setting himself little tasks to achieve, the latest being to see how many W stations with *two-letter* calls he can hear over a period of a year, with only a few days of the year missed out of his listening watch. The results are interesting, when looked at in conjunction with a copy of the American listings in the *Call Book*. A total of 306 of these two-letter calls was logged—43 in W1, 40 in W2, 42 in W3, 34 in W4, 17 W5's, 25 W6's, 34 W7's, 23 W8's, 26 W9's and 22 in W0, with the latter and W5 the rare ones throughout the year. Four states have not been heard at all, ten states were only represented by one station, and a further 13 states yielded only two or three stations each—thus, 27 out of 48 states yielded three or less stations. The four not heard at all were Maine, Alabama, Oklahoma and Nebraska. Turning with all this data to the *Call Book*, and checking the numbers of stations listed against

the number heard, state by state, and call area by call area, produced similar proportions, with one very notable exception: This is that in W4, 45% of the total were from Virginia, whereas from the *Call Book* one would have predicted only 14% of W4's heard being from Virginia. Why? Why indeed, but it does rather seem to bear out W1BB's theory of "selective skip." It would be of interest to repeat this exercise, but using two stations in different parts of the country, with listening times synchronised, and see if anomalous results again appear, in either or both stations' list.

We have heard already in this piece of the doings of ZL2ACN (G6XJ) and our next letter gives some more details, from ZL2ACN himself. Arthur, at the time of writing, was about as far as he could get from the U.K. without going on to the Antarctic—but he finds reluctance from officialdom to take him there. G6XJ/ZL2ACN has so far covered most of North Island. Since leaving the ship (in which he was with G3UOF) Arthur has worked the latter from his home in U.K. Visits have been

made from the Earth Satellite station at Warkworth to Auckland; Tauranga (Maurice Mason, G6VX as was, now ZL2OU, his host), Napier, and Wellington. At the latter place he met, for the first time G5LC, Leslie Cooper, who will have completed his retirement job out there by the end of August, and be taking a long ride back home by way of VK JA, Singapore, Hong Kong and the Persian Gulf. Arthur himself will be heading North, for Auckland by way of several intermediate stops, whence he takes plane to Melbourne and VK3ML (who is the "Mister Eddystone" of VK-land). In prospect there is a month in JA, albeit with no "ticket," and then he will in due course make a slow return to this country by way of ZE and ZS to arrive late in 1974 or early '75. Some trip, Arthur!

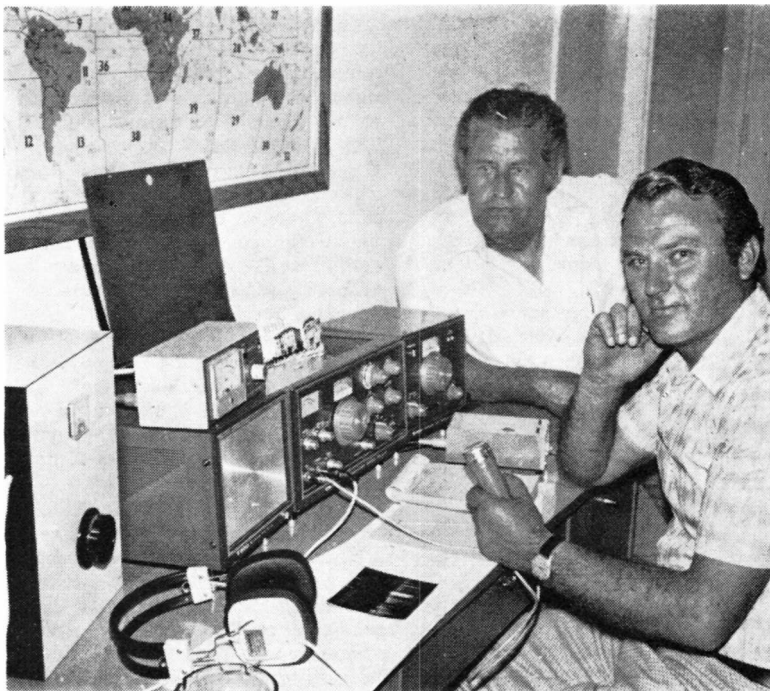
Now for some CW contacts, from the pen and key of G3UZ (Goring-by-Sea). OM Sadler reckons his list of gotaways is as long as his arm, but still he managed to connect with LU5DON, ZE1EN, YV4CI, HC1FM, KP4DJE, PY1TC, PY2EXB, PY2CDV, PY7APS, LB1C, C11A1B, C11ACP, EA8FE, EA8GU, 4Z4MO, JT1AO, JA3DGE,

Reporting the HF Bands



At 83, the oldest active amateur in Northern Ireland is GI4RY (left), operating GB3MKB during the Marconi-Kemp 75th anniversary celebration in July. With him are GI5UR and GI3A0B (right). They put on a very good show and many first-day QSL covers have been sent out.

When G3IAG (Littleport, Cambs.) went to Yugoslavia for a holiday he was able to make contact with the YU Klub at Porec. Here we see (left) YU2RBN and YU2AAX at the Club station. Note that they have modern Heathkit gear—they had no need of the bits-n'-pieces G3IAG had thoughtfully brought along! He says that for a holiday with the XYL he would rather go to YU than SP, which he has also visited.



VP2AZA, CT2BO, CN8AQ, XE1RV, 5T5LO, EL1H, 9H4C, SV0WQ, 9Y4VU, VE3AGT, UA0BAR, UA0AAQ, twenty-six UA9's, UI8LF, UI8AAF, UI8IZ, UI8AAM, UI8LAE, UH8CI, UL7SJ, UL7HB, UL7LAR, UL7OAC, UD6AI, UD6GT, UD6BZ, UF6FBV, UF6FAG, UF6FBK, UG6EW, and all W districts. This just goes to show what the one-band, one-mode specialist can knock out of a band in pretty poor shape over most of the period.

Our next one is addressed to "The Venerable Old Scribe" so it must be good! G4AYG (Harwich) likes to ragchew with DX. John has a DX-100U and a "5RV" aerial tacked to the property of a neighbouring firm of builders. This, and QW, yielded the desired grade of QSO, a chat with DX—surprising, in fact, just how chatty some of the DX gets if you give 'em a chance! Among them we note VS6AU, VK2EO, CP1JY, ZF1SB, KV4AA, 8P6DR, VE1-3 and W1-4.

Twenty was not very forthcoming for G8HX (nor for your scribe either, come to think of it!), Frank having not managed any contacts outside Europe on this band.

G3VLX plods steadily along, and this month his list shows SSB contacts with PJ2CB, HB0AWQ, FG7XL, SP9VU/OA4, UX3B, MID, JY6KAQ, HP1TG, CE3AQW, UO5BZ, UO5RO and CT3AB, this batch all being worked either around 0700 or during the evening in spite of the local TV's.

A good old crop comes to be mentioned by G3ZPF, who found himself swapping SSB reports with OH0MAS, CN8BBO, GM4BVU, GM3BCL, EI2S/M, GM3EJB, GM3YEW/M (Yes, this is a report for Twenty!) UA0TO, LU8AJG, I14FQM, PZ1DR, 5V7GB, ET3USA, ET3USF, A6XP, JA6FP, OD5GC, 9X5NA, VQ9BP, 5U7AX, VP2KH, HR1SP, W2AAF/KV4, VQ9GP, 5B4FF, OJ0AM, UX3A, UX3B, UX3C, UX3F, UX3R and UX3J (for a complete set of these UX's), UA9BR, a goodly assortment of W's, and a collection briefly lumped in as "sundries." David is beginning to feel the pinch a bit now in finding new countries—with 199 up he feels the need for something a bit more potent than a dipole.

G3NOF found things good in mid-July, but then the band went to pieces and was only just showing signs of recovery as he wrote. The

mornings yielded no ZL's, and only a few VK, although there were some nice openings to West Coast U.S.A. and the mid-Pacific; early evenings have offered a few openings to S.E. Asia by the short path. Africans, other than ET and 5Z4, have been conspicuous by their absence, but later in the evening there have been some good sessions to South America and the Caribbean. ZK2BD was unresponsive, but to make up for it Don raised G3VUI/OH0, HR1RSP, HZ1AB, K7RSC, KH6UL, VE4IE, VP2AB, VQ9R, VS5LH, W2AAF/KV4, W7IJQ, ZK1TA and 9M2DW. Finally, on August 11, Don was operating at GB2YEO, and found Fifteen in good shape, remaining open to the Caribbean as late as 2200z.

Odds and Ends

That note from G4AYL last time prompted her OM, G3UKS, to write about her. Perhaps this may encourage some of the other YL SWL's to have a go at getting a ticket—seems Pat found R.A.E. a rather tougher problem than Morse, which she picked up in four months: she is a regular and active attendee at the Maidenhead Club and prefers DX operating—they share a family

rig, using the FT-DX401.

Another YL now: The White Rose award, offered by that Club, has a new custodian, *vice* G3YFP who is off to Antarctica. Connie Wade now handles the award and is QSL manager for the club as well. Address for White Road Award applications: Miss C. Wade, 74 Cow Close Road, Leeds LS12-5PD.

G2HKU has some interesting points to mention. He worked UP2PX on Forty for a new one, and was a bit shattered when UP2PX knew Ted, and also mentioned your conductor—seems the UP2 lad is a regular reader of the *Magazine*, and of this piece. G2HKU had a

spot of bother with loading-up on the Royal Signals net one night; something reported wrong with the signal, RF in all sorts of places, and so on. Thinks to himself, out to look at aerial (time, for the record, about 10.45 clock!), to find one leg of balun o/c. Great stuff, but a certain itching feeling; shine torch on self, find covered in thousands of ants! Just like the "African Queen." G2HKU's XYL recorded a talk on Amateur Radio for the BBC and it is pleasant to hear that the taped talk was transmitted as it was recorded, with no "doctoring". It sounds at last as though a more sensible attitude is being adopted in the BBC as far as Amateur Radio is concerned.

The next letter really made the old 'KFE blood boil. G3DRN received a 'phone call—anonymous, of course—to the effect that he is to be pirated by the caller! For sheer cheek that about takes the cake—the pirate almost surely picked on G3DRN because he does amateurs a service with his QSL card work. If you hear a "G3DRN" on Top Band or VHF, nail him; the real one does not operate on these bands and has no gear for them. It's also a reasonable assumption that he is not far from S.W.20, so a few cross-bearings from anyone who meets him might assist in his early elimination.

We have a couple of letters to mention from W6AM (Long Beach) of his activities in Amateur Radio outside the DX-chasing field, in which he is pre-eminent. Recently, Don was on a trip to Greece, where he operated from various SV1 and SV0 stations; one evening the Greek broadcasting station said that the suburbs of Los Angeles, the Palos Verdes Hills, were on fire, burning up thousands of homes. Don got on the air from SV0WTT and worked several W6's in his local area—they had *all* been out to see that Rhombic Farm was still safe. That's the old pre-War Amateur Spirit—and the fire was eventually checked on the very next road to the south of W6AM. As Don says that event made his holiday ten times better.

W6AM's other letter refers to his latest pleasure, to receive a plaque for fifty years' membership of ARRL, to put alongside his charter life membership and five-band DXCC

plaques in the shack. When Don had his Stag Visitors Day, in honour of 9M2IR (of XU1AA and XV5AC fame) he made his visitors total for the year up to all but 500 people—and still he stays at the top of the DX listings!

Forty Metres

With the fall in the sunspot count, 7 MHz is a band that from the DX point of view, were it at its pre-War width, would probably be equalling Twenty. However, now we have a bare 100 kHz, and most of that plastered with intruders; but still some DX can be worked by those with a selective receiver and a stout heart.

G3XTJ (Palmer's Green) has not been heard of for quite a while, but Ed was inspired by the recent remarks about the "waste of a good band" to have another try. He fished up the old sloping dipole from the ground and set to work. From June 30, the results, all CW and all between 2100 and 2359z, looked like this: CR7IZ, EA6BK ET3USE JY9GR, KV4CI, KZ5BB, KZ5VV, LU1HDC, LU3AHH, LU3AU, LU9FAN, DJ7MG/OH0, PY1DVG, PY3CFN, PY7AFA PY7ASV, PY7BF, PY7BXC, PY7PO, PY7BTX, PY7ZAH/0 (Fernando da Noronha) PZ1AA, PZ1AV, VK2EO, YA1TCA, YV1VG, YV4NQ, YV4UX, YV5DRN, ZC4BI, ZP5AL, 3V8BD, 4K1A (Antarctica) 5R8AC, 8P6DR and 8R1AE. Proof of the pudding is in the eating!

We have already mentioned G2HKU's contact with reader UP2PX; in addition Ted managed SSB contacts with CM3HG, EP2WB, and UP2PX for a new country, plus CW with UV9BB and SM4CLF/4P—could this have been a genuine Ceylon contact, he wonders, as the QSO was a bit scratchy, the time was right, and it was not possible to find out from the station just what the /4P actually meant.

It is a bit of an odd thing to have to say, but G8HX has been looking at the band in daylight and could find nothing above about S5 anywhere—but one evening did yield a W1 just after midnight as some consolation.

G2NJ reports one interesting contact, when on July 31, he worked G2JL/MM, on his boat *Reine de Mai* near the I. de Croix.

BRIEF DX DATA

- A51PN Pradhan, 14051 CW 1420z, or 14228 SSB 1630z, 14050 CW at 1715. QSL to H. N. Pradhan, c/o Post Office, Thimphu, Bhutan.
- C2 JA1MCU/C21 made about 4900 contacts, including some 52 on Top Band. Residents are C21DC and C21DR, and C21NI is the club station, QRV 14250 SSB at 1100-1400z.
- ZL Equinox Activity Day. Stations from all four ZL areas will be QRV on 160 metres over a week-end in mid-September. For a sked, write *quickly*, giving time and frequency, to ZL4IS, Smirk, 68 Cannington Road, Maori Hill, Dunedin.
- C3 C31CA, 21265 SSB, 1835z, or 3790 around 2330z. QSL to F2PY. C31DS, 14002 CW, 0731z, QSL via F6ARV.
- TT8 TT8AQ may be OK; but the "TT8AQ" who calls for QSL's via F2QQ is definitely a phoney.
- V55 VS5MC, Maurice, 14027 CW, 1516z.
- VS9 VS9UA, Alan, 14255 SSB, around 1700z. QSL to G3UAO address.
- HV3SJ 7098 SSB 0500z, 14265 SSB 0645z, 21110 CW around 1645z.
- JT Zone 23. JT1AO, 14014 CW 1830z, JT1AS 14003 CW, 1645z, JT0AE 14327 SSB 1715z.

This is the station of VK4JS, Jim Gravina, 36 Robinson Street, Moorooka, Brisbane, 4105, Australia, who started with us as an SWL, then became a sea-going radio officer and in 1963 was licensed as G3SHH (awkward c/s for a CW man!) Then he emigrated to Australia and now has a fine QTH right in the clear outside Brisbane, with 5 acres on which to spread his antennae. He runs an FT-200 with ancillaries and is always glad to work U.K. stations—which he can easily do with a TH-4 on a 75ft. tower.



Eighty

Treated with ignore by most of the reporters this time—or is it just the “regulars” on holiday? One has to admit this band has a strange fascination—just like a small rabbit under the eye of a big snake!

G8HX was the brave one to have a stab and he found that just after midnight was quite productive, things like UA9, W's and LU came to hand—literally, as they were worked on CW.

Miscellany

We now have the results of the 1972 CQ WW Phone Contest to hand. G3HCT was top dog of 21 MHz. with a score of 629,847 points, and G3WJN fourth on the same band at 483,735; G3FXB made 539,002 points on Twenty to place fourth, and GM3YCB showed his mettle on Top Band with second place to KV4FZ, his points score being 2,128. Amongst the multi-operator class we notice G3WYX at fifth place with 3,662,880 points in a very close-fought battle. To all these, our congratulations—there may not be many G's, but they can still make a very good showing.

Of contests to come, we notice the CQ WW DX Contest for 1973 looming up, the CW leg being over November 24-25, and the Phone October 24/25. Rules are the same as in previous years; the exchange is RS/RST plus your CQ Zone.

Details and log sheets from CQ WW DX Contest, 14 Vandeventer Avenue, Port Washington, L.I., N.Y., U.S.A. 11050.

Another one for the tough guys is the VK/ZL/Oceania Contest, due October 6-7 (Phone) and October 13-14 for CW, from 1000z to 1000z the following day. Exchange RS(T) plus a three-figure number starting from 001. Score 2 points for VK/ZL contacts, and one point for anywhere else in Oceania. Score equals total QSO points *times* the sum total of VK and ZL call areas worked on all bands. Single band entries are also acceptable. Logs to show date, time (GMT), station worked, number sent, number received, band, and QSO points claimed for the contact; underline each new VK/ZL call area worked, and use a separate log sheet for each band. Summary sheet to show the scoring claimed, name and address in block letters, and a signed declaration that the rules have been adhered to are also required. Send to Wireless Institute of Australia, Box N1002 GPO Perth, Western Australia 6001, to arrive not later than January 22, 1974. (There is also a SWL section to this one).

A very brief note of some results now. First, the Grafton Top Band shindig, which seems to be gaining in popularity year by year—this time there were entries from GM, several OK/OL, and EP2BQ. The

winner overall was G3WDF/A, with G3ZJK as runner-up.

There are far too many items for anything like full mention of the results of the 1973 WAB contests. The HF Phone section was won by WA1EUO, closely followed by YU1KWX. G3MZV seems to have lifted the LF Phone and both HF and LF CW Sections! One is glad to see firmness in the matter of disqualification, and the giving of clear reasons for the action.

Top Band

First, a mention of GM3YOR and GM3OLK's summer Scottish DX-pedition. September 29 sees them in *East Lothian*; the 30th in *Berwick*; October 1 in *Roxburgh*; 2nd in *Selkirk*; 3rd in *Peebles*; 4th in *West Lothian*; 5th *Stirling*; 6th *Clackmannanshire* and 7th *Kinross*. In the main, operation will be Top Band in the evenings, with 80 and 40 during the day and early evening, on the WAB frequencies. Times will be entirely a matter of conditions, modes CW/SSB. If the sites look good enough, there may be some two-metre operation.

Looking for Liechtenstein on Top Band—or indeed any other band? HB9NL and HB9AIC are going to the Principality during October 8-20 and will be all bands, CW/SSB/SSTV, using calls HBØNL and HBØAIC. For a sked, write to Frank Acklin,

HB9NL, CH-6233 Bueron, Switzerland.

G3SED (Portsmouth) writes to mention his results after his two-year layoff from Amateur Radio. Mike got back in time for the Trans-Equatorials, and comments on the thrill of hearing the summer-time DX; as he says, probably the bands were indeed wide open in those past years when nothing was heard, but they *seemed* dead just for want of a bit of activity. Very true. This season the aerial has been an inverted-Vee, at 45 feet, 95 feet long and end loaded, as the big wire came down part-way through. Interestingly enough, the loaded wire was only an S-point down on the big one, but it fits into only fifty feet of ground. Mike

ends with a list of the times at which the DX peaked: LU5HFI 0030z; ZP9AY 0035z; EP2BQ 0040z; CP1EU 0100z (for a lucky catch); 5Z4KL 0040z; PY1DVG 0130z; ZD9BM 0132, (a sked ran with ZD9BM for six weeks three years back and was no go!), and KV4HW. W1BB never fails to produce something of interest with his *bulletins* and flashes. This time Stew records what is reckoned to be the longest Top Band QSO in history, mileage-wise, between JA7AO and VP8KF, on July 9 at 1141z. JA7AO also rang up the first JA to South America when he worked LU5HFI. Another good contact was that between VK3CZ and VP8KF to give the former his WAC. A really tough one from U.K. now—G3YUV

worked W7DZO during the last winter session. Finally, a little snippet of news of interest to DX-ers not only on 160m. but every other band: W4ZMQ and WB2JYM are planning a trip to the Cayman Is. for the *CQ WW DX Contest* weekend November 24/25, for all bands, but with WB2JYM taking along Drake R4B/T4XB gear with the specific intention of working Top Band, possibly as early as November 20 or 21.

