

The

SHORT WAVE

Magazine

25p

VOL. XXX

DECEMBER, 1972

NUMBER 10



WORLD WIDE COMMUNICATION

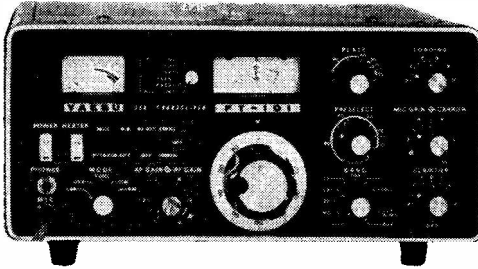


OUR AESU MUSEN DISTRIBUTOR

A Merry Christmas from

When you buy YAESU from their U.K. main distributor you get the best engineering standards in the world and superb performance too. All items carry the YAESU 12 months guarantee. We also do free labour on warranty claims, and carry an excellent stock of spares.

THE SUPERB FT-101 (Ex-Stock)



NEW:- FT101 - £249

260w. p.e.p. SSB 180w. CW 80w. A.M. Improved cross modulation and noise blanker performance 160m. factory fitted, and improved inverter stage. Selectivity: 2.4 kHz (6 dB down) 4.2 kHz (60 dB down). Sensitivity: 0.3 micro volt for 10 dB signal to noise. Full amateur band coverage plus 27-27.5 MHz. Built-in AC P.S.U. for 110-234v. AC Consumption 3 amps, max. Built-in DC P.S.U. for 12v. DC. 0.5 Rx standby, 5 amps. Tx standby, 20 amps. modulation peaks. Weight: 30 lbs. Complete with noise blanker, 20 dB attenuator, 25 and 100 kHz calibrator, Vox, \pm 5 kHz clarifier, CW break in with side tone, 1 kHz readout. Compatible AM and internal speaker. Micro-phone supplied as standard.

FT101 - £229

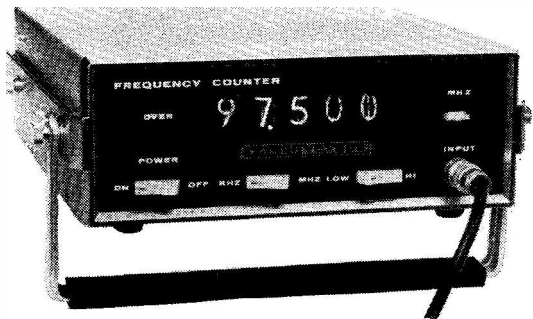
With one year Yaesu guarantee. Remaining old stock offered at £229 carr. paid, or with fitted 160m. £239.

MATCHING FL-2100 LINEAR (Ex-Stock)



The FL-2100 is designed to match the FT-101 and runs 1200w. p.e.p. If it's a linear you require for some other exciter, compare the FL-2100 with 2 fans, AC and HV safety interlock and fully screened input circuitry. You'll not find better value!

YC305 FREQ. COUNTER (Ex Stock)



This compact digital frequency counter which is equally suitable for laboratory, industrial or amateur applications has the following specifications: Compact design by advanced IC technique to count wide frequency range 5Hz-30 MHz. Dual range system provides 8 digit measurement with MHz and kHz indicators. 240v. AC/12DC dual power pack built-in; accuracy \pm time base stability + 1 count, gate time 1 m.s. or 1 second; input Z 1M Ω , low 56 Ω ; input capacity = less 20pF; max. i/p 60 v-p-p less than 10 sec. 20v. p-p continuous; time base frequency 1000 kHz crystal controlled; stability 0.0005 per cent at 25°C, 0.0025 at 40°C. Dimensions 8 1/2" x 3 1/2" x 10 1/2". Weight 8 lbs.