Conclusion

So there it is once again. For next time, the deadline is **September 11** latest, addressed as ever to "CDXN," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18-1RQ.

For this month's Small Advertisements, see pp.441-447

MOBILE RALLY CALENDAR

The last of the season's Rallies to be notified are as below:

September 23: The annual Harlow & District Amateur Radio Society Rally will take place at Nettleswell School, Harlow, Essex, with ample indoor space available. Routes sign-posted, with talk-in on 2m./80m. There will be trade stands and the usual attractions at this regular event, including a bring-and-buy stall and a junk stand—V. Heard, 106 Vicarage Road, Harlow, Essex, CM20 3HQ.

September 30: Mobile Rally, opening at 11.0 a.m., at Walton School, Mountsteven Avenue, Walton being about four miles north of Peterborough city centre. Talk-in on Top Band and two metres by G3DQW, callsign of the Peterborough Radio & Electronics Society.—J. Chapman, 10 Bettles Close, Peterborough, Huntingdonshire.

Reports on these events, with photographs, from the organisers responsible should be sent to Editor, SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.

AMATEUR RADIO FROM H.M.S. BELFAST

This famous cruiser, now at permanent moorings in the Pool of London as an exhibition ship from the time of Hitler's War, will be accommodating an Amateur Radio station signing GB3RN during the period September 3-8. The station will be situated on the admiral's bridge in the forward superstructure. It is hoped that operation of GB3RN will be continuous throughout the 24 hours, on all bands 2m.-160m. Organising the event is the R.N. Amateur Radio Society, hon. secretary at H.M.S. *Mercury*, Leydene, Petersfield, Hants. The ship is open to visitors during 11.0 a.m. to 5.0 p.m. daily.

STATION EIØWPO

The World Ploughing Organisation will be running a championship contest, with entries from 22 countries, at Wellingtonbridge, Co. Wexford, Eire, over October 3-6. For this major event in the agricultural world, station EIØWPO will be on the air daily, 0900-2100 clock, running AM/CW/SSB on all amateur bands, including 2m. and four metres. QSL's to P. Fitzsimmons, EI5P, c/o World Ploughing Hq., White's Hotel, Wexford, Eire.

NAME AND ADDRESS, PSE!

We recently received a postal order for £3.00—that, no name, address or any other means of identifying the sender. Evidently, it was either a new subscription or a renewal. So we would be glad to know who are unknown subscriber could be!

EAST GERMAN PREFIX

Until December this year certain stations in the German Democratic Republic will use the prefix DT instead of DM—to celebrate the 20th anniversary of Amateur Radio in the D.D.R. QSL bureau address remains Box 30, 1055 Berlin, D.D.R. (*Region I News, August*).

CLUB MEMBERSHIP NOTE

It is always a good thing to be a member of your local Club—SWL's will find guidance and support and licensed members the fact that the bigger and stronger the Club the more ambitious and interesting can be its activities. A good example is the Sutton & Cheam Radio Society—of their 70 members, 37 hold full licences, 21 are SWL's and the remainder G8/3's or overseas.

HW-17A RECEIVER SECTION MODIFIED FOR NBFM

DETAILS OF AN EFFECTIVE CIRCUIT

A. LEAVER (G8HGR)

FOR some months it has been a struggle to work stations using NBFM, even with the station being received at reasonable strength on the HW-17A, using "slope" detection. It was decided to modify the HW-17A for NBFM reception.

First considered was using a ratio detector transformer, but finding a transformer of this type at 2 MHz would be difficult, and the work involved in fitting it would be equally tiresome. It was therefore decided to use the TAA570 integrated circuit. This IC (with 39 semiconductors and 43 resistors) was originally intended for TV/Rx design as a limiting amplifier, FM detector and audio pre-amp. This was considered ideal, as it could readily be adapted to the HW-17A Rx since the IF bandwidth is sufficient to allow very good reception of NBFM.

Circuit Considerations

The TAA570 is a six-stage IF limiting amplifier with a quadrature detector and audio pre amp stage. The IC is designed to operate with an IF input of 6 MHz. This was found to be due only to the external tuned circuit for the quadrature detector. Given the information on the data sheet for the valves of the quadrature detector components for 6 MHz, then using a similar L-C ratio, a coil was wound for 2 MHz; this consisted of 56 turns of 32g. enamelled close wound on a 5/16in. former. The capacitor in the Rx is 432 pF, but it may not be the same for all receivers as the HW-17A is home-built and therefore not all of them may have exactly 2 MHz IF's. Therefore it was decided to make the greater part of the capacitance fixed at 390 pF, 2% silver mica, and use a miniature compression trimmer of 140 pF, a standard component.

The resistor across the quadrature detector was omitted as this was only required for FM reception and not NBFM.

Next point to be considered was the input and output of the IC. The data sheet shows the final IF transformer secondary above ground, but on the HW-17A Rx it is grounded at one side. To remove the ground connection is not an easy job, so it was retained and the input to the IC was taken via a 75 pF capacitor from a Veropin inserted at the junction of the demodulator diode D201 and the final IF secondary T4, then to the slide switch, see Fig. 3. The diode was left connected as this operates the AVC line and hence the S-meter and the squelch gate. As leaving the diode in circuit made no difference to the performance of the IC it was considered that there would be no point in losing the advantages of the AVC, S-meter and squelch. The only loss was the ANL but as it was being converted to NBFM

it was unnecessary. The 100-ohm resistor R1 across pins 8-9 of the IC was to offer low impedance and bias for the IC, as omitting it caused instability at a moderate input levels.

The output was next to be considered. This was taken from pin 3 of the IC via C9, 0.22 μ F, to the switch, Fig. 3; the bias supply being by R4. At full drive the output level of the IC is too high for the input of the AF stages of the HW-17A, so this was reduced to 4K7 (R2) to make it compatible with the volume in the AM mode. The supply required is shown on the data as 7.5 to 14 volts, but if the IC is supplied direct off the 12-volt rail in the HW-17A the quadrature detector drives too hard and beats with the final IF in the Rx, producing oscillation as the receiver is tuned through signals—so it was reduced to 9.1 volts stabilised by Z1 and R3. (This also is of help as the 12-volt rail is unsteady at moderate volume levels).

The only remaining point is the de-emphasis capacitor C2, this is shown in the data as .015 μ F but the noise when not receiving a carrier was rather high so it was increased to .033 μ F, offering a much lower noise level of the carrier but also made much better copy on NBFM reducing the noise to almost *nil*.

Layout

Fig. 2 shows the layout for the IC and external components. This was made up on a small piece of plain Veroboard but could of course be on a printed circuit board. This is mounted on the inside of the back

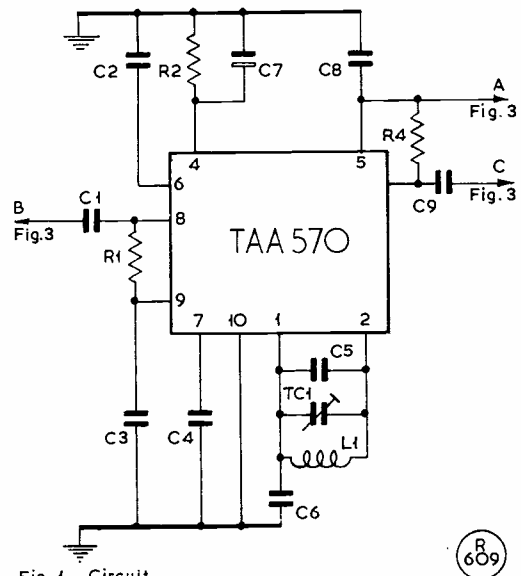


Fig. 1. Circuit

Fig. 1. Circuit for the NBFM modification, using the TAA570 (or SAA570) integrated circuit. Valves required are: C1, 75 pF, silver-mica; C2, 0.33 mF; C3, C4, C8, 0.1 mF, poly.; C5, 390 pF, 2% s-m; C6, .01 mF, poly; C7, 10 mF elect.; C9, 0.22 mF, poly; TC1, 140 pF compression trimmer; R1, 100 ohms, low-noise; R2, 4.7K; R3, 100 ohms, 2w.; R4, 5.6K. L1, 56 turns 32g. enam. close-wound on 5/16in. former. Mount on 0.1 pitch plain Veroboard.

R
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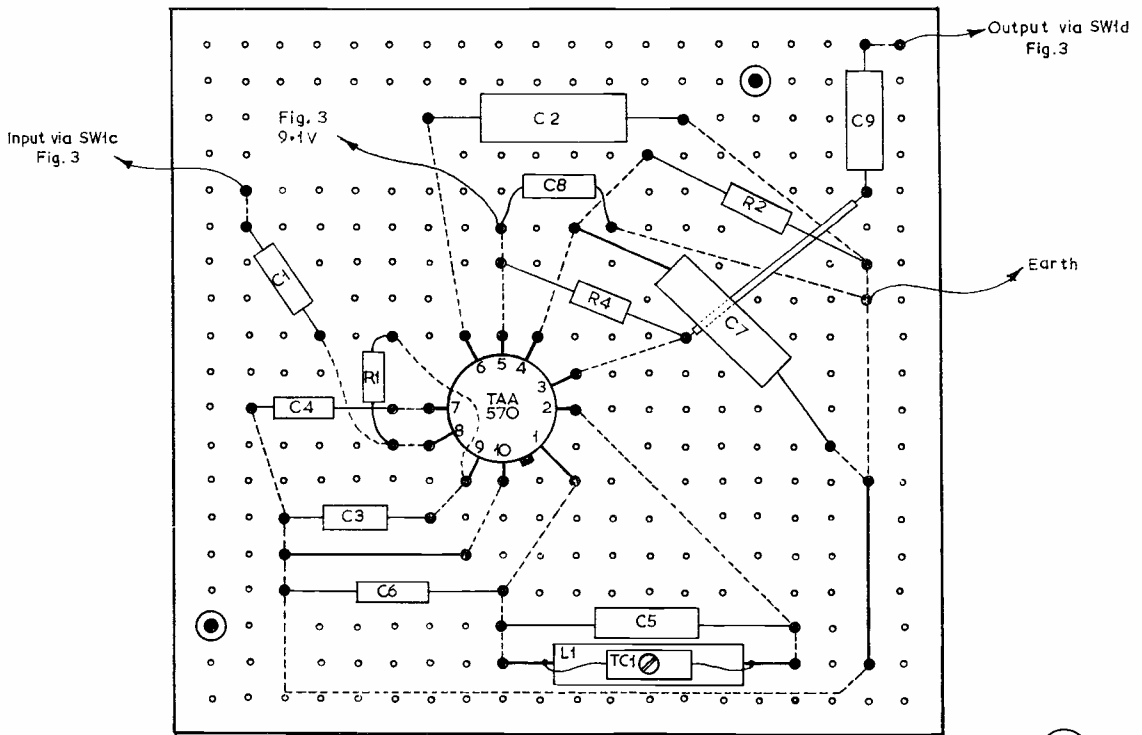


Fig. 2. Veroboard layout

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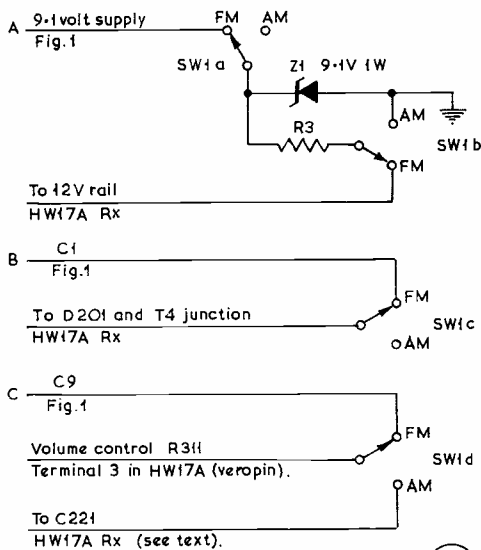


Fig. 3. AM to FM Switch Diagram

R
611

plate of the HW-17A, above the Rx board near the pins for the volume control, the coil L1 being at the bottom of the board. The 4-pole 2-way slide switch is mounted to the right (looking from the front) of the FM board, thus making any wiring very short; no screening was required. It was decided not to mount the switch on the front panel as a matter of convenience, but there is room for it if required on the front panel. This of course would require some of the leads to be screened.

Wiring the board and switch into the HW-17A receiver is a simple job. A wire from SW1 is taken to the *Veropin* adjacent to diode D201, the other side of the switch to the IC board capacitor C1, terminal B. Connections for the output require the 10 μ F capacitor C221 negative wire in the Rx to be disconnected and a *Veropin* inserted; a wire from this is taken to the switch slider, a hole being drilled in the P.C. board, and a pin is inserted. C221 negative wire is connected and a lead to SW1 AM position; a wire is then taken from SW1 FM position to C9, terminal C on the IC board.

The wiring for the supply is self-explanatory, one pole being used for supplying the IC board, the other as a convenient means of connecting Z1 and R1. When the modifications have been completed and with the switch in the FM position a loud hiss will be heard from the speaker when switched on, but tuning into a carrier will cause the hiss to disappear completely. TC1 is

peaked for best audio output level, this course being carried out on an NBFM signal. In the AM position the set is returned to normal and no adjustments are required.

Results

The modifications described are well worth carrying out, as stations that were not readable at all before, on slope detection are a good R5 with no noise in the background. Also, the trouble with QRN from vehicles or other man-made noises are reduced to such a level as not to be heard unless listened for, as the AM rejection

for the TAA570 is 55dB for 10 mV input and 40 dB for 1 mV input.

It only remains now to make the Tx side NBFM too which is now in hand, as this will cure the local hi-fi interference trouble near the home QTH, and also enable operation with a mode that is second to none if properly received.

One final point: there is no reason why this IC could not be used at other IF's with a suitable modification to the L-C ratio on the quadrature detector tuned circuit.

MODIFICATION FOR THE G3FCW KEYER

IMPROVED PERFORMANCE

G. DENBY (G3FCW)

YOUR callsign sounds familiar OM, but I am not sure why. . . ."

This remark has prefaced so many QSO's since the "Practical Electronic Keyer" appeared in SHORT WAVE MAGAZINE for May 1972, that the writer concludes that the unit has at least had a certain appeal. It is true that many have commented, over the air, on its successful operation. Perhaps it is also a tribute that it has evoked such a *small* amount of correspondence.

If you construct a piece of equipment to a published design, and it works first time, you just accept this as normal, or thank your lucky stars, according to your previous experience. Either way, you do not usually write to the author in congratulation. Only if it does *not* work, does the urge to correspond well up. Only about half a dozen of the latter sort have been received, but together with discussions over the air, it seems one snag has tended to recur.

Fault Condition

This has appeared in various guises. Sometimes, a failure for characters to be self-completing. Or for the keyer to work on *dots* but not on *dashes*. Again, for everything to appear normal, except below about 15 w.p.m., when the last character of a series is lengthened—in one case, to the keyer remaining on continuous mark at the slowest speed, until the speed control was advanced.

All these were traced to a common cause, and to respond to a simple remedy.

Circuit Operation

Fig. 1 shows the relevant part of the original circuit. The pulse generator is switched via Tr3, which is normally "on" because its base is at +5v. through R2 and R7. (All values Fig. 1 are as in the original circuit, p.160, May, 1972).

If the paddle is moved to *dot*, the case of Tr3 is earthed (0v.) through R2, and switches "off." In use,

with the paddle released before the character ends, self-completion occurs *via* D1 and the NOR gate in IC2. But with D1 in circuit the junction of R2 and R7 is about +.3v. due to the forward voltage drop across the OA91 junction, and Tr3 base is no longer at 0v.

Worst case condition occurs when dashes are self-completing through D3 and D2 in series, giving about +.6v. on Tr3 base. If this puts the case beyond the knee voltage for the particular transistor used, then it will not switch "off." This erratic switching is the cause of the trouble.

Circuit Modification

Fortunately the cure is a simple one. Referring to Fig. 2, if a silicon diode is placed in the emitter lead of Tr3, the forward voltage drop across the diode will put the emitter about +.6v. relative to earth, offsetting the voltage produced by the switching diodes. The resulting base/emitter voltage is cancelled, and Tr3 switches normally. The diode to use seems quite uncritical, for example type 1N914, BA100 etc., being suitable.

See you down the low end of the band. . . .

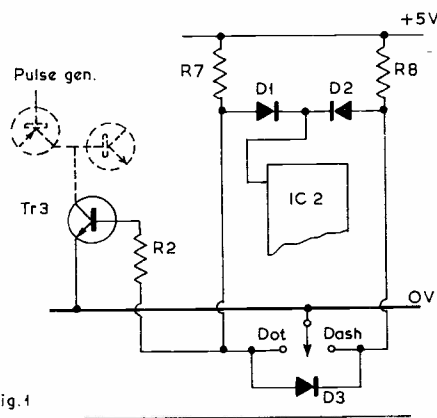


Fig. 1

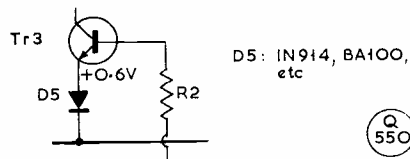


Fig. 2

D5: 1N914, BA100, etc



THE EDDYSTONE 730/4

DISCUSSING A USEFUL GENERAL PURPOSE RECEIVER

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

DETAILS of some of the well-known Eddystone receivers have appeared in past issues of SHORT WAVE MAGAZINE. These included the S.640 (*Jan. 66*), 740 and 750 (*May '69*), 840A and 840C (*Dec. 69*) and 888A (*April 72*). Now that the 730/4 model has recently become available from several suppliers, it is felt that details of this receiver would be of interest. The 730/4 has features which make it an exceedingly good general-coverage receiver. As is usual with Eddystone receivers, components and mechanical construction are of the highest quality. Indeed, many earlier Eddystone models are still giving good service in numerous shacks after 25 years or more, and the 730/4 is a relatively new and "young" receiver.

Band Coverage

There are 5 ranges: (1) 12.3-30 MHz, (2) 5.3-12.5 MHz, (3) 2.5-5.7 MHz, (4) 1.11-2.5 MHz, and (5) 480-1110 kHz. One of five small indicator lamps shows which range is in use. These ranges do of course give coverage of all amateur bands, Top to 10m., as well as general SW coverage for the SWL, or as use with a converter for 4m. or 2m. as IF/AF amplifier.

The familiar Eddystone tuning drive which breaks up the scale into 2500 divisions for logging purposes is again used. Readings on this scale for the various amateur bands are as follows:

1.8-2.0 MHz—254 divisions; 3.5-3.8 MHz—180

divisions; 7.0-7.1 MHz—31 divisions; 14-14.35 MHz—71 divisions; 21-21.45 MHz—45 divisions; 28-29.7 MHz—191 divisions.

It is thus practicable to prepare an individual graph for any amateur band, if wanted, and the reduction ratio of approximately 120:1 allows easy tuning. Calibration and re-set to frequency can be extremely accurate, and the cursor can be set by the small top right hand adjusting knob to agree with pips from the 500 kHz internal calibration oscillator, operated by pressing the topleft hand button. The 500 kHz calibration points throughout all ranges are marked in red. For amateur-band purposes, calibration can be checked by this means at 1.5 and 2.0 MHz, 7 MHz, 14 and 14.5 MHz, 21 and 21.5 MHz, and 28 to 30 MHz. The actual tuning scale length is 12in., with finely calibrated scales.

In terms of reception, this means that a transmitter of known frequency can very nearly be found by dial readings alone.

Block Diagram

Fig. 1 is a block diagram. V1 is the 1st RF (6BA6) and V2 the 2nd RF (6BA6). The use of two RF stages reduces 2nd channel interference to an exceedingly low level. V3 is the mixer (6BE6) with separate oscillator V4 (6AM6) operated from the voltage regulated supply from V14 (VR150/30).

V5 and V6 are the two IF amplifiers (6BA6's) and variable selectivity and optional crystal filter are provided. V7 is a double-diode (6AL5) used for AVC and demodulation, and V8 (12AU7) provides two stages of AF amplification. V15 is the output stage (6AM5) and there is an optional audio filter between V8 and V15.

V9 (6AL5) is a cathode follower for S-meter protection, and noise limiting. V11 (6AU6) is a cathode follower giving an optional IF output point at 70-80 ohms impedance.

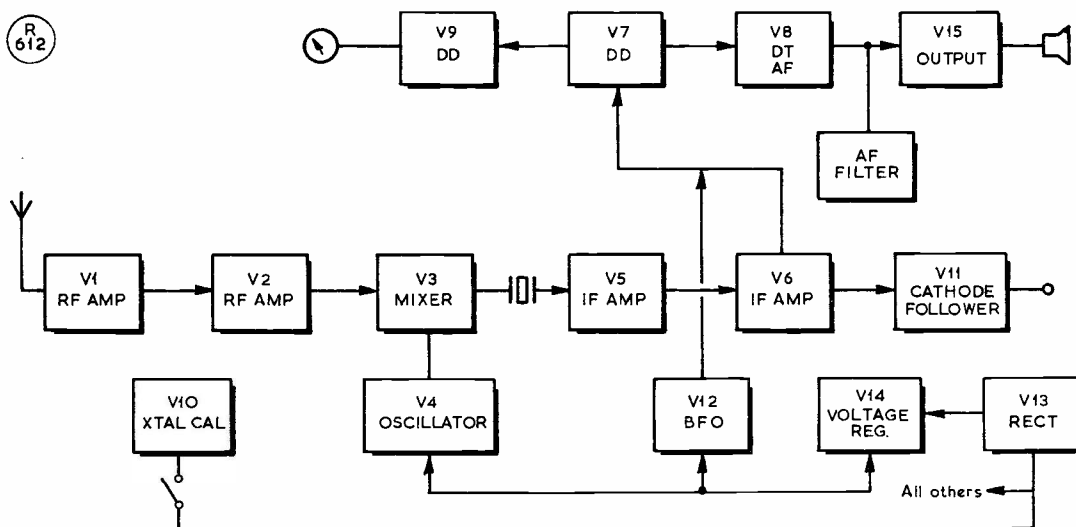
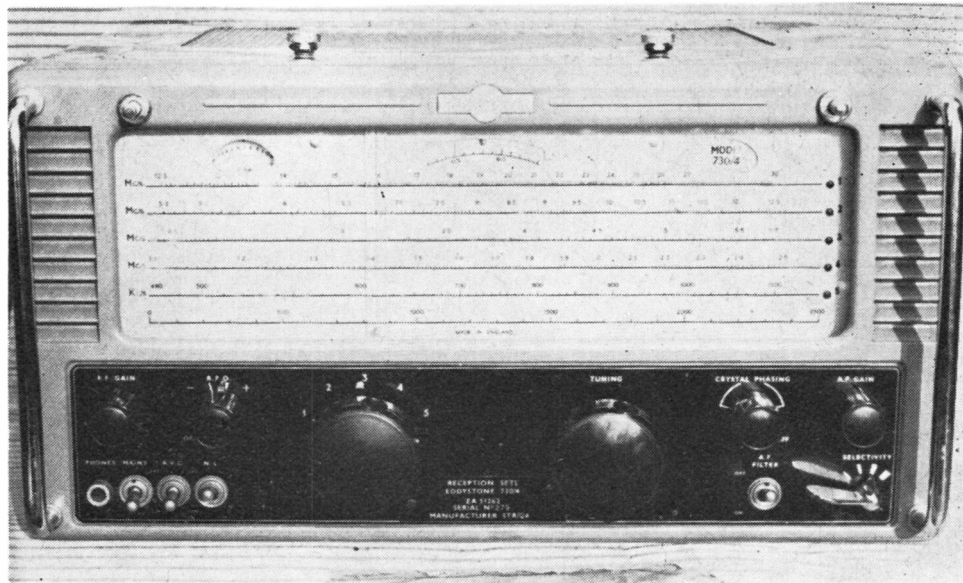


Fig. 1 Block Diagram of the 730/4



(Front.) The band in use is indicated by the small lamps to the right of the scales. The centre logging scale is read in conjunction with the bottom scale in the manner familiar to users of similar models. Controls are described in the text.

V10 (6AM6) is the crystal calibrator, with means of adjusting to zero beat with the 2.5 MHz or other standard frequency transmission if required. V12 (6BA6) is the BFO, also receiving regulated HT. V13 (5Z4G) is the full-wave rectifier.

There is provision to use the audio section alone as an AF amplifier, pick-up terminals being provided at the back. Output is for a 2/3 ohm speaker, or 600-ohm line. Other facilities at the back of the receiver include adjustment for the S-meter zero, two aerial inputs, a dial light brilliance control, mains input socket, and socket for alternative supply. Here, the receiver requires 5 amperes at 6v. or 6.3v., with 120 mA at 250v. for HT; or it can be operated from 110v. to 250v. AV mains, by adjustment of taps on the internal mains transformer, these being marked for the various voltages.

Panel Controls

The crystal calibrator switch and cursor adjuster have been mentioned. Knob controls, from left to right, are (1) RF Gain, (2) BFO Pitch with "Off" position, (3) bandswitch, (4) main tuning, (5) crystal phasing control with "Off" position, and (6) AF Gain.

Lower, at the left, is an outlet for phones, and toggle switches for mains, AVC, and noise limiter. At the right is a toggle switch for the audio filter, and a 4-position selectivity switch.

The S-meter is fitted at the top left of the tuning scales.

Aerial Input

There are two co-axial sockets in parallel, and either may be used for the aerial. The input impedance is 70-80 ohms. This means that a conventional dipole with

co-axial or twin feeder will automatically provide best matching. So will an end-fed or other type of transmitting aerial used with a tuner or Z-match adjusted to present a load of about 75 ohms to the transmitter, and switched to the receiver for reception.

DX reception is of course possible with a random length of end-connected wire, taken directly to the inner pin of the aerial socket, though the use of a matching device will improve results, in the customary manner. A terminal allows a "silent" (non-mains) earth to be connected.

Calibration and Alignment

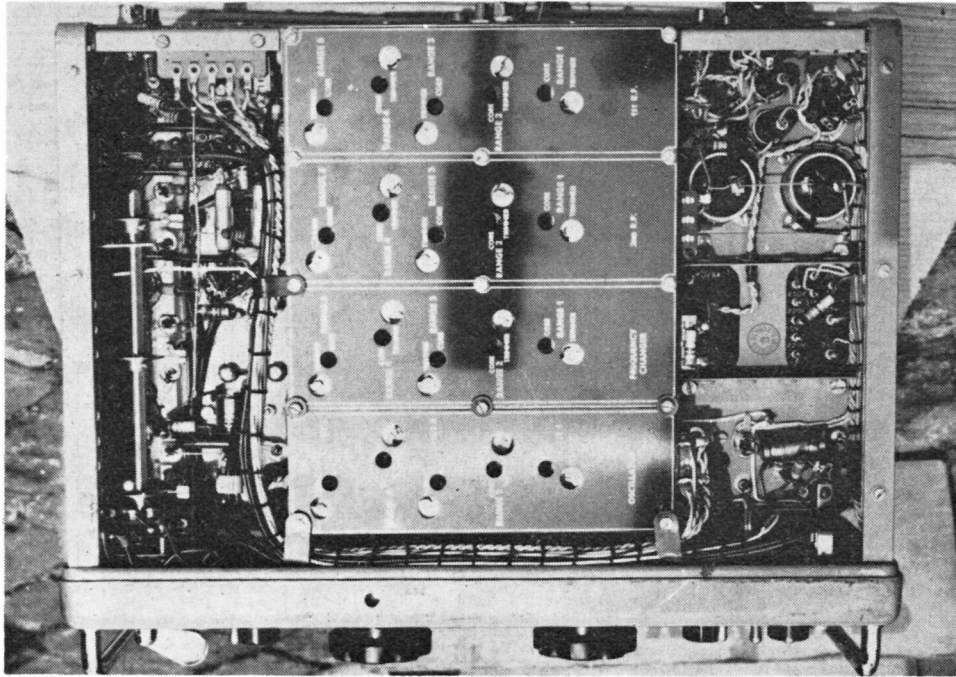
Any adjustment to the IF, signal-frequency or oscillator circuits should only be made with appropriate equipment and a full knowledge of procedure. The IF is 450 kHz, with a 1.5 kHz latitude to suit the individual crystal.

The setting points for the oscillator trimmers and cores are; *Range 1*, 28/14 MHz; *2*, 12/6 MHz; *3*, 5.6/2.5 MHz; *4*, 2.5/1.2 MHz; and *5*, 1,000/1500 kHz. The cursor adjuster should be at its middle position. Trimmers are always adjusted at the HF end of a band, and cores at the LF end.

The tracking points to adjust aerial, 2nd RF and mixer signal frequency circuits are: *Range 1*, 28/13.3 MHz; *2*, 12/6 MHz; *3*, 5.4/2.6 MHz; *4*, 2.3/1.2 MHz; and *5*, 1000/520 kHz. A very high degree of scale accuracy should be obtained on each band.

Selectivity Controls

The main selectivity control has four positions, and changes the coupling in the three IF transformers. This



(Inside bottom.) The cast coil box is covered by a plate with trimmers and cores marked for each range. Here, the IF section and associated circuits are to the left, and audio and mains sections to the right.

control also operates a switch which adjusts the gain of the 1st IF stage, to obtain more equal output over the range of selectivity positions.

In addition a single crystal is used with phasing capacitor, as in Fig. 2. This capacitor operates a switch in one position to eliminate the crystal.

These ranges of selectivity will allow good results under bad conditions, for AM, SSB or CW reception.

With selectivity in the minimum position, the response is substantially flat-topped, and is 9 dB down at approximately 7 kHz off resonance, and 50 dB down at about 12 kHz off. The next position has 9 dB points at about 3.5 kHz off resonance, and 50 dB points at about 9 kHz off. The next position provides 9 dB points at a little over 2 kHz off resonance, and 50 dB points at 7 kHz off. The sharpest position (without crystal) gives 9 dB

points at about 1.8 kHz off, and 50 dB at 6 kHz off. This position is some 30 dB down at 4 kHz off and the sharpest likely to be normally used for AM.

With the crystal in, signals are 30 dB down at about 1 kHz off resonance, results depending on crystal phasing. As is usual with this type of filter, a very deep rejection notch can be moved across the IF passband by adjusting the phasing capacitor. The maximum degree of selectivity available is very high.

Audio Filter

This is, of course, only used with CW. In difficult conditions the filter is switched in, and the BFO adjusted to place the audio tone in the filter pass-band. This results in a great clearing up of surrounding mush of other signals.

The filter has tuned inductances, and is resonant at about 1000 Hz, with a pass-band of 100 Hz or so at about 6 dB points. This filter can select a wanted signal out of a background of other signals which normally would be almost impossible to separate.

S-Meter

This is calibrated at 6 dB per point, and 6, 12 and 18 dB over S9. Fig. 3 is the S-meter circuit. VR1 allows this arm of the bridge to be adjusted for zero. The presence of a signal causes a rise in voltage at G2, V5,

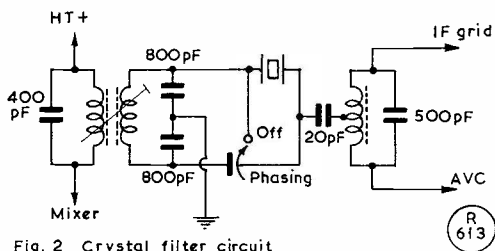


Fig. 2 Crystal filter circuit

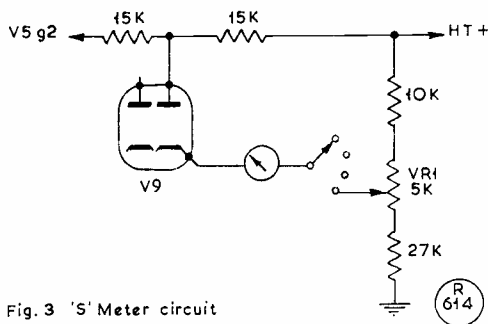


Fig. 3 'S' Meter circuit

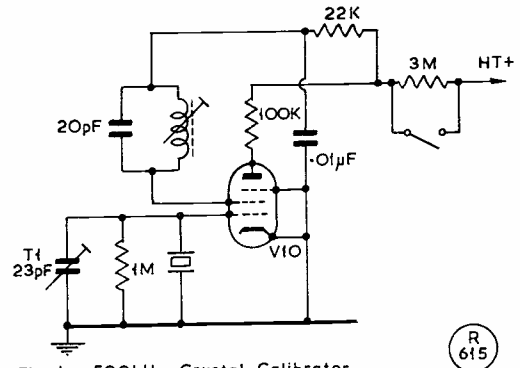


Fig. 4 500kHz Crystal Calibrator

operating the meter. For normal readings RF gain is at maximum (and AVC on). The meter only operates at the maximum selectivity position (but with crystal in or out) as this helps separate the reading from that of adjacent carriers in a congested band.

There is no adjustment other than temporarily shorting aerial and earth at the back of the receiver, and setting VR1 for zero on the scale.

Crystal Calibrator

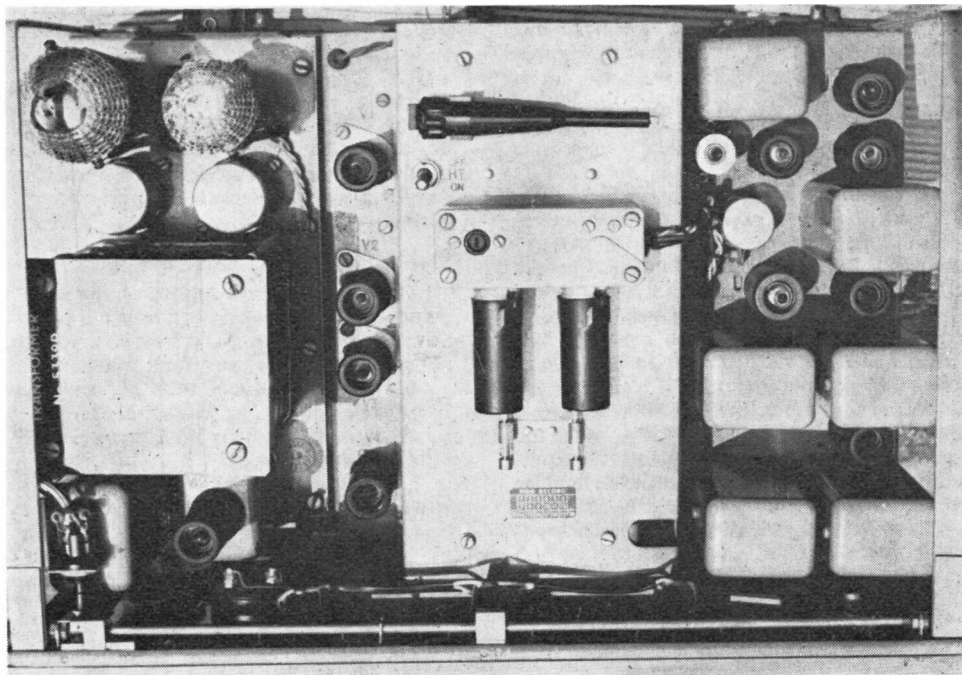
The circuit of this unit is shown in Fig. 4, and it is fitted to the top of the ganged tuning capacitor screen. Adjustment of frequency should rarely be necessary, but is possible by rotating T1 with the tool clipped near the unit.

Assuming the calibrator is to be checked against the standard frequency transmissions of 2.5 MHz or 5 MHz, tune in the latter, and rotate T1 for zero beat of the crystal harmonic.

The 500 kHz marker pips can be located up to 30 MHz, but naturally get weaker as frequency increases. If the BFO is on (white mark on top) a heterodyne is produced at the 500 kHz points.

CW and SSB

It will be noted that the receiver has no product or mixer detector (as with the 888A). However, satisfactory SSB reception is readily achieved provided it is remem-



(Inside top). This clearly shows the calibrator on top of the gang cover, with tool behind. The three IFT's on the right have mechanical adjustment of coupling for selectivity purposes.

bered that the SSB signal at the detector is kept down to a substantially lower level than the BFO injection. This means that whereas RF gain is usually at or near maximum for AM reception, with volume controlled by the audio gain, the reverse is so for SSB (and probably CW). With audio gain at maximum, RF gain is reduced until rotation of the BFO pitch control gives proper SSB reception.

The BFO is pentode connected, with 8 pF from anode to AM diode demodulator, so there is quite a reasonable level of injection.

No particular points arise with CW reception. The makers suggest maximum or intermediate selectivity for normal purposes. The BFO can be adjusted to that side of zero beat which gives best freedom from other signals. Naturally, with the crystal in, and also the audio filter if wanted, the receiver can produce CW

which can be copied but which would be almost or quite impossible to read without these features.

General Points

Removing four large screws at the back allows the receiver to be drawn out of its case. A hinged lid permits valves to be reached, or adjustment to the crystal marker.

The recommended mains fuse is 750 mA Magnickel or 1A standard. The scale lamps are 6.5v. 0.3A, small bayonet cap. There are five miniature lamps for range indication. These are assembled in holders on a strip which can be taken out when a thumbscrew is undone.

The weight is not much over 45 lbs. Dimensions are approximately 17 x 9 x 14 in. including the front handles. On those models so fitted rack-mounting brackets are fixed with screws and easily removed.

LOW-BAND "CAMBRIDGE" AM.10 CONVERSION FOR TWO METRES

MODIFYING THE RECEIVER SIDE

R. E. G. PETRI (G8CCJ)

THERE must be many people with a Low-Band Pye Cambridge just lying about doing nothing, simply because it is thought an impossible task to convert it for use in the two-metre band.

This article describes the method employed when converting such a unit so that it could be used as a fixed-channel two-metre mobile.

The mobile which was converted was in Band "E", 68.88 MHz, which may seem ideal for four metre working but is of little use to the owner of a "B" licence.

Once the mobile has been converted to fixed channel on two metres, any of the standard well tried modifications may be used to make it tunable if required.

The first, and often considered the most difficult, task will be to make the receiver tune to a signal at 145 MHz, the mobile calling channel.

For the conversion work the user should have a copy of the "Cambridge" manual by Pye with the original circuit diagram. A glance at this for the front-end shows us that this is nothing more than the familiar "converter," but instead of being followed by an Eddy-stone or a CR100 as a tunable IF it feeds into a fixed-frequency 10.7 MHz amplifier. As the Cambridge will not tune over a band its "receive" frequency must be controlled by its first local crystal oscillator. This must beat with the received signal at the mixer to produce the 10.7 MHz IF. The crystal frequency is calculated from the formula:

$$\frac{\text{Signal freq.} - 10.7}{3} = \frac{\text{Local osc. freq.}}{3}$$

So for the mobile channel,

$$\frac{145.0 - 10.7}{3} = \frac{134.3}{3} = 44.766 \text{ MHz}$$

The oscillator in the diagram is VT3 (using the manual nomenclature) with its collector tuned to the third overtone of the crystal, *i.e.* 134.3 MHz, which is fed *via* C24 to a mixer diode MR1 where it mixes with the 145 MHz signal to produce the 10.7 MHz IF.

Required

The test gear needed before attempting this conversion is VHF signal generator or a signal source at the tune frequency, *e.g.* a transmitter tuned to 145.0 MHz will do with a low level coupling taken from its dummy load; a GDO for checking the coil resonance; and a sensitive absorption wavemeter will be useful.

An RF probe can be simply constructed and used in conjunction with a 50 μ A meter for checking the oscillator injection voltage and a three turn coupling coil fitted to it for detecting the presence of RF in coil windings—*see* Fig. 3.

Step-by-Step

The procedure is to convert one stage at a time and ensure that it is working before going on to the next—in this way we will not end up with a receiver that does not work and so has many fault possibilities.

All coils to be wound with 20g. enam. copper wire, turn spacing about one wire's diameter.