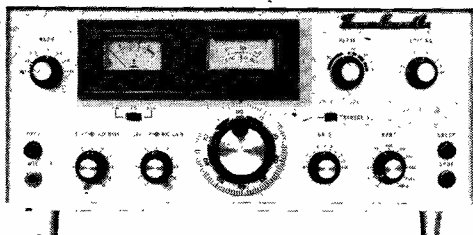
NEW 305D 220 MHz (Ex Stock) Only £111

OSKER POWER METER



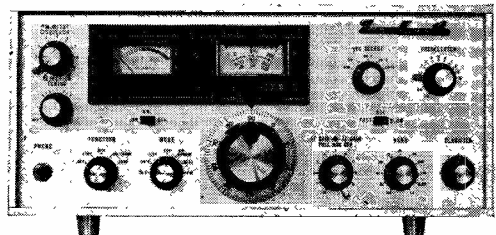
Price: £18.50

Features: Switchable for 52 or 75 ohm systems. Each instrument is individually calibrated. Four ranges: 0-2, 0-20, 0-200 and 0-2kV, 3-200 MHz. Excellent styling.



The FLDX400 Transmitter runs 240w. p.e.p. and is designed to transceive with FR100B or FR400. AM and "break-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 will receive if not switched to "transceive". 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.

★
NEW
FR400SDX
fitted 4m
+ 160-2m!
(Ex Stock)



The FR400SDX (Super de luxe) receiver is now available fitted with 4m. This model is only available from us and covers 160, 80, 40, 20, 15, 11, 10, 4 and 2m. 4 mechanical 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 VFO or 4 crystal frequencies. Monitor facility enables transmitted signal to be monitored at all times. Squelch circuitry silences receiver for noise free AM/FM reception. FM discriminator fitted to SDX model. 25/100 kHz calibrator. WWV band to check calibrated. 3 step AGC. Built-in noise limiter. Basic FR400 receiver from £120.

Western Electronics (UK) Ltd



FV200
FT200
FP200
All
Ex Stock

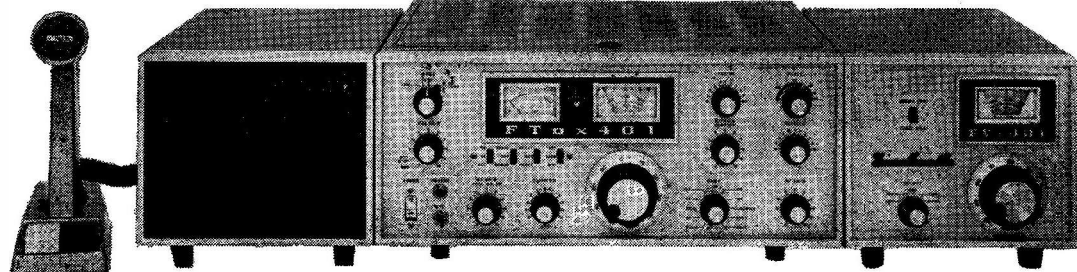
THE FT200 is without doubt one of the "best buys" available. Compare its features with similarly priced units and kits. **SPECIFICATION:** Power 1p 560w, p.e.p. 1p. Built-in CW filter, noiseblanker and blower cooled pa. Complete coverage 80-10m. Plus WWV (10MHz) to check the 25/100 kHz calibrator plus 3 spare band positions. VOX is built-in (not an extra). Dial readout to 1 kHz on all bands. Sensitivity 0.5µV for 20 dB S/S+N. Selectivity: 2.3 kHz (6dB), 4 kHz (60dB). Solid state FET VFO with excellent linearity (like all YAESU VFO's), 25/100 Calibrator. VOX/PTT. Separate DC supply available for mobile use. Clarifier ± 5 kHz. Break-in CW keying.