- (1) Remove winding from former of T2 and note position of taps,
- (2) Take out C16 and C19, to be replaced later.
- (3) Rewind with 4 turns 20g. enam.,
- (4) Tap coil at 1 turn and 2½ turns from HT end, connect taps to original positions on former,
- (5) Replace C16 and C19. Check for resonance with GDO,
- (6) Insert crystal for "receive" channel,
- (7) Connect battery supply and switch on.
- (8) The oscillator should now be working if the coil has been correctly wound. Check this by use of the absorption wavemeter which will roughly check frequency; in our case it should

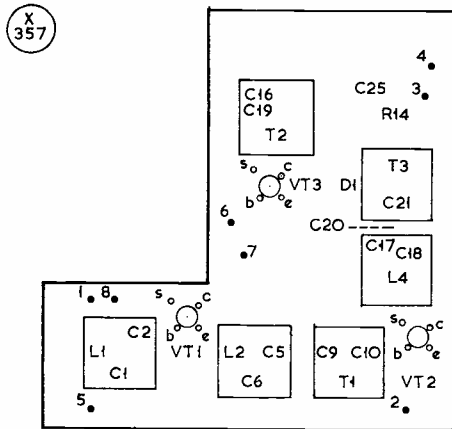


Fig. 1

Fig. 1. Showing position of items that may need to be changed or lifted. New values are (old in brackets): C1, 12 μF (10 μF); C2, 82 μF (100 μF); C9, 12 μF (10 μF); C17, 12 μF (10 μF); and C20, 10 μF (0.3 μF). All capacitors ceramic, except C2 which is silver-mica.

be 134.3 MHz. If the wavemeter does not show about this frequency then the oscillator may be tuned to the wrong harmonic; correct by tuning the core to give the required frequency; when this has been achieved connect the RF probe or valve voltmeter to the junction of MR1 and L5 and adjust core for indication; this should be about 0.5 volts. Do not proceed until this stage is functioning correctly,

- (9) Take off winding L1,
- (10) Remove C1 and C2; these will not be replaced.
- (11) Rewind L1 with 4½ turns 20g. enamel with aerial tap 1 turn up from ground.
- (12) Replace capacitors, C1 as 12 μF ceramic and C2, —82 μF silver mica; check with GDO.
- (13) Check that VT1 (on Pye main circuit diagram) is type AFZ12, AFZ12A or GM378B. If VT1 is not one of these change it,
- (14) Ensure that VT2 is also one of the above type,
- (15) Remove winding L2,
- (16) C5 and C6 come out; they will be replaced later,
- (17) Rewind L2 with 3¾ turns 20g. enam. and tap at 1¼ turns from the HT end. (This was found to be the optimum position),
- (18) Replace C5 and C6. Check with GDO for resonance,
- (19) At this stage we may ensure that all is well by connecting the supply and injecting a signal of 145.0 MHz at the aerial socket and loosely coupling the wavemeter (or RF probe with coupling coil) to T1 and adjusting the cores of L1 and L2 to give a maximum indication on the meter. If the cores will not tune through a definite tuning point and L1 and L2 have been wound correctly then it may be necessary to increase or decrease the value of C1 or C5. As a general rule, if the core is fully into the

winding when the meter is increasing then it will be found necessary to increase the value of the capacitor associated with that particular coil; a change in value of 2-3 μF should be enough. If the core is winding out of the former and the meter reading is increasing without going through a peak then the value of capacitor may be decreased by 2-3 μF .

- (20) Remove T1 windings,
- (21) Take out C9 and C10,
- (22) Rewind T1 with ¾-turn link on lower end and 4 turns for the primary winding. The spacing between the link and the primary winding is about the diameter of the wire, as is the coil turn spacing,
- (23) Replace C9 with a 12 μF ceramic and replace the original C10. Check with GDO,
- (24) Remove L4 winding,
- (25) C17 comes out,
- (26) Rewind L4 with 4 turns and tap 1 turn from HT end,
- (27) Replace C17 with 12 μF ceramic. Check resonance,
- (28) Remove C14 from junction R7/R8 and reconnect to emitter end of R7.
- (29) Check that RF stages are working by employing the procedure described in step (19) but couple the wavemeter or RF probe coil to L4. Tune T1 and L4 cores for maximum indication. If T1 or L4 will not tune correctly change values of C9 or C17 as suggested in step (19),

The Mixer Stage

In the original a diode mixer is used. For this conversion we are going to fit a transistor mixer stage (Fig. 2) which will give some conversion gain and an improved signal/noise ratio.

- (30) Remove both windings of T3, also C20 and C21.
- (31) Break off the former level with its base; this will leave the base and the pins protruding to

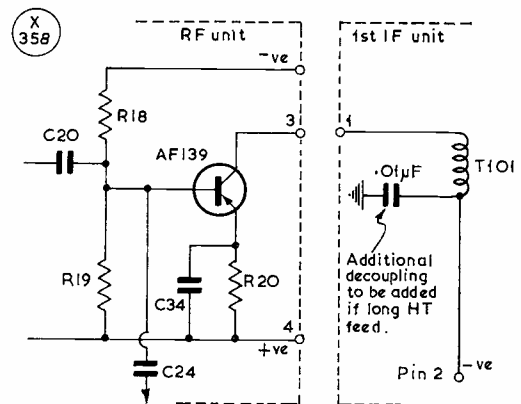


Fig. 2

Fig. 2. The new mixer stage, using an AF139 transistor to give improved performance. C20, 10 μF ; C24, 15 μF ; C34, .001 μF ; R18, 33K; R19, 6.8K; and R20, 470 ohms.

- form the base for the AF139 mixer transistor,
- (32) Take out mixer diode and replace it with a wire link,
 - (33) Remove R14, C25 and L5,
 - (34) On the underside of the board connect the transistor base bias resistors to the nearest negative and positive rails. Refer Fig. 2. R18, 33K goes to negative rail; R19, 6.8K to positive rail, then take the junction of R18, R19 to pin 2 on the coil former base,
 - (35) Still on the underside of the RF board connect R20, C34 from the same positive point as R19. Take the other end of R20, C34 to pin 1 on the former base; this will be the emitter connection for the AF139,
 - (36) On underside of board connect wire link between IF output pin (pin 3 on RF board) and pin 4 on ex-coil former base for the collector of the AF139,
 - (37) Reconnect the signal injection capacitor C20 (new value $10\ \mu\text{F}$) from L4 to the transistor base pin 2,
 - (38) Refit converter board,
 - (39) It may have been noticed at this stage that there is no negative HT to the mixer stage collector; this is fed in from the 10.7 MHz first IF board *via* the first IF transformer T101 simply by lifting the grounded side of the primary of T101 and taking it to the nearest negative HT rail. The grounded side of T101 is earthed very close to the transformer and care should be taken that the wire does not break off at this point. T 101 now forms the collector load.
 - (40) Now solder the mixer transistor on to the base, **Alignment**
 - (41) The receiver should now be aligned using one of the signal sources available, *i.e.*, VHF signal generator or low-level signal source from a Tx on the tune frequency. Obviously a calibrated signal generator will be best but a fairly good guess may be made of the level obtained from the low-level signal source by feeding it into a VHF receiver with an S-meter. As there seems to be no standardisation of S-meter calibration and in the absence of a calibration chart for the receiver we may be using, we will have to make a few assumptions,
 - (a) The noise level at the input to the receiver is about $0.125\ \mu\text{V}$.
 - (b) That the S-meter is scaled to about 6 dB per S-point,
 - (c) As every receiver will have its own noise figure, S1, which is our starting point, may be considered as an input signal just high enough to raise the meter off the noise. S4 should be a steady signal and the average receiver will have a signal + noise/noise ratio of 10 dB or thereabouts for this meter reading. Armed with these "guesstimations" it will now be possible to measure the signal level with which we are to test the mobile by using our existing receiver as a (sort of) microvolt meter. This method will also be useful if using one of the lower

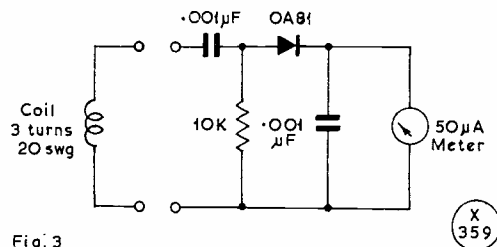


Fig. 3

Fig. 3. The RF probe, suggested as a useful aid for testing and setting up.

- priced signal generators which do not have a calibrated attenuator.
- (42) With the mobile switched to the Rx position turn the volume and squelch control clockwise until the set noise is heard,
 - (43) Connect signal at a level about $300\text{-}500\ \mu\text{V}$ or "S 9+20",
 - (44) Connect a DC microamp. meter between test point 6 (the diode current test point on the second IF board, located next to the cathode end of MR 304) and pin 4 (the +ve. supply rail),
 - (45) Adjust T302 and R301 on this board for a maximum reading and reduce the RF input signal to maintain the diode current at $10\text{-}15\ \mu\text{A}$.
 - (46) Hinge up the second IF unit to expose the second mixer unit and adjust R201 for maximum diode current reading and relock the second IF unit,
 - (47) Adjust the cores of the first IF unit for maximum diode current reading in the following sequence: T104, L102, T103, L101, T102, T101, reducing signal to maintain diode current at $10\text{-}15\ \mu\text{A}$.
 - (48) Next, adjust the cores on the RF board for maximum diode current reading, in the sequence L4, T1, L2, L1,
 - (49) Re-check core of oscillator transformer T2 for maximum diode current,
 - (50) The mobile Rx should now be giving a good output signal when the input signal is reduced to about $2\ \mu\text{V}$. A signal + noise/noise test should give better than 10 dB for a $2\ \mu\text{V}$ e.m.f. input signal modulated at 30%, 1000 Hz. The set as converted gave 17 dB on this test—7 dB better than the manufacturer's figure. This figure may be reduced if at a later stage it is decided to make the mobile tunable, because the response of the front end may have to be flattened to give equal gain over the whole 2 MHz of the band. Measurement of the signal + noise/noise can be made only if an accurate signal generator is available, also required will be an audio power meter. Set the signal generator to 145 MHz, modulated with a 1000 Hz tone to a depth of 30% and RF output to $2\ \mu\text{V}$ and feed to mobile Rx. Connect the audio power meter or dB meter across the loudspeaker terminals and note readings in dB. Switch off modulation at the signal generator and note reading in dB. The signal + noise/noise ratio will be the difference of the two readings. **(To be concluded)**

• • • SWL • • •

SHORT WAVE LISTENER
FEATURE

By Justin Cooper

NEWS, VIEWS, COMMENTS AND IDEAS
FROM A HEAVY MAIL

ONE of the questions which crops up at regular intervals from new readers is the one about the type of receiver to be chosen against a given budget. It is, of course, impossible to answer in that form; but perhaps some of the considerations could profitably be mentioned.

For an absolute beginner, the ideal is to start with a cheap and simple receiver, perhaps a surplus or home-built effort. It will have plenty of shortcomings for today's amateur bands, and in the process of learning how best to overcome these shortcomings one learns quickly—skill which in some cases would never be gained by taking up a more expensive receiver initially.

During the use of this receiver, the budding SWL will begin to find what are his own special interests—VHF, DX, Contests, Construction, to name but a few. He may take up SS/TV, or RTTY; SSB or CW; and all these different facets of Amateur Radio mean that no two SWL's are alike, from which it follows that no two SWL's would find the same receiver ideal.

This fact is the overwhelming reason for home construction, either by modifying commercial or surplus or completely from scratch. The question of whether one likes home construction is irrelevant—your aged J.C. trails the end of his beard daily out of the development lab. and on to the factory floor in a well-known electronics concern, and for him construction is no hobby—but still he builds or modifies his own gear as it seems to be necessary, in order that his station may be the perfect tool for his various radio interests—unless he can find something as suitable and within the depth of his pocket book.

In a similar way a listener, in general, will sort out for himself the rig of his choice. Inevitably it will be short of the ideal—and it is then his interest, by way of his ears, eyes and mind, to make the Rx function to the best of its ability.

Some of the top names on the HPX Ladder use relatively simple equipment that they would unhesitatingly ditch if they found themselves coming on the air—but his skill in extracting a call sign from a maelstrom of sound is quite uncanny to the licensed chap who has never been a practising listener on the DX bands, as many an SWL logging for a contest has demonstrated. The chap using very limited equipment can get to the top of the tree by applying his skill to top-flight equipment; it *proves* that the important factor in the shack is the listener with his senses of hearing and touch.

The Letters

And for a start let's look at the clip from the new chums.

W. H. Smyth (Hartlepool) uses an Eddystone 940 and a Trio JR599, coupled to a Joystick and Joymatch ATU. Although he has been a listener for a number of years, it is only recently he has taken to collecting prefixes, his first list containing 332 of them, since February this year.

The problem of badly given callsigns is always one to confuse the newcomer, as *M. Brignall (London, E.7)* has found out—he heard someone signing SP9CWF-DK5NY! This, of course is not a callsign, but two of them run together, probably when DK5NY was either commencing or concluding an "over" with SP9CWF, omitting the word "from" between the two callsigns.

S. Sharred (Birmingham) has much to say about the helping hand given to him and his brother by the local licensed types, both from a technical point of view and by way of a seat in a car going to a rally, taking them on a weekend /P expedition, or giving them useful bits. The rig comprises CR-100 and CR-150 receivers, also an R.1155-plus-converter combination for Two, with a halo aerial in the loft.

A quiet type is *S. Hall (Hucclecote)* who sends in a long list of prefixes, well presented—thanks!—but with no covering letter to tell of his gear or interests.

A young aerial farm is owned by *D. A. Johnson (Clitheroe)*. He has a G2DAF receiver and Heath SB610 Signal Monitor for the HF bands, plus a Codar CR-70A as tunable IF to a Sentinel two-metre converter. Aerials include a two-metre turnstile, a fifty foot long wire and inverted Vees for 14 and 21 MHz, plus a 12AVT trap vertical on the way. Constructionally, the current project is a slow-scan TV monitor. Other activities include handling the club QSL chores, and helping when the gang put on special-activity stations locally.

The absence of AM from the bands these days is noticed by *G. Lucas (Kennoway, Fife)* who logged only one case in his 294 prefixes; his receiver was originally HA-600, later changed to the KW-202, tacked to a 300-footer bent into a triangular configuration and fed into a PR30X preselector, which is cut out on occasion if the going is rough.

R. Shelley (Bisley) made his entry using a CR-100 with an end-fed wire; Robin wants to know when VQ9R was operating /D on Desroches Is. This one almost reduced your J.C. to scanning the log for a clue; but records show that Carl was on Desroches for seven days to November 5 last year, during which time he made 2355 contacts in 134 countries.

J. M. Nicholson (Leicester) was interested back in 1967, but after not getting his CR-100 to play properly

despite all efforts, he lost interest until early this year, when he came across a copy of *SHORT WAVE MAGAZINE*, which rekindled the enthusiasm. John is now at the delightful stage of wondering which receiver he should invest in for a start, and what aerial to use. The comments on receivers in the preamble could be the answer to the first question; as for the aerial, this writer would suggest an end-fed, up to, say 100 feet long total, and as high as may be, connected to a good earth through an aerial tuner of some sort for each band. The maximum length is rather dictated by considerations of all-round reception rather than directive effects, while the ATU will ensure that whatever signal appears on the aerial is transferred as well as may be to the receiver.

Quite a few readers mention that they have just finished school examinations, among them *A. May (Bromsgrove)*. Andrew is finding his Zepp aerial rather ineffective, which argues that his tuner at the bottom of the feeder is not "doing its duty"—one *must* use a tuner to a Zepp aerial because, although the aerial itself is resonant, the feeders are worked at high standing-wave levels, and so are extremely reactive. One would expect the tuner to bring signals up by several S-points when it is brought correctly to resonance with the right tap setting.

* * *

P. C. Jane (East Looe) would like to have a stab at R.A.E., but feels it would be too difficult to do the needful studying as he is on shift work. One would have thought that, if one is studying without benefit of a night-school course, being on shift work would give more time available for personal study. Get a copy of the book *Amateur Radio*, by F. G. Rayer, G3OGR, and read it at all spare moments—in the canteen at tea, or at lunchtime; instead of watching TV, read up on *Amateur Radio*; and when the exam. time draws near, get hold of some back papers, and work them through against the clock, so that you know how to get all the required number of questions done in the time allowed—a factor to be reckoned with as it determines the amount of writing you can afford on any one question if you are not to fall behind time in the exam room. After all, the examiner can't mark the questions you didn't get around to answering!

B. Rhead (Stoke-on-Trent) used a Codar CR-70A to compile his collection of prefixes—he has been an SWL for years, but only in the last two has he taken seriously to the amateur, as distinct from the BC, bands.

When he started in 1971, at the ripe old age of thirteen, *S. Smith (Polmont)* used an Eagle RX60N plus Codar Preselector, but more recently he has gone to the Yaesu FR-50B; however, Stephen reckons his QTH is far from perfect in the radio sense, and he makes do with 66 feet of wire bent into a Z-shape.

Back in 1936, when *K. Smeeton (Northwich, Cheshire)* made his start, he used a Phillips four-valver, from which he has progressed down the years to an AR88D plus Hamgear preselector, Joymatch tuning unit, and an L-shaped aerial at around twenty feet. The main interest lies in logging the various villages and towns in all countries, mainly, as one would expect of an old-timer, on CW, but also occasionally on Sideband.

L. T. Poyner (Sutton Coldfield) started by hearing amateurs on Forty, and has gone on until now when he has a Yaesu FR-50B, coupled to a Mosley RD-5 aerial.

Technical Points

R. Holland (Malvern) wonders why some mobile stations are so much louder at a given range than others in his area. Simple, Roy. Anyone can generate some RF, but, particularly on Top Band, the problem is to transfer the said RF first into the aerial, and secondly out of the aerial and into space, rather than using it to heat up part of the transmitter or the car body. The boy with the big signal has mastered this art of getting the aerial "on the nose" and he uses some sort of meter to make sure it stays that way.

Last year it was 144 MHz, this year Seventycems and R.A.E.—for which the results have just come out as this piece is being put together. *J. Fitzgerald (Gt. Missenden)* is the first SWL one can recall for a very long time who is active on 432 MHz; he has a Micro-wave Modules converter feeding into the main receiver. The aerial is a home-brew 8-element light enough not to overload the stub mast which already carries a two-metre beam at 14 feet.

The problem of image interference is touched upon by *M. Wickstead (Taplow)* in connection with his Trio 9R-59. It has to be realised that a receiver with one RF stage and single conversion to an IF of 465 kHz is very prone to images above about 3.5 MHz, the problem being worse as you go higher in signal frequency. The only palliative is to build an ATU using high-Q circuits and to couple this to a basically resonant aerial. On the other hand no bit of equipment is perfect, as said earlier, and, now one knows of the problem, one can always either decide to live with it, or turn the receiver into a double conversion job by using a converter ahead of it on the HF bands.

P. Vernon (Salford) wonders about the length of a resonant or half-wave aerial. This length, in feet, is given by the result of dividing 468 by the frequency in MHz, which gives 132 feet for an aerial cut to about 3.55 MHz; for 3.7 MHz the figure would be near-enough 126 feet, in the opinion of J.C.'s trusted old slide-rule. A dipole should be made by figuring the length of the top for the middle of the band desired; it has to be accepted that this is a bit of a compromise at the ends of the band, but unless one is prepared to do clever things with the aerial which will make it look a bit obvious for miles around, then you must accept the compromise.

Has anyone any ideas? *M. Peters (Newbury)* has an AR-77 which persists in "hooting" every time the BFO is switched on, the pitch of the oscillation being variable with RF Gain and BFO trim. Sounds rather as though Martin needs a handful of good 0.1 and 0.01 μ F capacitors, which can be soldered in to replace the dud ones in the existing decoupling circuits, as the latter are unsoldered and checked one by one. Most likely, there is one either o/c, or with one end hanging off its tag, or with a dry joint at one end or t'other.

Prefix Problems

Still with Martin Peters, he offers a couple of dud prefixes for examination and queries also the status of USARTEK; the latter has been around for years from

Russia, and is well-known.

An interesting point is raised by *M. Smith* in *Matamata, New Zealand*, who heard a phoney "ZK1TA" on Twenty on July 4, at 0557, when he had previously heard ZK1AI say that he would not leave for Tongareva and activate the proper ZK1TA until July 10.

Another unholy one was unearthed for sure when *H. M. Graham (Harefield)* logged a "ZA5BM," claiming to be from Tirana and giving QSL address as "via YU1OBH" who does not appear in the 1973 *Call Book*. Bearing in mind the lack of Amateur Radio licensing in Albania, one would unhesitatingly classify this character as no good.

M. Hartley (Preston) queries the OJØ AB prefix (Market Reef) and the RB5 and RQ2 prefixes from Russia; the latter are allocated to the VHF-only licensees over there, "VHF" including ten metres in their spectrum.

The C1AIB heard by *A. Glass (Plymouth)* was in fact a Canadian special-activity call. Bert, incidentally, has been spending much of his time on Two lately, using an Eddystone 750 tuning 28-30 MHz as tunable IF for the converter, which in its turn is "inhaling" from an eight-element array.

W. J. Smith (Benfleet) is contemplating having his QTH moved to Spain and wonders whether he should be able to carry on his HPX entries. Yes, of course, but starting from zero again, as the distance from the old to the new place would be so great as to make some signals DX to one but not the other.

B. F. Hughes (Worcester) offers another crop of prefixes, among which was XE13, passing messages to Brazil from the raft *Alcali*. This one, strictly, is non-amateur, and the writer has no knowledge that they are allowed to, or do, work amateurs; so, reluctantly, we have to count XE13 out.

There is just one query in the letter from *R. Smye (Wirral)*, namely the status of the ZX7 prefix. This one, if memory serves aright, was used in the contests by PY7AAD.

P. Davies (Stoke-on-Trent) has changed from his UNR-30 to an HRO-MX, with which he added quite a few new prefixes. Among them was ZM3RK, on which there is not enough data given to enable us to pronounce judgement, although one sees no reason to seriously doubt its validity.

LJ3L was heard by *G. Ridgway (Darlington)* and queried; no problem for Graham as this one is a form of special-activity station; doubtless a QSL sent to them will bring a card in return and all the details.

Miscellany

An interesting point crops up in the letter from *C. B. Russell (Runcorn)* who remarks on how easy it is to fail to log Europeans in the excitement of the chase for the DX beneath—very true, and most of us could wind our scores up considerably by settling down to a concentrated session of logging the first-hop stations coming in to the aerial. Brian has extended his aerial to 132 feet at the expense of a couple of obtuse-angle bends and is now evaluating this set-up.

Like so many more, *D. Rodgers (Harwood)* is chafing to hear the results of the R.A.E. However, Dennis has taken a chance and booked a Morse Test for July 31, an act which has caused his Phone score to fall, while he

HPX LADDER

(All-Time Post War)

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
R. Shilvock (Lye)	1400	A. Judge	
T. Rootsey (Ilford)	1333	(Bishops Stortford)	742
S. Foster (Lincoln)	1327	M. Williams (Sleaford)	732
W. Bingham		B. Thomas (Pontefract)	729
(Carrickfergus)	1323	O. L. Cross (Bexleyheath)	722
J. Fitzgerald		W. B. Taunton (Meopham)	720
(Gt. Missenden)	1139	C. K. Verstage (Old Basing)	695
A. W. Nielson (Glasgow)	1138	M. Cuckoo (Herne Bay)	663
K. Kyezor (Perivale)	1112	L. Thomas (Castleford)	662
I. Brown (Newtownabbey)	1044	J. Woods (Chillesford)	609
R. Carter (Blackburn)	1014	J. R. Cowan (Rochford)	586
H. Alford		H. A. Londesborough	
(Burnham-on-Sea)	1011	(Swanland)	585
L. A. S. Poole		R. H. McVey	
(London, N.21)	983	(Weston-s-Mare)	579
B. Hughes (Worcester)	947	P. L. Barrett (Welwyn)	577
M. J. Quintin		B. Cushing (Hove)	573
(Wootton-u-Edge)	931	K. C. Webb (Reading)	572
D. Rodgers (Harwood)	901	M. J. Stringer	
R. Pullen (Crawley)	885	(Southend-on-Sea)	547
J. H. Sparkes (Trowbridge)	877	A. I. Williams (Stockport)	534
G. W. Raven		P. Barker (Sunderland)	531
(London, S.E.13)	860	M. Kitchener (Hitchin)	526
N. Hembrey (Northiam)	850	K. Williams (Swinton)	514
N. Askew (Coventry)	840		
K. Plumridge		CW ONLY	
(Southampton)	822	A. Glass (Plymouth)	935
P. L. King (Emsworth)	821	T. Rootsey (Ilford)	702
S. Proud (Letterston)	820	G. Proud (Letterston)	683
C. Henderson (Beckenham)	790	W. B. Taunton (Meopham)	612
M. Fisher (Bradford)	784	C. Henderson	
A. R. Holland (Malvern)	783	(Beckenham)	531
H. M. Graham (Harefield)	763	D. Rodgers (Harwood)	434
E. Parker (Hove)	752	H. A. Londesborough	
E. W. Robinson		(Swanland)	314
(Bury St. Edmunds)	752	B. Heppenstall (Holyhead)	228
A. West (Herne Hill)	747	S. J. Proud (Letterston)	201

Starting Score 500 for Phone, 200 for CW. Listings include only recent claims. Rules for HPX—see Panel, p. 163, May issue.

For HPX Rules, see p.163, May

ANNUAL HPX LADDER

(Started January 1, 1973)

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
J. Gravell (Bury Port)	489	G. Lucas (Kennoway)	294
M. Whitfield (Stroud)	482	B. Rhead (Stoke-on-Trent)	291
C. L. Lee (Ilford)	470	R. Shelley (Bisley)	282
R. Smye		C. B. Russell (Runcorn)	281
(Shrewsbury School)	448	S. Sharred (Birmingham)	281
D. Churchill (Bexleyheath)	446	M. Wickstead (Taplow)	277
W. J. Smith (Benfleet)	444	M. J. Wright (Holyhead)	261
S. Scott (Stockport)	416	M. Smith (Matamata,	
B. F. Hughes (Worcester)	404	New Zealand)	257
D. Johnson (Clitheroe)	370	P. Davies (Stoke-on-Trent)	250
C. M. Little (Addiscombe)	366	P. C. Jane (East Looe)	243
P. Eaton (Folkestone)	343	W. McFaul (Londonderry)	242
W. H. Smyth (Hartlepool)	332	A. May (Bromsgrove)	228
G. Ridgway (Darlington)	321	S. Hall (Hucclecote)	208
M. Hartley (Preston)	295		

Starting score 200, in accordance with the HPX Rules. All prefixes to have been heard from January 1, 1973.

has been listening intensively to the CW to keep his speed up.

P. Barker (Sunderland) has been building the G3RHI Slow-Scan TV monitor, and wonders if anyone else has tried it—if they have, he would like to hear from them, at 15 Buttermere Street, Grangetown, Sunderland SR2-9NS.

Perhaps this is his last letter, at least as far as HPX is concerned, avers *R. Carter (Blackburn)*. Ben is not giving up listening—far from it—but now he has managed the 1000 prefixes, he is turning his attention to the popular HAB activity for a new challenge. On a different theme, Ben has hung up a 7 MHz dipole which he finds good on 80m. and 40m. “as is.” For 14 MHz he straps the feeders together and works it Marconi-fashion, and for 21/28 MHz just one leg of the feeder is connected. He reckons this way of using the single aerial is a very good compromise.

A. West (London, S.E.24) has now passed the O-Level stage and started work; he has also been accepted for a marine electronics course at Norwood Tech. and so is no doubt feeling quite pleased with himself.

A novel reason for inactivity comes up in the letter from *K. Kyezor (Perivale)* who rashly promised to build a locomotive for his son's model railway; it should keep the OM out of mischief for quite a while!

R. Shilvock (Lye) notices that Stew Foster still manages to hear the odd prefix despite being newly married, and wants some tips on how to listen without upsetting the XYL! Difficult Question indeed! Some people get home from work and find their rigs in the garden, while others have wives who take an active part or even become licensed themselves; the majority fall in between these limits and tolerate the OM having a hobby other than his wife. But it's best to set up a test before you get married, and watch the reactions!

J. Cowan (Rochford) deserves our congratulations, in that he has now become qualified as a marine radio officer; John has just to do his radar certificate and will then be off to sea, probably about March next year.

It is quite surprising what you can adapt to make Amateur Radio gear. The *Binghams (Carrickfergus)* have set up the logger, Joe, with his two-metre machinery; outside, the aerial rotates on a mast which is rotated by the aid of a car back-axle. One recalls some years ago an operator who used a car gearbox as the bottom support for a rotating mast carrying a beam. On the HF side, Billy has now giving up the R.1155 in favour of a home-brew job using an R.209 front-end—good!

After all the trouble he was experiencing in getting data on NBFM discriminators, *P. L. Newman (Thame)* has accumulated quite a lot of information since last he wrote, between the stuff forwarded from your J.C. to him and what he has been able to scratch up himself, thanks to G3TDZ whose brains he picked. The result sounds to be an arrangement using the TBA120A integrated circuit. Paul is another one who should be getting his R.A.E. result about the time this was going down.

Likewise *K. Webb (Reading)* who is doubly pressed, over his accountancy finals and his R.A.E.—we hope you pass both, Keith.

M. Stringer (Southend) has abandoned his attempts to make a Quad for 144 MHz with many elements, in

favour of the potentially more profitable approach of stacking four three-element jobs in a square configuration. This sounds interesting, although the need to stack with separation of at least a couple of wavelengths in both vertical and lateral planes may make the beast a bit of a brute mechanically; and in terms of windage, it may give a lightweight beam-rotator something to think about. However, nothing venture, nothing gain.

H. Alford (Burnham-on-Sea) bewails the low state of the bands and adds that it is depressing in the extreme for one of his advanced years! Cheer up, Herbert! Leg-pulling apart, the Alford list is always pretty respectable, and he doesn't miss much in the way of DX when it is going; he prefers the early mornings in spring and early summer for profitable DX-chasing.

A microphonic fault on his receiver annoyed *T. Vale (Abingdon)* for a while, but it did the decent thing in the end and cured itself! On a different tack, Terry mentions a good point in the TVI game when he recounts how, as hospital electrical engineer, he was asked to look at a sick TV with an awfully grey-and-grainy picture. A quick check on the cable revealed that the “engineers” who installed it has pushed the inner of the coax into the plug, unsoldered, and had cut away the braid clear of the connector. Taking a soldering iron and doing properly what the installers had been paid to do made the picture revert to proper black-and-white on the screen. This is a very good point, seriously; a connector not properly made off used on the SWL station can not only reduce incoming signals but also and, maybe more important, can cause interference in the receiver due to rectification effects from local stations whether in the pass-band of the receiver or not.

O. Cross (Bexleyheath) sends in details of the 1973 Cray Valley SWL Contest, on 15-16 September, 1800 to 1800 GMT. If you want to have a go, write to R. A. Treacher, 392 Rochester Way, Eltham, London SE9-6LH for the rules, enclosing also a big s.a.e. for a supply of the log sheets if you want to use them—entries are preferred on these but will be accepted on other sheets provided they carry the specified information. There is a bonus of up to 100 points for a neat log, and illegible ones won't be accepted at all—so be warned!

E. Parker (Hove) always seems to have something of interest to say—this time he makes the suggestion that stations on Eighty should be made to reduce their power inputs to reduce the cacophony, as he says, if one has AGC off, headphones on, and one turns the tuning a bit incautiously to land on one of these big signals, then you are deafened for several minutes. Very true. On the rare occasions when J.C. sets his jaw and tunes over the pundits' band, he has a thingummy in his headphone leads to save his ears. It consists of a couple of silicon rectifier diodes back-to-back in parallel across the headphone leads. Thus any signal of more than about 0.7 volt in either direction is shorted through one or other of the diodes, saving your ears at the expense of distortion which is cleared up the moment the op. grabs the gain control and reduces the audio output from the receiver.

Gardening is the latest variety of QRM to hit our old friend *S. Foster (Lincoln)* who all but missed the deadline as a result. However, Stew still managed to find 20 interesting ones to add to his total and keep him well

One of our more distant SWL readers—G. Bowers, 6 Sunniva Street, Lerwick, Shetland, who is a member of the local Lerwick Radio Club. He is working for his R.A.E. and in the meantime is a keen listener, mainly on 20 metres, using an old BC-348 on which he has logged some 60 different countries since starting on the DX bands in June this year.



in the hunt.

H. A. Londesborough (Swanland, Yorks.) had a try at the CW HPX, and as a result was "infected by the CW Bug" to such an extent that SSB was largely neglected. CW queries were LB1R and the UX3B; the former surely a phoney and the latter as surely OK.

I. Brown (Newtownabbey) brings his total up once more, despite the counter-attractions of summer and the poorish conditions of late. Irwin was interested in the situation in the Phoenix Is., where KB6CU can also be heard from the same spot signing VR1AC, from which he deduces joint U.K./U.S.A. ownership of the group.

Sad to say *A. W. Nielson (Glasgow)* has had a spell in hospital which kept him away from the receiver, but nonetheless we have no doubt he is still well in the hunt. After all, he is the last survivor of the keen types who entered the very first HPX Ladder back in 1960!

C. Henderson (Beckenham) has been taking an interest in the WAB/HAB activity, to such an extent that he has booked in 380 squares in a month, but still Crispin has a respectable collection of prefixes to add to his score in the Ladder.

Some several months ago we received a letter from *R. C. Woolley (Ashbourne, Derbys.)* about the business of getting started; it led to his latest epistle in which he indicates his progress. Richard has now bought an FR-50B fitted with Top Band, and has increased his interest in the aerial types to such an extent that, as he puts it, "my XYL does not know which line to hang the washing on!"

R. H. McVey (Weston-super-Mare) has much news, one way and another. His father has just come back on the air, with 50w. of SSB, and this must have given Roger a bit more incentive. For himself, he has noticed that at a score of 499 one is transferred to the ATPW listing, at which time it is possible to add on any prefixes that are not allowable in the 1973 Table. As to the receiver, Dad is being prodded into buying an FT-200, as Roger is of the opinion its receiver section is very good.

The Rest

As usual, J.C.'s garrulity has got the better of his space allocation, so it remains for him to acknowledge letters and ladder claims from D. Churchill; M. Cuckoo, *Herne Bay*; P. Eaton, *Folkestone*; J. Gravell, *Burry Port*; A. Judge, *Bishops Stortford*; C. L. Lee, *Ilford*; C. M. Little, *Addiscombe*; W. McFaul, *Londonderry*; L. A. S. Poole, *Winchmore Hill*, G. W. Raven, *London, S.E.13*; E. Q. Robinson, *Bury St. Edmunds*; T. Rootsey, *Ilford*; J. H. Sparkes, *Trowbridge*; B. Thomas, *Pontefract*; L. Thomas, *Ferry Fryston*; and C. K. A. Verstage, *Old Basing*.

Wind-Up

Which is were we bring things to a conclusion for another round by mentioning the deadline for next time. It is fairly tight at **September 20**, addressed as always to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ. Finally, we congratulate all those who passed their various exams, and in particular those who succeeded with the R.A.E.; equally of course, we commiserate with those who have been unlucky enough to "come unstuck," for whatever good reason. *73 de J.C.*

SPECIALLY ON THE AIR

G3CAR, September 1: For the 27th annual Wycombe Show, at The Rye, High Wycombe, Bucks., organised by the Chiltern Amateur Radio Club, to operate CW/SSB on all bands 10-80m. RTTY skeds would also be welcomed—A. C. Butcher, G3FSN, 70 Hughenden Avenue, High Wycombe, Bucks.

GB2CCF, September 1: In conjunction with the Clitheroe Castle fête, operating 10-80m. and two metres, with a special QSL card to confirm contacts and reports. —D. Johnson, 29 Chatburn Road, Clitheroe, Lancs., BB7 2AW.

VHF BANDS

A. H. DORMER—G3DAH

THE bands had been pretty quiet up to the end of July with just the occasional opening to the Continent, and that confined mostly to the South of the country, but during the last week, conditions improved considerably. D, SM and OZ were all available on July 29, with French stations workable to the Paris area. A brief slackening of the tempo ensued, but things looked up again around August 9, when there was a good opening down into S.W. France. The Brittany beacon (F3THF—144.007 MHz) was particularly strong, although at the time of writing it appears to be off the air. 70 cm. was exhibiting remarkable stability of performance on August 10, with GB3SC at 5 & 9, ON4HN at 5 & 9+ for hours on end and your scribe recorded G3LQR in Suffolk (involved in a cross-band QSO) at 5 & 9+40 dB and overloading the front end of the Rx. But, as is unfortunately only too usual, the activity on the band was disappointingly low, and the 100 watts of RF from G3DAH produced only the ON4 and G3XPT in spite of repeated calls in various directions. Perhaps the answer lay in the parallel opening on 2m. which was a real honey. As an example, one CQ call on SSB provoked 21 QSO's in succession, all D or PAØ, in just over two hours. There wasn't much time to scan the

rest of the band to see what was happening there, but it can be said that most of the EU activity appeared to be concentrated in the Ruhrgebiet, with the PAØ mostly on the German border. Conditions were still good, although not as good, on the evening of the 11th, as witness the three-way between GD8EXI, G3DAH and G8CCG/M, the latter near Wolverhampton, at signal strengths around the S7/8 mark. (CCG was running a "Liner-2" to a halo in the car!) GM and GI were being worked from the South at this time.

August 12 produced some good extended tropo. to Scandinavia (SM6 and SM7) and also to the West, with several Welsh portables at tremendous strength and E15BH (Athlone) and G13GXP (Co. Down) knocking off the G's and occasional Continentals with speed if not complete ease. In Herne Bay, 70 cm. was also open for DX about midnight, but no takers. It was noticeable around this period that the Angus beacon was at times 10 dB up on the Durham beacon. Reports have also been received of reception of the HB9 beacon during this period.

August 13 produced much the same DX as the previous evening with the addition of LA and OZ, some very strong GM and excellent signals from GI6YM/P in Co. Antrim. August 14 was good for both 2m. and 70 cm., with GM workable on both bands.

70 Centimetres

What *are* we going to do about this band? It is undeniable that the advent of commercial, push-button, fixed-channel gear for 2m. has accelerated the drift away from the frequency, but this cannot explain entirely the decline of activity, since one has only to listen to a contest, coincident with even average propagation conditions, to observe that many operators still have equipment for 70 centimetres, but rarely use it, and it is only publicised events such as a contest that brings them to light. One hears the cry that there are fewer DX openings on 70 cm. than there are on 2m., but your scribe takes leave to doubt this statement. The fact is, that if one would get into the habit of checking GB3SC, and later on this year, the Durham 70 cm. beacon,

one would find that there are numerous occasions when propagation is equally good on both bands. Even when it isn't, there is surely a gratifying sense of achievement in making a 100-mile contact under difficult conditions with home-constructed equipment of greater complexity than that used on lower frequencies. Even if one doesn't, for various reasons, wish to embark on an extensive and time-consuming process of designing and building one's own receiver (and be it noted that the prices of some of the modern converters are no higher than the cost of components plus your own time) the construction of a Tx to a published design is not an insuperable task, and in some circles the possession of gear for 70 cm. lends a certain *cachet* to the owner—if you care for that sort of thing.

Should we have more 70 cm. contests to stimulate activity? Should we adopt the practice of other countries and have a probationary period on 70 cm. before permission is granted for new licences to operate on 2m.? Should more publicity be given to activity nights? (Whatever happened to the Monday night activity periods?) Should manufacturers be encouraged to develop and sell transmitters for the band? They need not even be complete sets—triplers from 144 MHz would fill the bill. Perhaps more space should be devoted in this Column to reporting notable DX achievements, but that requires that operators tell us about them. While it is possible to garner some information from personal contacts, it just isn't possible to monitor all of the bands all of the time.

Whatever the solution, it behoves us to make more use of these frequencies for the reasons which have been elaborated many times in the past, and whatever the solution, the facts are:—

- (a) 70 cm. can be, and frequently is, as productive of good DX as 2m.,
- (b) Openings occur on this band with almost the same frequency as on 2m.,
- (c) Although equipment is rather more difficult to construct, it is certainly not beyond the capabilities of the average amateur. You can always triple the 2m. NBFM in a QQVO3-20A,
- (d) Professional gear is available if

you don't want to build your own,
(e) Activity is a self-generating process. There won't be any if we don't come on the band!

(f) There is increasing interest in these frequencies on the Continent if you enjoy EU contacts,

(g) If we don't use it . . . Need one say more?

And after all that, one supposes that there will be a flood of letters from readers all over the country reporting that, in their particular neck of the woods, there always has been, and still is, a consistently high level of local activity. If that is the case, it can only be said that it must be very short range, since the views expressed above represent not just personal observation but reiterate those of many correspondents from all over the country.

Contests

Results: Congratulations go to GM3BA and G8AGU as winner and runner-up respectively of the May 144 MHz Portable contest. The May 144/432 MHz contest brought victory to G3ZMD, operating in Derbyshire, in the fixed section and to G3HHG/P in Berkshire in the portable section. A very disappointing entry of 14 only for the May 432 MHz event, the winner, G3KMS of Bradford, making 26 QSO's only to lead the field by a comfortable margin.

Reports: Conditions for the 432 MHz Portable contest on July 22 were poor, and it will be surprising if many more than 14 entries are received from this event also.

Participants in the 4m. contest on August 12 were luckier with the propagation. As customary, conditions were much better at the start (0900z) than during the afternoon. EI3VPK/P in Larne, Co. Antrim, was a very good phone signal in the South-East during the forenoon, as were GW4AZP/P in Welshpool and GW3ONP/P in New Radnor. The nine-element beam which Willie was using in Larne seemed to be paying off handsomely, although it was noted that it was pretty sharp and on at least two occasions deceived him by its side-lobe performance! Perhaps surprisingly, GI3TLT/P in Belfast seemed to be putting in a better signal after midday than earlier. Scores above 70 are likely to be up

among the leaders. CW activity was low in the morning while conditions were good, perked up during the hot afternoon, but shortly before the end of the event it seemed that every one had worked all they could hear, and new contacts on any mode were hard to come by. Perhaps the whole thing was too long? There are good (propagation) arguments for starting this event much earlier to take advantage of the early morning lifts as well as to provide an easement for the unfortunate sufferers from the dreaded TVI.

Forthcoming Events: Two major events in September—VHF/NFD and the concurrent IARU Region I contest over September 1/2. UHF/NFD this year is on October 6/7 which is also the date for the IARU Region I 432/1296 MHz contest. All very confusing as many discovered to their cost last time, when the choice DX had been worked the evening before and was not therefore available for scoring purposes the following day!

Stop Press: I2ADN/IA5 will be

QRV at 1,000m. a.s.l. on 2m. from Elba during VHF/NFD. They will have 300 watts p.e.p. output, to a 44-ele antenna. QRG 144.2 MHz and 145.4—145.5 MHz. They will also have AM on 144.7 MHz. QRA is FC11d and the address for QSL is:—I2ADN, Box 144, 22100 Como, Italy.

Woburn Rally

The Woburn Rally, held this year on August 5, was marred only by the appalling weather since the attendance was up on that of last year. Fortunately, the organisers had made provision for this by erecting *two* large marquees this time, which meant that there was plenty of room for both the visitors and the general public—all under cover. Apart from the 25 general trade stands with the usual assortment of goodies, a welcome novelty was the appearance of a representative from Lucas who was there to advise on ignition interference problems, a growing feature of Amateur

OSCAR VI — Prediction Data

Orbit	Date	Time	Position	Direction
4015	Sept. 1	0813	34°E	N/S
4016		1008	04°W	N/S
4017		1203	33°W	N/S
4020		1724	37°E	S/N
4021		1919	08°E	S/N
4022		2114	21°W	S/N
4102	Sept. 8	0657	43°E	N/S
4103		0852	14°E	N/S
4104		1047	14°W	N/S
4105		1242	43°W	N/S
4108		1303	27°E	S/N
4109		1958	02°W	S/N
4110		2153	31°W	S/N
4190	Sept. 15	0737	33°E	N/S
4191		0932	05°E	N/S
4192		1127	24°W	N/S
4196		1843	17°E	S/N
4197		2038	12°W	S/N
4198		2233	41°W	S/N
4278	Sept. 22	0816	23°E	N/S
4279		1011	05°W	N/S
4280		1206	34°W	N/S
4283		1727	36°E	S/N
4284		1922	07°E	S/N
4285		2117	22°W	S/N
4365	Sept. 29	0701	42°E	N/S
4366		0856	14°E	N/S
4367		1051	15°W	N/S
4368		1246	44°W	N/S
4371		1807	26°E	S/N
4372		2002	03°W	S/N
4373		2157	32°W	S/N

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

Radio mobile communications these days.

The talk-in stations were well organised and catered for both HF and VHF users. A thoughtful planner had arranged for FM, AM and SSB to be available on 2m. and this was just as well since a quick check on the logs showed an 8 : 1 ratio of VHF to HF callers and, within the VHF band, some 60% called on FM, 20% on AM and the remainder on SSB. Quite a startling change from previous years. Refreshment facilities were improved by the appearance in the grounds of the adjoining Abbey of a new bar—"The Duke's Head".

Although some cretin had removed a few of the direction signs from the route, those that remained, together with the very efficient operators at the talk-in stations, were adequate.

VHFCC Awards

We are very pleased to welcome GI8EWM (Co. Antrim) to membership of the Century Club. All his contacts were made on two metres with, initially, a QQVO3-10 and EL84 modulators, but subsequently with a K.W. Viceroy and transverter plus a "Liner-2". Antennae have ranged from a dipole, through an 8-ele. beam at 30ft. to a Skybeam at 50ft. on a telescopic tower. Steve's list of 100 stations worked includes more than 30 GI stations, so the answer to those who have asked where all the GI's are must be that they are there if you know when and where to look for them! GI8EWM is awarded Certificate No. 190.

Certificate No. 191 goes to John Button, G3YSK (Winchester) again for 2m. operation. He started up on the band in the Spring of 1971 with borrowed gear and a 4-ele. Yagi resting on the stair landing, but by the Autumn the bug had really bitten and he built up a '320A rig with NKT404 or 6V6 modulators (which ever were serviceable at the time) the antenna then being an 8-ele. Yagi on a 7ft. pole in the attic which was rotated by keeping a pair of steps on the landing and reaching through a trap door to turn the pole. By early 1973 this *ad hoc* arrangement has been replaced by a shack in the garden with the beam on a 30ft. mast. Even so, he worked 6 countries and 30 counties with the earlier

aerial. A contact with him during the recent 4m. contest indicates that he is also active on that band.

Norman Fitch of Purley, Surrey, is now G3FPK, but one remembers his SWL reports to the *Magazine* from 'way back. With more than 400 stations worked on 2m. and a QSL return rate of some 66%, it is hardly surprising to find him among the members of the VHF Century Club and he is awarded Certificate No. 192 to prove it. He uses a Ranger Tx (bought in 1966 for 30s.), a DL6SW converter into a Heath Mohawk with a Skybeam at 35ft. to go with them. The 450ft. a.s.l. site has a good all-round take-off, that to the North being particularly good with the Brookman's Park masts at 28 miles visible from the shack window on a clear day. He comments that the Mohawk is excellent for AM, CW and SSB but even it will not cope with some of the excessively deviated FM stations. He should know—he is the hon. secretary of the Amateur Radio Mobile Society!

A query has been received about the claim position when the QTH is changed. The rules for the VHFCC Award state that all contacts must have been made from one QTH only, so in this case it would mean starting again from scratch.

The Score from GM

Additional information is now available on the Scottish VHF Convention. The programme opens at the Pollack Halls of Residence, Edinburgh University, at 2 p.m. on Saturday, September 22. At 2.45 p.m. G3FZL will be talking about VHF/UHF affairs, tea at 3.30 p.m., integrated circuits and how to use them by GM8BJK at 4.0 p.m. and "Portable Experiences" by GM8FFX (and he should know!) at 4.45 p.m. Concurrently a session on "Getting started on Microwaves" is planned, so take your pick. There will be an informal discussion at 5.30 p.m. followed by the dinner and trophy presentation at 6.30 p.m. Tickets and further information are available from Vic Stewart, GM3OWU, *QTHR*. Fees are: Convention only 30p; Convention and Dinner £1.25, and lunch 70p. Overnight accommodation may be available, so, if required, please write direct to the Deputy Steward at the University.

Talk-in stations will be available—GM3BQA/A mainly on SSB around the calling channel, and GM3HAM/A on 4m.

The Glenrothes Club, hot from their success in coming third in HF/NFD, are planning to participate in the next two-metre contest and, in view of the excellence of their planning and organisation on that occasion, this will be one well worth looking for. GM3OLK is the chap to contact for further details.

GM3OWU, GM3OLK and GM3BOA are now running the "Europa" transverter, and find that the addition of a small blower to cool the QQVO6-40A PA prolongs active life no end. "Liner-2's" continue to proliferate with GM3JGF using one to put a fine signal into Edinburgh from Caithness. GM3WIG has got his in his car. Incidentally, GM3ZBE, GM4CAN, GM4CAY and GM8DMZ were all putting excellent SSB signals into the South during the August openings.

Beaconry

GB3VHF is off the air at the time of writing (August 14). There have been considerable variations in the received signal strength for some time now, but things should improve when G8AZU finishes the solid-state installation he has designed and is constructing. F3THF on 144-007 MHz also went quiet on August 12 and is still off as at today. GB3ANG is still a little high in frequency, but has been stronger in the South than the Durham beacon on occasions. GB3GM in Thurso on 145-995 MHz was copied easily with an indoor beam by G8ELS of Herne Bay, Kent, early in the morning of August 14. GB3SX is still QRT.

Reception of ZB2VHF has been reported by GW3MHW in Cardiganshire on July 20, by G3BQX on July 21 and by G3OHH on August 4.

Activity Reports

G3NAS (Walsall) now runs 50 watts p.e.p. to a 4-ele. cubical quad on 4m. Although he is in the Midlands Channel 4 TV area, he has received no complaints and puts this down to the fact that the majority of sets are now on UHF Channel 40. Let's hope that this will fill the gap in 4m. coverage in that area which was very evident

during the recent contest. G4BRK (ex-G8ESI) in Leeds is now QRV on 4m. with 25 watts to a '3-20A, 6V6 modulator, and FET converter into a BC-348 and a 4 ele. beam at 30ft. GD4BJL is on 4m. from the I.o.M. He also has SSB on 2m. You may have worked him as GI8ACY prior to his QSY to GD.

On 2m., GW4BXE (ex-GW8FJK) in Pontypool is now active with a "Liner-2", a Mosfet converter, an FT-505 and a 12-ele. at 20ft. G8HET (Stourbridge, Worcs.) was first licensed in February of this year and seems to have been able to devote much time to the gear. He has built himself a solid-state Tx with the 2N3375 final yielding about 12 watts p.e.p. output and which incorporates a transistorised VOX switching system. He has constructed his own 35ft. tower from aluminium angle and this supports the 14-ele. beam. Nice work! G8CBZ is on SSB with 150 watts from Brixham, Devon. EI5BH has worked EI on M/S using RTTY!

Several readers have asked that their thanks be passed to recent DX - expeditionaries — GM3JFG /8AGU, G3ZUL/G8ACB and G3FDW in particular, who have done such an excellent job in providing so many with contacts in the rarer counties, a view which this column shares. We are sorry to have to report that G3FDW was taken ill while on his trip, but as he was active during the August 4m. contest, one assumes that all is well again. During his foray, he ran 25 watts p.e.p. output from a QQV03-10, and FT75 SSB generator, with a 4-ele. beam on 4m.

G4BMM (Luton) reports that GW3ZUL/P was at about the same strength on 2m. as he was on 70 cm., but the fact that he was on CW on the higher frequency band and phone on the lower meant that he was much easier to copy on 432 MHz. This might be used to illustrate a point raised by GW8FOL who asks if CW is really necessary on 2m. in noting that the top three stations on 2m. in the Annual VHF Tables are G8/3. Weak CW is *always* easier to copy than weak phone, and the placings in the Tables are indicative more of hours of operation than they are of mode. Incidentally, GW8FOL had a very nice DX contact on 2m. on July 3 with DJ2HF/P in DL69h,

THREE BAND ANNUAL VHF TABLE

January to December, 1973

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	
G3NHE	31	5	73	13	31	7	160
G3ZMD	45	5	64	9	29	4	156
GD2HDZ	29	4	72	9	26	5	145
G4BEL	23	2	60	11	20	6	132
G3DAH	39	4	47	12	18	5	125
G3FIJ	38	4	44	9	18	6	119
G3OHH	52	6	42	7	9	2	118
G4BMM	21	2	52	10	20	5	110
G8FUI	—	—	73	11	21	2	107
G2AXI	39	4	43	7	6	1	100
G4ASR	28	2	57	7	—	—	94
GW8FOL	—	—	80	11	—	—	91
G8EOP	—	—	50	8	27	2	87
GW8FKB	—	—	76	11	—	—	87
G8DNK	—	—	75	12	—	—	87
G8GNE	—	—	55	9	14	3	81
G8BXX	—	—	52	10	16	1	79
GW3ZTH	—	—	64	12	—	—	76
G3XDY	—	—	65	11	—	—	76
G8FMK	—	—	41	5	27	2	75
G8ECK	—	—	60	13	—	—	73
G3BW	—	—	57	9	—	—	66
G8FQE	—	—	54	11	—	—	65
G8CKY	—	—	48	10	5	2	65
G8HET	—	—	50	12	—	—	62
GM3ZVB	8	1	45	8	—	—	62
GW8DUP	—	—	51	9	—	—	60
G8BKR	—	—	36	5	14	2	57
G8CKZ	—	—	47	9	—	—	56
G3SMU	18	3	10	2	16	3	52
G8FWB	—	—	46	4	—	—	50
G4AJE	—	—	38	8	1	1	48
G4BKG	—	—	40	7	—	—	47
G3FPK	—	—	39	6	—	—	45
G4AEQ	—	—	25	2	13	3	43
G8CBU	—	—	32	3	6	1	42
G8DGR	—	—	32	2	6	1	41
GW8BHK	—	—	33	8	—	—	41
G8GPR	—	—	36	5	—	—	41
GI8EWM	—	—	32	5	—	—	37
G8DOT	—	—	27	8	—	—	35
G8GNC	—	—	28	2	—	—	30
G8COG	—	—	23	3	—	—	26
GW3CYB	—	—	16	5	3	2	26
G8EMS	—	—	20	2	2	1	25
G8GBV	—	—	16	3	5	1	25
G4BOW	—	—	23	2	—	—	25
GD4BJL	4	3	13	5	—	—	25
G8FUL	—	—	23	2	—	—	25
G8GJB	—	—	21	3	—	—	24
G4AEZ	—	—	22	1	—	—	23
G8ECU	—	—	19	2	—	—	21
G3EKP	8	3	4	2	2	2	21
GW4BXE	—	—	17	4	—	—	21
G3WHK	—	—	17	3	—	—	20
G8GXE	—	—	17	1	—	—	18
GW8CMA	—	—	14	3	—	—	17
GW8CGH	—	—	12	2	—	—	14

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

a distance of 980 kms!

GW3ZTH has really been at the DX in Bridgend. During July he worked among others the G3ZUL expedition in Caernarvon on both 2m. and 70 cm., three ON, several DL and PA and finished off the month with four SM. Nice going.

General

First, let us clear up the situation regarding GW3MHW who has been putting out such a good signal on the VHF bands recently. His home is in Cardiganshire, but he has a cottage in Breconshire. When he uses /A after his callsign he is in Cardigan and when the callsign alone is used he is in Brecon operating his main station. OK?

The *Chiltern Carrier*, newsletter of the Chiltern Amateur Radio Club, is a well-produced publication which always has something useful to say, and it is with acknowledgement to them that a paraphrase of their recent editorial is quoted. *Quote*. Do you put yourself out to meet, welcome and instruct the young SWL? Think back to the days when you were a young SWL yourself, and how nice it was when someone at the Club came up and spoke to you and brought you into the rest of the crowd. We should all try to help and encourage newcomers. We should also consider the rest of the population. They are the ones who will campaign against us or help us in all sorts of ways. As a Club policy one should try to participate in fêtes and the like, and so meet members of the general public and explain Amateur Radio to them. *End of quote*. Now, that is all good sense, and so receives here the publicity it deserves.

GD2HDZ informs us that the I.O.M. society has just had the licence reinstated after a lapse of several years and will probably be heard on two metres shortly using the callsign GD3FLH/P. By the way, Arthur has at last been able to work GD on 4m. and 70 cm.!

Mention was made last month of

regular skeds which were kept for months at a time some years ago. It was pleasant, therefore, to hear from Herb Bartlett, G5QA, who put so much time and patience into this endeavour. He emphasises the point that, to gain the maximum value from this type of operation the skeds should be daily, at the same hour and with the same equipment. The sked gear should *never* be altered. Recordings should be made of barometric pressure, temperature, humidity, cloud cover and, of course, signal strength and band conditions. His own most productive skeds were those with GW2ADZ which ran on 2m. for thirteen months in 1948/9 and that with GW3ATM and G3OYM/T (now G8AI) which ran on 70 cm. for 14 months during the same period. At 73, G5QA is still active on 70 cm. and 23 cm. and is another operator who puts in a plea for more 70 cm. activity—particularly with the beam directed towards Exeter! Still on skeds, the G8BCL /G8DNK/DC9KU affair continues with 100% success.

G3AHB comments upon the ease with which skeds for VHF can be made via the HF bands and quotes in particular a long-haul contact with the Yeovil Technical College lads on 2m. which followed immediately an 80m. QSO with them. A procedure not to be neglected.

A very interesting report covering a wide field comes from G3FPK. Unfortunately, space does not permit it to be quoted in full, but a few salient points follow: He notes that manners on the VHF bands are deteriorating to the level of those on the HF bands and suggests that the sort of behaviour which, alas, is now becoming commonplace, provides ideal ammunition for those who are trying to acquire our bands for commercial use by "proving" that radio amateurs are not using the frequencies for the purpose stated in the licence. A very valid criticism. He also comments, and this is really still in the "manners" context, on those who "clobber" the top end

of the Zone A allocation. The excessive deviation frequently used on 144.4 MHz extends upwards to meet those who deviate excessively on 144.8 MHz, thus effectively masking weak, West Country signals over some 120 kHz. Out-of-Zone operation by so-called FM "nets" is another problem, particularly when three or more discrete frequencies are used instead of one only as the verb, and noun, imply in this context. Finally, Norman mentions an occasion when he replied on AM to a CQ call made by an operator using FM and was told that the FM receiver was so good that it would not copy AM. There are occasions when one could wish that the reverse were true!

G6RH has now worked 36 countries via Oscar 6 and is trying to get 9H1BX interested. He has had 850 QSO's with 279 different stations. The 189 Trans-Atlantic QSO's were made with 56 different W and eight different VE. Hope that the FM QRM does not impede further progress, Bob!

The date for the launch of "Sonde 6" from Nancy has now been finalised as September 16. Up-frequency between 432.1 and 432.4 MHz and down-frequency between 145.6 and 145.9 MHz. Beacon on 146.0 and telemetry on 144.8 MHz.

The Glamorgan VHF/UHF Group is now well established. They meet on the third Tuesday of each month at the NCB Staff Members Club at Tondy near Bridgend, and have arranged an interesting series of talks and demonstrations for the remainder of the year. Further information from GW3ZTH, QTHR.

Deadline

Deadline for the next issue is **September 8**. Please try and keep to the date, chaps—it's a nuisance having to re-draft copy to accommodate late reports! All correspondence as usual to: "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ. Cheers for now and 73 de G3DAH.

BOOK REVIEW

FM and Repeaters for The Radio Amateur (ARRL)

THE rapid increase in FM operation on the VHF bands has brought with it a demand for information not only on fundamental principles but on modern techniques for transmission and reception in this mode. The new ARRL publication *FM and Repeaters for the Radio Amateur* fills this demand.

Starting with a review of the history of FM, (and it will perhaps surprise some readers to learn that Carson's original paper was dated 1922, to be followed by Armstrong's classic analysis in 1936), nearly 100 pages of the book are devoted to explanations of both underlying concepts and practical circuitry. Receivers for VHF/UHF are covered in detail with examples of the use of phase-locked loops as FM detectors, automatic channel scanning, NBFM adaptors and the application of linear integrated circuits to fulfill the functions of limiters, amplifiers and discriminators. The section on transmitters deals with the generation of both FM and phase modulation and elaborates on speech processors, varactor triplers, solid state amplifiers for the 144 MHz and 432 MHz amateur bands, and frequency synthesis. Antennae for mobile, portable and fixed station use receive adequate, if not extensive, coverage and useful hints on ignition suppression are included.

The success of the U.K. GB3PI repeater and the possibility that operation of this installation will be extended (and indeed that others may follow) must engender a desire for at least a rudimentary knowledge of the way in which these devices operate, their capabilities and limitations, and the 50-odd pages devoted to repeaters include not only these aspects but also practical designs for equipment at both the remote and local ends of the circuit.

Descriptions of test equipment for both Tx and Rx

are included, and the construction of sweep generators, deviation meters and output power meters is given practical treatment.

Inevitably this manual by its very origin, includes some material which is of little practical interest to amateurs in this country, but it is a very small proportion of the whole. The enquiring U.K. reader will derive pleasure, instruction and satisfaction from the major part of this volume.

Unique in its comprehensive treatment of the subject from the amateur point of view *FM and Repeaters for the Radio Amateur*, of some 230 pages fully illustrated, should appeal to both beginner and experienced amateur alike.

It represents good value for money at £1.60 post free, from the Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1 OHF.

A.H.D.

WE ARE ALWAYS INTERESTED

To see articles of radio amateur interest—in particular good, up-to-date constructional illustrated designs, for which a generous page-rate is paid. Intending contributors should study and follow carefully the notes given on the Contents page in every issue, under the heading "Authors' MSS."

We also always need good photographs for general illustration, preferably black-and-white and about post-card size, with details on a *separate* sheet, stuck lightly to the back of the print. Payment is made, immediately on publication, for any that we can use.

All such material should be sent to: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.



The new Racal TA-944 is a 100-watt linear RF amplifier designed for the range 1.6-30 MHz. It incorporates an ATU which will match the PA into any sort of aerial from an 8ft. whip to 3.0 MHz dipole. It is intended for portable, mobile or fixed-station operation and will give 100 watts p.e.p. output at drive levels of between one watt and 5 watts only.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for October issue: September 6)

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

THE time has come, once again, to put out our first warning that the popular **Magazine Club Contest** is due to be run off during November. Dates chosen are November 3-4, with rules in the October issue, due out on September 28. This year, the event will be slanted not only at inter-Club working but also to scoring on a *County* basis—because by April next year the present geographical county system as we know it now will cease to exist. The rules are being worked out accordingly. Final details have yet to be settled here, but the general form, at least as far as the operating *times* are concerned, will be as in previous years.

Changing our theme somewhat, perhaps we should point out that details of any Club may appear in the Short Notices panel. The only rule on this which is rigidly applied is that which puts a Club in "Short Notices" not more frequently than once in three months—the time is normally rather longer than this. As for the reason for "Shorties"—simply to get more Club activities into the given space.

Back to our normal regional layout for this month, commencing with:

South and East

Crystal Palace lead off, their meeting being set for September 15, at 2000 hours, the venue being Emmanuel Church Hall, Barry Road, London, S.E.22. G8CSC is giving the talk, the subject being the Use of Electronic Techniques in Biochemical Measurement—pretty esoteric!

Reigate have a Natter Night at the "Marquis of Granby," Hooley Lane, Redhill, on September 4; this is followed by the main meeting of the month on September 18, at St. Marks Church Hall, Alma Road, Reigate, which will kick off sharp at 8.0 p.m. G3GVV will be the speaker.

On September 3, the lads at **Southdown** have an interesting talk laid on; this is by a radio officer on the "Sealink" m.v. *Senlac* and he will be talking about Marine Radio. At the meeting the details will be finalised for a visit to *Senlac* (to Newhaven) to see all the gear he will be describing. This visit will be a Sunday morning affair, probably 0900 to 1130, while the ship is actually in service.

Acton, Brentford and Chiswick will devote their evening on September 18 to an account of the holiday radio activities of various of the members. Venue, as always, Chiswick Trades and Social Club, 66 High Road, Chiswick.

The regular sessions of the **Worthing** group will be resumed on Tuesdays as and from August 28, at Rose Wilmot Centre, Littlehampton Road. September 4 is down for an inquest on VHF/NFD, while the 11th is the opportunity for discussion about Club matters at the AGM. A ragchew follows, on September 18, and on the 25th there is a Club transmitting contest, which in its turn will be the subject of an inquest on October 2.

Dunstable Downs get together every week, the form being that alternately there are formal talks or whatever and "between weeks" which we assume are in the nature of ragchewing sessions. This routine seems to be a bit disturbed in September, the between-weeks this time being on September 7 and 21, the 14th being given over to a discussion on their Club emergency network, and the 28th to G3VZV/G6AEV/T who will be talking about the setting up of an A/TV station. The change is that there is an extra event, namely the D/F Hunt on 144 MHz, slated for September 9.

There is nothing like having a suitable vice-president in an Amateur Radio Club. As example, not that **Cray Valley** have nailed G2MI, to talk about the workings of the QSL Bureau. No doubt G2MI will have something to say about people who "sit on" QSL's, either outgoing or returns, for months before posting them, and then blame the Bureau for the delay! All the meeting dates for the Cray Valley group are taken at the United Reformed Church Hall, Court Road, Eltham. The informal is on September 20.

Not far away is **North Kent** who have Hq. at the Congregational Church Hall, at Bexleyheath Clocktower, the entrance being in Chapel Road. Here they can be found on the second and fourth Thursdays of each month.

The second Monday in each month is the big date for the members of the **North Bucks.** crowd, the date on which they take off for Wolverton Youth Club. In fact, September 10 is a very important date for them as it is the Annual General Meeting, to which all are asked for

For the Marconi-Kemp 75th anniversary operation, signing GB3MKB during July, the station was set up on Rathlin Is., a few miles from Ballycastle on the N.E. coast of Co. Antrim. Here we see, left to right, GI8HUD, GI8AYZ and SWL McTaggart before crossing to Rathlin with their A/TV gear, with which they sent pictures to Ballycastle on July 6, this being exactly 75 years, to the day, since the first Marconi signals went out from Rathlin to report ships.



their attendance.

Now to **Southgate** who will be foregathering at their new Hq. address, which is Southgate Swimming Baths, in Winchmore Hill Road, just a few yards from Southgate Circus and Tube Station. September 13 looks to be the correct date, but we would advise an intending visitor to contact the hon. secretary, G3XMV—for all the latest details—see Panel p.433.

We've mentioned North Kent, now we come to **West Kent**, who have formal meetings down for Fridays September 7 and 21; in addition, the weeks between the Friday meetings are enlivened by informals in the Tuesdays. Once again we have to advise you to contact the secretary for the latest details and the Hq. address, if you live within striking distance of the Tunbridge Wells-Tonbridge area.

For **Chiltern** the venue is the Ernest Turner works in Totteridge Avenue, High Wycombe. Here they may be found on September 11 for the informal, and on the 26th for the "full" session, details of which were not finalised at the time of writing.

Bishops Stortford have their usual booking at the British Legion club in Windhill, the date being set for September 17. G3NPA is the speaker, and his subject "Satellite Communication."

MAGAZINE CLUB CONTEST—MCC

To take place over week-end November 3-4, on Top Band as usual. Rules, which will be different this year, will appear in the October issue, due out on September 28.

The West Country

Our first port of call is to the Hq. of **North Devon**, Crinnis, High Wall, Sticklepath, Barnstaple. The lads get together twice each month, once for a talk and once for a general ragchew. The dates are September 12 and 26 respectively.

An appeal for help comes from the new formation at **Ilfracombe School** where two of the staff have formed a Club—they have G4CHU to operate but would appreciate any offers of help with gear for the School station. They have a television studio in the school and will, hopefully, be using the gear in there to put out A/TV signals on 70 centimetres, from a high site with a clear take-off. It is hoped that they will be contributing some students to the R.A.E. class at Barnstaple, which will no doubt please the North Devon lads somewhat, after their efforts to get it going. For more details on this Club, drop a line to the Secretary—see Panel.

The **Plymouth** lads are finding their *Newsletter* is going from strength to strength, as indeed is the Club itself. You can find them on the first and third Tuesday of each month at Virginia House, Bretonside, Plymouth.

At the time of the Secretary's letter, work was going forward on the winter programme for the **Torbay** group. Tuesday evening informals are well patronised, and the Saturday evening session on September 29 is to be devoted to a tape talk.

Cornish next; this is quite a wide-flung group, with the "main" meetings at the SWEB clubroom, Pool, Camborne—the next one will be on September 6, and will be a talk on Stage Lighting and Sound Effects, by G3XFL. In addition, there are offshoots of the Club at Newquay and Penzance, not to mention a VHF group as well. All the details can be obtained

from G3XTF—see Panel for his address.

Midlands and Around

A large area indeed—and our first call is well to the northernmost end, namely to **Wirral**, who are still getting together in their temporary home at the Community Centre, Carr Bridge Road, Woodchurch (entrance through the large doors on the left-hand side of the building). The September dates are on September 5, when G3YGL will be talking about Servicing Tricks—a useful sort of talk indeed, on a subject which is often neglected—and the 19th is down for a Surplus Equipment Sale.

Stowmarket is a group that believes in publicity as a means not only of attracting new members but also of educating the general public as to what Amateur Radio is all about. On September 3 comes the main monthly meeting, at which a talk on broadcast listening will be given, plus details of a constructional project. Then on September 17 comes the mid-month ragchew—and at both these get-togethers they are hoping to reap a harvest of new members from their sowing of publicity seeds.

For **Worcester** we are a bit out of synchronism with their *Newsletter*, which carries all the programme data up to the end of August. However, the situation is soon sorted out—just get in touch with Secretary G8ASO at the address given in the Panel, opposite.

A change of Hq. and a change of routine are to be noted for **Bury and Rossendale**. They are going to meet weekly instead of monthly in future, at the new Bury Community Centre, with the formal lecture on the second Tuesday in each month. The first of these “second Tuesday” sessions in the new Hq. will be addressed by G8EUM of Pye Telecommunications.

Coventry have their place at Baden-Powell House, St. Nicholas Street, Radford Road, where they can be found on Friday evenings. The slate for this month says something like: September 7, a “University Challenge” type of Quiz; September 14, discussion on future contests; September 21, a trip to look round Birmingham Airport, Elmdon; and on the 28th a night on the air with the Club rig, signing G2ASF, for many years a well-known callsign in Club circles.

Not very far away is Leamington Spa, where, at 28 Hamilton Terrace, on Monday evenings, the **Mid-Warwickshire** club foregather, on and after the resumption date of September 10. Prior to that they will still be in the summer recess.

We have a bit of a problem this month as far as **Midland** is concerned; while it is agreed that the date is September 18 (at the Midland Institute in Margaret Street, Birmingham) we have two letters each of which gives a different name and call as the speaker. Both names are known to this writer, and either way the Midland members are in for an entertaining evening!

Wolverhampton meet at Neachells Cottage, Stockwell End, Tettenhall, Wolverhampton, where they seem to have a session every week. September 3 is set aside for G3NOW to talk about the Arts of listening to Short Wave Broadcast Stations, while the 10th is a Natter session. Then on the 17th, all those who possess Yaesu gear are asked to bring it along so that the

others can enjoy a “Yaesu Night.” That leaves the 24th, when the committee have their gathering.

Nothing succeeds like success, we are told, and the membership figures at **Spalding** certainly go to bear out the theory. In a by no means thickly populated area, in which most committees would be only too pleased to retain enough members to keep the Club viable, the group now have no less than 81 members, 32 licensed and 49 SWL! The meetings are held at the Teachers’ Centre, Pinchbeck, and the next one is down for September 21; it will be an “SWL’s Night,” with talks about Simple Receivers and so forth—a Good Idea.

Scotland and North

More Scotland this time than for long enough—which must be good!

Top of the clip is **Lothians**, where the meeting-place is in question—it should have been finalised by the time this comes to print. Provisionally, then, the programme is that on September 13, president GM8BJF will be giving his address, and on September 27 there will be a Grand Junk Sale. We suggest that anyone wishing to join this group or visit with them should first get in touch with GM8DIJ, address as Panel.

Now **Glenrothes** who have moved their usual date to avoid a clash with VHF/NFD, and so meet on September 9, at the Library Building, Old Nursery School, Douglas Road, Leslie, Fife. In addition we notice they have a visit organised to the IBA transmitter at Blackhill, Lanarkshire on September 11.

The twice-weekly gatherings of the **West of Scotland** chaps are all well filled with things to do and hear. In general, the form is that the Wednesdays are strictly informal, given over to VHF, construction, trouble-shooting, and such-like activities, while the Fridays are the main meetings with lectures, discussions, Morse tuition, and demonstrations organised for the members pleasure. The Hq. is at 81 Virginia Street, Glasgow.

Coming now over the Border into England, our first stop is at **Derby**, who are pleased with the success of their Ladies’ Evenings, which have resulted in several lady members. Mondays at 119 Green Lane are devoted to project and similar activities, while on Wednesdays there is a programme, which looks a bit like this: September 5, a Surplus Sale; September 12, talk and slides by VK4KS and XYL on their trip to Fiji (ladies invited); on September 19 the evening starts with a D/F Hunt, and when the members get back, around 2100, the judging will take place of their Crystal Set Contest. Finally, we have September 26, and another invitation to the distaff side to hear Tony Griffin talking about “An Easy-to-Maintain Garden.” That lecture should be taped and circulated to all clubs, to judge by the number of complaints of Gardening QRM!

There always seems to be something going on at the **Northern Heights** Hq. For September, we notice a Social Evening on September 5; a talk about an Electronic Fair Organ, by G3USH—(that should be interesting!) on September 12, and a Committee meeting on the 19th. Finally, on September 26, we see a talk on getting started in RTTY; all these are at the Peat Pitts Inn, four miles North of Halifax Town Centre.

At **Lincoln** the lads are still using as Hq. the Lecture

Room of the Lincoln Astronomical Society in Westcliffe Street, off Burton Road. A Treasure Hunt opens the account on September 5, and is followed on the 12th by the inevitable *post-mortem* on VHF/NFD. Then on the 19th there is a Film Show, and an Open Night comes up on September 26.

York recently showed the flag of Amateur Radio at the Garden Party at the Archbishop's Palace, Bishopthorpe, very successfully; for the future there are various talks and lectures lined up for the regular Thursday evenings meetings at their Hq., the British Legion, 61 Micklegate.

White Rose is the name of a very successful Club having Hq. at 82 Town Street, Armley, Leeds, where they can be found on any Wednesday evening. High on their current scheme of priorities is the matter of raising funds so that, now they have a permanent place of their own, they can have a permanent station set up. They have already acquired a 16 mm. projector as part of the campaign for being independent of outside resources. For all the details on this group, contact Secretary G3YEE—his name and QTH appear at the

MAGAZINE CLUB CONTEST—MCC

To take place over week-end November 3-4, on Top Band as usual. Rules, which will be different this year, will appear in the October issue, due out on September 28.

appropriate spot in the Panel below.

Others

British Rail caters for the interests of all those interested in radio who are members of the various parts which are integrated to form the British Rail organisation. Their main method of communication seems to be through the newsletter, and of course the net operations, which cover not only BR people but also join up with the railway types in other parts of the world. Details from G31LC, hon. secretary.

Radial is the newsletter of the R.A.I.B.C. who, as

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.
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BRITISH RAIL: L. C. Carter, G31LC, 35 Barnfield Gardens, Kingston-on-Thames, KT2-5RH, Surrey.
BURY & ROSSENDALE: J. D. Clifford, G4BVE, 10 Arley Avenue, Bury, Lancs., BL9-5HD. (061-764 3466.)
CHILTERN: F. S. G. Rose, G2DRT, 84 Cock Lane, High Wycombe, Bucks. (Penn 4240.)
CORNISH: H. Webster, G3XTF, Crandale, Gillyfields, Redruth (6905), Cornwall.
COVENTRY: G. Whenham, G3TFA, Lavernock, 33 Chapel Street, Bishops Itchington, Warwickshire.
CRAY VALLEY: P. F. Vella, G3WVP, 78 Hurst Road, Sidcup.
CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, SE23-3BN. (01-699 6940.)
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ECHELFORD: V. W. Higgs, G3VWJ, 205 Commercial Road, Staines (57021), Middx., TW18-2QT.
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HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (3237).
ILFRACOMBE (School): D. Raby, G31DR, 77 Channel View, Ilfracombe, Devon.
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LINCOLN: F. Day, G4BXL, 5 St. Marks Avenue, Cherry Willingham, Lincoln (51038), LN3-4LX.
LOTHIANS: B. Howie, GM8DIJ, 3 Liberton Brae, Edinburgh.
MEDWAY: H. E. Willis, 111 Laburnum Road, Strood, Kent. (Medway 76953.)
MIDLANDS: N. Gutteridge, G8BHE, 68 Max Road, Birmingham, B32-2AN. (021-422 9787.)
MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill (3552), Sussex.
MID-WARWICKSHIRE: A. C. Outhwaite, G8GDY, 2 St. Annes Close, Leamington Spa, Warks.
NIGERIAN: The Hon. Secretary, P.O. Box 2837, Lagos, Nigeria.
NORTH BUCKS: R. J. Pye, G8AAT, 7 Meadow View, Potters-pury, Towcester, NN12-7PH, Northants. (Yardley Gobion 342440.)

NORTH DEVON: H. G. Hughes, G4CG, Crinnis, High Wall, Sticklepath, Barnstaple, Devon.
NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44329), Yorkshire.
NORTH KENT: R. Wells, G4ARQ, 12 Bullbank Road, Belvedere, Kent.
PLYMOUTH: C. Mitchell, G3UVS, Kechil Rumah, Green Lane, Yelverton, Devon, PL20-6BW.
PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.
R.A.I.B.C.: Mrs. F. Woolley, G3LWY, Woodclose, Penselwood, Wincanton, Somerset.
REIGATE: F. H. Mundy, G3XSZ, 2 Conifer Close, Reigate (43130), Surrey.
ROYAL NAVY: CRS A. G. Walker, Hon. Sec. RNARS, 4 Woodcroft Gardens, Lovedean, PO8-9PZ, Hants.
SHEFFIELD: P. Day, G3PHO, 39 St. Albans Road, Sheffield, S10-4DN, Yorkshire.
SOUTHDOWN: A. Seabrook, 6 Harebeating Gardens, Hailsham, Sussex.
SOUTHGATE: J. Batchelor, G3XMV, 22 Faversham Avenue, Bush Hill Park, Enfield, Middx. (01-360 6537.)
SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale, Cheshire, M33-3GW.
SPALDING: R. Harrison, G3VPR, 38 Park Avenue, Spalding, Lincs., PE11-1QX.
STOWMARKET: A. P. Ashton, G3XAP, 30 Ford View Road, Stowmarket, IP14-2BL.
SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Cheam, Sutton, Surrey.
SWEDISH (Broadcasting Corporation): D. Gough, SM7RN/G5ALK, c/o Radio Klubben, Sveriges Radio, S 211 36 Malmo, Sweden.
TORBAY: M. Yates, G3UIQ, Top Flat, 23 Waverley Road, Newton Abbot (3025), Devon.
VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford.
WEST KENT: S. E. Jones, G4BKG, 36A London Road, Southborough, Kent.
WEST OF SCOTLAND: M. Parks, GM8HBU, 6 Stamperland Hill, Clarkston, Glasgow, G76-8AE. (041-644 1783.)
WHITE ROSE: R. Short, G3YEE, 10 Tyersal Grove, Bradford 4, Yorkshire.
WIRRAL: A. Fisher, G3WSD, 34 Glenmore Road, Oxtou, Birkenhead, Cheshire.
WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton, WV3-7LX.
WORCESTER: B. A. Jones, G8ASO, 12 Woodside Road, Larkhill, Worcester (29208), WR5-2EG.
WORTHING: G. Hooper, G8ETL, 12 Bramble Crescent, Durrington, Worthing (62013), Sussex.
YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

SHORT CLUB NOTICES

CLUB NAME	HEADQUARTERS LOCATION	MEETING MONTHLY
Echelford	St. Martins Court, Kingston Crescent, Ashford, Middx.	Sept. 10, 27
Hereford	Civil Defence Hq., Gaol Street.	<i>Not given</i>
Kingston	Scout Hq., Stirling Walk, Raeburn Avenue, Surbiton.	Sept. 12
Medway	Aurora Hotel, Gillingham.	Sept. 7, 14, 21, 28
Mid-Sussex	Marle Place, Leylands Road, Burgess Hill.	<i>Not given</i>
Purley	Lansdowne Hall, Lansdowne Road	Sept. 7, 21
Sheffield	Sheaf Hotel, Bramall Lane	Sept. 17 (<i>visit</i>)
South Manchester	Sale Moor Community Centre, Norris Road, Sale	Sept. 7, 14, 21, 28
Sutton and Cheam	"The Harrow," Cheam	Sept. 18
Verulam	Market Hall, St. Albans.	Sept. 19

N.B.—In each case, the Secretary's name and address appears in the Panel on p.433.

readers will know, care for those who are interested, as SWL's or licensed amateurs, in Amateur Radio, but who are blind or otherwise handicapped. (And there are about 400+ of them). The membership is split between the handicapped and blind on the one hand and the supporters on the other—and to read *Radial* for a few years leaves one wondering just who enjoys the association most! Details from Mrs. Frances Woolley, G3LWY, at the address in the Panel.

Nigerian (the national society out there) are almost at the cross-roads. 5N2ABG, who for years has kept it going, in a few months' time will be leaving Nigeria and a new "dogsbody" has to be elected to keep N.A.R.S. alive. None the less, the Society seems to be far from lacking in membership or funds, despite the continued restriction on the issue of new licences.

The **Royal Navy** group, as may be expected, is a live-wire organisation. The *Newsletter* alone is worth a sub. for the humorous "fill" items in the corners, and the articles by members, some technical, some pure reminiscence. Any amateur or SWL who has served in either Royal or Merchant Navy should give serious thought to joining.

Amateur Radio in the mobile sense is a specialist interest which is catered for on a world-wide basis by A.R.M.S., who have done much good work on reciprocal licensing, suppression of car interference and other topics of direct interest to the mobile operator.

Conclusion

Again we come to the end of the pile; your news for next issue should be of your Club and its *October* doings, for which the deadline will be **September 6** latest, addressed "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18-1RQ.

COURSES FOR THE R.A.E.

Second List

The first list under this heading appeared on p.344 of the August issue of SHORT WAVE MAGAZINE, together with notes intended for the guidance of all potential candidates for the R.A.E.—Subject No. 765, City & Guilds of London Institute.

It should be noted that R.A.E. courses can often be arranged on application to the Principal of the local Technical College, Adult Education Centre or Evening Institute—practically every town in the country has one, usually conducted out-of-hours at the neighbourhood school.

For official support—meaning accommodation and lecturing under Education Authority auspices, at fees that are largely nominal for students—the requirement is usually a class starting with about 12 candidates. The main difficulty could be the finding of a suitable tutor—preferably, not only a qualified teacher but also himself holding an amateur licence. However, in practice this difficulty is usually overcome, it being surprising where help can be found when it is needed. The lecturer is, of course, paid by the Education Authority.

To make up numbers, SWL members of the local Club will be enthusiastic candidates, or a notice in the newspaper for the district will usually bring in would-be recruits.

In other words, once the ball has been started rolling, it will not be long before a keen class is formed. Naturally, not all starters will see it through to the end but generally there will be enough to keep the class going and make it worth while.

Amersham: At the College of Further Education, Stanley Hill, starting Sept. 25 at 7.30 p.m. Morse instruction to be available if sufficient demand. Ring L. E. Fishburn, *Amersham 21121*.

Bangor (Co. Down): Starting about the third week in September at the Technical College, further details from the College or the course lecturer, G13WSS, *QTHR*.

Bedford: At Westfield School, Queens Park, on Tuesday evenings, commencing end September. Further information from J. Kiggins, *Bedford 56116*, or E. Elsley, G3YUQ, the tutor, *QTHR*.

- Bradford:** At the Technical College, Great Horton Road, enrolment during September. Course tutor R. Short, G3YEE, *QTHR*, Tel. *Bradford 664220*.
- Bridgend:** Thursday evenings at the Technical College, starting in September, with B. Jones, GW3WRE, *QTHR*, as tutor.
- Crawley:** At Ifield Evening Centre, Monday evenings 7.0-9.0 p.m. Enrolment September 11-12, and further details from the course tutor C. McEwen, G3VKQ.
- Dundee:** At the Kingsway Technical College, Old Glamis Road, covering theory and practical, commencing September 6 at 6.30 p.m. Enrol immediately or on the first evenings. Apply Head, Electrical Dept.
- Grantham:** Again at St. Hugh's School, Dysart Road, on Mondays at 6.45 p.m., starting September 24, with A. Ellis, G3PJR, as instructor.
- Harlow:** At the Technical College, The High, enquiries to E. P. Essery, G3KFE, 17 Ascot Close, Parsonage Lane, Bishops Stortford (2501), Herts.
- Hinckley (Leics.):** Commencing September 17 at the College of Further Education, London Road, Monday evenings, 7.15-9.15 p.m. Enrolment September 10-12.
- Horsforth (Leeds):** At the new Technical College, Richardshaw Lane, Pudsey, enrolment during first two weeks September. For further details apply Principal.
- London (Acton):** On Wednesdays, 6.30-9.0 p.m., starting September 19. Enrolment Acton Technical College, near Town Hall, September 6 and 12th, evenings, inclusive fee for three full terms, £4. Course tutor W. G. Dyer, M.I.E.E., G3GEH.
- London (Borehamwood):** At the College of Further Education, Elstree Way, on Wednesdays from 7.0 p.m., starting September 26, enrolment at the College evenings, 5.0-8.30 p.m. Lecturer, G. L. Benbow, G3HB.
- London (Brentford):** To be held at the Adult Education Centre, Clifden Road, starting on September 24. Enrolment evenings September 12/13 and 17/18. Information from A. D. Crockford, 192 Boston Road, Hanwell, W7. (Tel. 01-567 5932).
- London (Croydon):** On Thursday evenings, at the Technical College Annexe, Tamworth Road, full enrolment details on application. Tutor, P. L. A. Burton, C.Eng., M.I.E.E., M.I.E.R.E., G3ZPB.
- London (Harrow):** At the College of Technology and Art, Northwick Park, beginning on Thursday, September 27, enrolment evenings 13th and 17th. In charge, D. T. Busby, G8ELB.
- London (Highgate):** Run by the Grafton Radio Society, G3AFT, at Whittington School, Highgate Hill, Mondays 7.0-10 p.m., starting on September 24, enrolment during the week prior to commencement. Lecturer, B. C. Bond, G3ZKE, or ring 485 7065.
- London (Ilford):** At the Evening Institute, Cranbrook Road, starting September 26. Enrolment September 10-13, 7.0-8.30 p.m. at the Institute, fee £3.00, or £1.50 for juniors. In charge, W. G. Hall, G8JM, 48 Hawkdene, North Chingford, E.4.
- Loughborough:** On Thursday evenings, 6.0-9.0 p.m., Morse, theory and practical, at the Technical College, Radmoor, fee £3.53 for two full terms, enrolment evenings September 10-12, course lecturer D. R. Doughty, G3FLS.
- Plymouth:** On Mondays and Wednesdays, 6.30-9.0 p.m. at the College of Further Education, information from the lecturer D. M. Webber, G3ENX, *QTHR*, or ring 68000 (*day*), 773238 (*evenings, after 6.0 p.m.*).
- Princes Risborough (Bucks.):** At the Adult Education Centre, Merton Road, theory on Monday evenings (G3POF), Morse on Thursday evenings (G4ACV), both classes 7.0-9.0 p.m., starting on Monday, September 24, enrolment evenings September 12-13. Further details from Head of Centre, L. Emmett, G3VKO, or ring *Princes Risborough 4977*.
- Slough:** On Friday evenings, 6.30-9.30 p.m., Morse and Theory, at the College of Technology, Wellington Street, with E. C. Palmer, G3FVC, and J. Baldwin, G3WQC, as lecturers. Enrolment evenings September 13 and 17th. The College has G3XPL on the air as part of the course. There is also an advanced course (Friday evenings 7.0-9.15 p.m.) for those who have already passed R.A.E. or hold a licence and would like to know more about the latest techniques under laboratory conditions. Details from E. C. Palmer, B.A., G3FVC, Dept. of General Studies, at the College.
- Stoke-on-Trent:** At the Northern College of Further Education, Longton Annexe, Trentham Road, Longton, Thursday evenings 7.0-9.0 p.m., starting on September 13, with a separate Morse class on Monday evenings. Enrolment at the Northern College of Further Education, Moorland Road, Burslem, evenings September 5-7.
- Torbay:** At the Torbay Amateur Radio Society club-room, Torquay, starting September 11. Information from M. Yates, Top Flat, 23 Waverley Road, Newton Abbot (3025), Devon.
- Wirral (Cheshire):** On Thursday evenings, 7.30 p.m., at Birkenhead Technical College, with L. Roberts, G3EGX, as lecturer. Applications immediately either to the College or to G3EGX, *QTHR*.
- Wolverton (Bucks.):** At the Technical College on Thursday evenings, enrolment September 4-5, or apply R. J. Pye, G8AAT, *QTHR*, telephone *Yardley Gobion 542440*.
- Wombourne (Wolverhampton):** At the Evening Institute, Ounsdale Schools, enrolment evenings September 10-11, lecturer R. W. Tomkys, G3NOW.

Because the winter session for all these courses starts during September, we shall not be publishing further lists. Those interested in reading for the R.A.E. in or near centres *not* covered in the foregoing list or that appearing in the August issue should apply to the local office of their Education Authority (*see* telephone directory) for any information they may have available, quoting "Subject No. 765, Radio Amateur's Examination, City & Guilds of London Institute."

NEW QTH's

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

G3CPH, F. H. Hatt, 23 Ravens Close, Enfield, Middlesex, EN1 3UR. (re-issue.)

GM4BUA, T. M. Shepherd, 17 Scooniehill Road, St. Andrews, Fife. KY16 8HA. (Tel. St. Andrews 2760.)

GM4BYF, P. J. Bates (ex-GM8EWQ), 2 Swan Spring Avenue, Edinburgh, EH10 6NJ. (Tel. 031-447 3201.)

G4CEJ, R. Moore (ex-G8GEM), 17 Somme Avenue, Ravenstow, Nr. Grange-over-Sands, Lancs.

G4CFV, R. E. Hall (ex-G8EGO), 41 Ayresome Avenue, Roundhay, Leeds, LS8 1BB.

G4CGU, R. G. Taylor (ex-G8GPT), 55 Chichester Drive, Quinton, Birmingham, B32 1BG. (Tel. 021-422 8477.)

G4CHK, M. J. Horder, 14 Conan Doyle Walk, Liden, Swindon, Wilts.

G4CHL, P. J. Howe, 57 Old Road East, Gravesend, Kent, DA12 1NW.

G4CHP, A. T. Cheesley (ex-G8FOC/MP4TEE/A6XF), 2 Willow Close, Upper Tasburgh, Norwich, NOR. 66-W. (Tel. Swainsthorpe 365.)

GM4CHX, J. Kyle, Grianan, 74 Rubislaw Den North, Aberdeen, AB2 4AN.

G4CIC, S. G. Edmondson, 6 Moony Avenue, Littleborough, Lancs., OL15 9JP.

G4CIG, A. Lincoln, 62 Chapel Street, Halton, Leeds, Yorkshire, LS15 7RG. (Tel. Leeds 647120.)

G4CIK, N. S. Hoult (ex-G8GXX), 34 Beacon Road, Loughborough, Leics, LE11 2BQ.

G4CIY, J. A. Cass (ex-G8GYR), 44 Dwarf Road, Wellingore, Lincoln. (Tel. Navenby 362.)

G8GZY, A. J. L. Cole, 12 Estria Road, Edgbaston, Birmingham, B15 2LQ. (Tel. 021-440 3562.)

G8HBO, H. C. Falkner, 31 Queens Drive, Surbiton, Surrey. (Tel. 01-399 8196.)

G8HFA, M. Allen, 1 Nutfield Street,

Todmorden, Lancs., OL14 5EL.

GM8HHC, P. J. Dick, 89 Trinity Road, Edinburgh, EH5 3JX.

G8HNM, R. Parker, 30B Radlett Close, Taunton, Somerset, TA2 8ED.

CHANGE OF ADDRESS

G2BCO, H. Worsley, 9 Norwood Road, Gatley, Cheadle, Cheshire, SK8 4AJ.

G2MU, E. J. Bayliss, 115 Albion Street, Kenilworth, Warks.

G3ERF, C. W. Liversidge, 35 Cotsmore Close, Moreton-in-Marsh, Glos., GL56 0JE.

G3FGD, W. J. Mordue (VK6JM), British Embassy, Havana, c/o F.C.O., London, S.W.1.

GW3GEN, C. F. Cole, Tyr Bugail, Caemansel Road, Swansea, Glam., SA4 3HN.

G3JEL, A. L. Skilton, 1 Daren Court, Carleton Road, London, N.7.

GM3JNW, H. L. Fleming, B.Sc., 4 Murray Crescent, Duns, Berwickshire, TO11 3DQ.

G3KFN, A. R. Baker, 89 Devonport Road, Stoke, Plymouth, Devon.

G3KOJ, R. J. Ezra (ex-ZB1PP/VSIFF/ZC5FFF/9V1FF), 30 Fernhurst Close, Hayling Island, Hants. (Tel. Hayling Island 66803.)

G3LCA, C. F. Hutchings, 6 Brookhill Close, East Barnet, Herts. (Tel. 01-440 2755.)

G3MCY, G. C. Moore, M.I.S.M., 4 Wenton Close, Cottesmore, Rutland, LE15 7DR.

G3NQX, W. H. Brown, 9 Lowther Crescent, Leyland, Lancs.

G3OHJ, E. W. Ashley, 33 Hazel Rise, Hornchurch, Essex, RM11 2AR. (Tel. Hornchurch 49545.)

G3REP, R. E. Parkes, 10 Hill Top Road, Cheltenham, Glos., GL50 4NN. (Tel. Cheltenham 28054.)

G3TTH, T. S. Coltman, 17 Grange Street, Loughborough, Leics.

G3VUF, G. Wright, 15 Falcon Hill, Morpeth, Northumberland, NE61 2YG.

G3WKS, West Kent Amateur Radio Society, c/o A. Matheson, Paradise Wood Cottage, Hartfield, Sussex.

G3WNC, R. K. Todd, 158 Hungerhill Road, Nottingham.

G3XDY, J. H. Quarmby, The Cottage, Main Road, Brigsley, Grimsby, Lincs., DN37 0RF.

G3YHJ, P. J. Simmons (ex-GM3YHJ), 4 Saddleton Road, Whitstable, Kent, CT5 4JB.

GW3YUC, D. Davies, 30 Wern Isaf, Dowlais, Merthyr Tydfil, Glam. CF48 3NY.

GM3ZDH, R. A. Dixon, Crossflat Farm Cottage, Muirkirk, Ayrshire, KA18 3RZ.

G3ZPN, J. V. Gibson, The Cottage, Dowthorpe Hall, Skirlaugh, Hull, HU11 5AE.

G3ZYE, R. Bellerby, 19 Great Fellingfield, Mary Tavy, Tavistock, Devon.

G4AFS, T. J. Bucknell, 51 Nelson Crescent, Watton, Thetford, Norfolk.

G4ATH, Thornton Cleveleys Amateur Radio Society, The Hobbies Centre, Rangview, Rosall School, Fleetwood, Lancs.

G4AP, J. G. Rooke, 35 Coombe Meadows, Chillington, Kingsbridge, S. Devon.

G4BHV, A. T. Bernstein, 28 Sutton Court, Sutton, Ely, Cambs.

G4QU, F. C. Mason, Oakdene, Hill Top, Stanton, Bury St. Edmonds, Suffolk, IP31 2DT.

G18GFP, C. C. Marshall, 31 Killaire Park, Bangor, Co. Down. (Tel. Bangor 60433.)

GM8HBU, M. J. Parks, 18 Netherplace Crescent, Newton Mearns, Glasgow, G77 6BT. (Tel. 041-639 4149.)

G8HKE, M. A. Holder, 2 Combe Fields, Portishead, Bristol, BS20 9JU.

AMENDMENT

GW5BCN, W. P. Binger, The Flat, Bryn Iorcyn Manor, Caergwrie, Wrexham, Denbighs.

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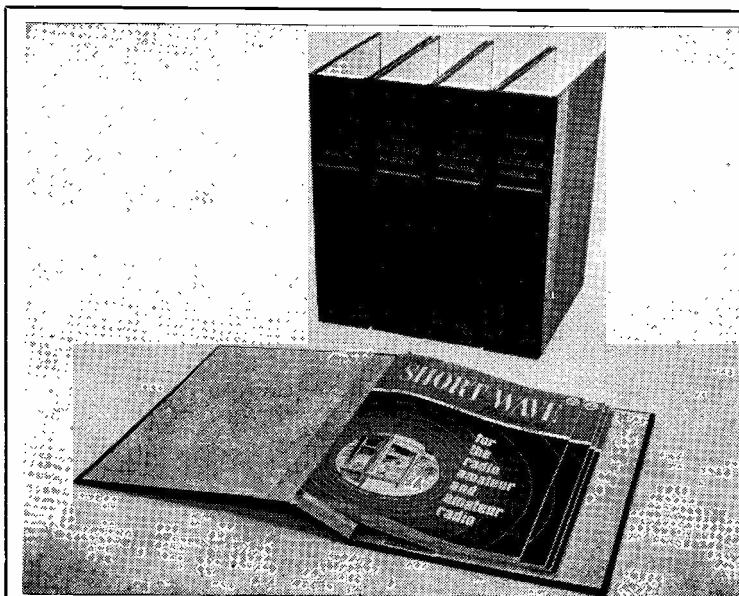
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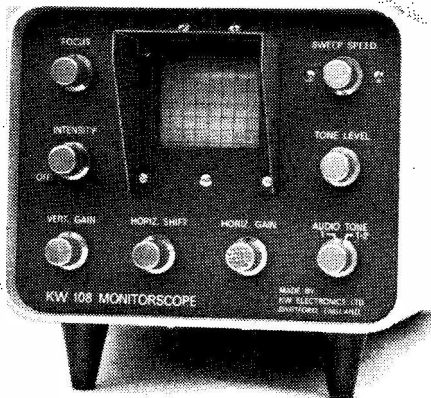
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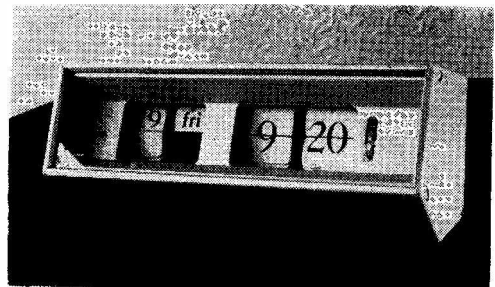
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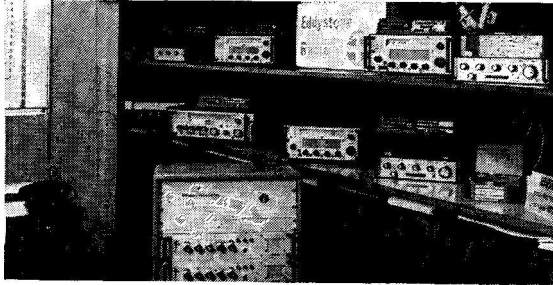
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WANTED. AT-5 with AC/PSU, CR-70A, PR-30X, T.55, S.27, RME-69 and S. 640 (Berks.)—Box No. 5163, Short Wave Magazine Ltd., 55 Victoria Street, London SW1H-0HF.

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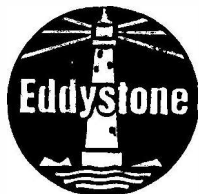
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