YD844

SP400 (Ex Stock)

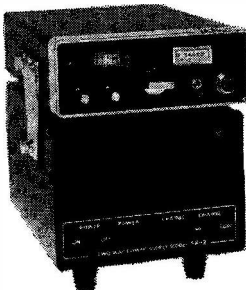
FT 401 (Ex Stock)

FV 401 (Ex Stock)



THE FT401 offers a high power SSB/CW transceiver with many extra features at a minimum price. **SPECIFICATION:** Power 1p 560w, p.e.p. Built-in CW filter, noiseblanker and blower cooled pa. Complete coverage 80-10m. Plus WWV (10MHz) to check the 25/100 kHz calibrator plus 3 spare band positions. VOX is built-in (not an extra). Dial readout to 1 kHz on all bands. Sensitivity 0.5µV for 20 dB S/S+N. Selectivity: 2.3 kHz (6dB), 3.7 kHz (60dB), CW filter 600 Hz. Clarifier 5 kHz. Break-in CW with sidetone. Selectable USB/LSB.

Ex Stock



NEW —FT2FB. Similar to FT2F but with more efficient transmitter, tone for repeater triggering and improved receiver filter. Takes less current!

The FT-2F opens the door to noise-free broadcast quality two metre FM operation. It is a highly advanced all solid-state unit complete with an automatic toneburst signal. Channel capability of 12 simplex or duplex frequencies. Three channel frequencies included. Advanced cct design protects automatically from damage of transistors caused by antenna trouble or reverse connection power supply. Portable or home base operation can be achieved with the addition of the optional FP-2AC/B power pack which provides regulated DC power for the transceiver and charging voltage for the leak proof re-chargeable colloidal type batteries. Spec. frequency 144-148 MHz., 12 channels, Frequency modulated, power drain, Rx 0.5A Tx 2A. Dimensions 6 1/2" x 2 1/2" x 10". Weight 4lb. Standard accessories, Dynamic mic., and mobile mount. Transmitter RF power 10 or 1w. o/p. Stability ± 0.001 per cent.



Ex Stock
£146

NEW
2m. FT-2 AUTO SCANNING TRANSCIVER

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.

THE FR-50B AMATEUR BANDS RECEIVER AT ONLY £59 or +CAL + WWV £63

The FR50B low-cost YAESU amateur bands receiver covers 3.5-3.8 MHz, 7.0-7.5 MHz, 14.0-14.5 MHz, 21.0-21.5 MHz and 28.0-29.2 MHz. Sensitivity: CW/SSB, less than 0.5 µV for 10 dB S/S + N. AM, less than 1 µV for 10 dB S/S + N. Selectivity: ± 5 kHz, -50 dB, ±1.8 kHz, -6 dB. Image ratio; better than -50 dB.

THE FL-50 SSB-CW TRANSMITTER £68

The FL-50B Transmitter operates on SSB/AM and CW. Power input is 50w, p.e.p. 80-10m. Carrier suppression, unwanted sideband and spurious radiation are all -40 dB. The unit is VXO controlled or will transceive with the FR-50B. The FV-50 VFO control is possible.

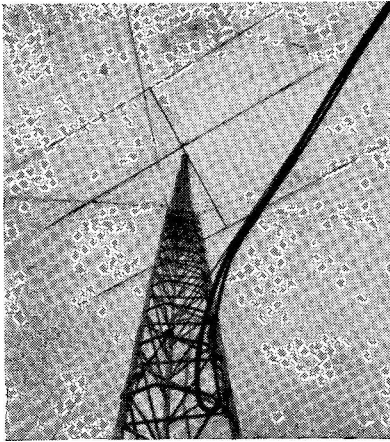
THE FU-50B REMOTE VFO for FT-75 or FL-50, £27.50

| YAESU PRICES | | CARRIAGE FREE BY SECURICOR | | MANUFACTURER'S 1 YEAR GUARANTEE | |
|----------------------------|---------|----------------------------|---------|---------------------------------|---------|
| FR-50B Receiver | £59.00 | FL-2100 1200W Linear | £148.00 | SP-400 Speaker | £10.00 |
| FR-50B + Cal. + WWV | £63.00 | FT-200 Transceiver | £134.00 | FL-2000B Linear, 120W | |
| FL-50 Transmitter | £68.00 | FP-200 AC PSU/spkr. | £38.00 | p.e.p. | £146.00 |
| FV-50 Remote VFO | £27.50 | FV-200 Remote VFO | £38.00 | FL-2500 Linear, 2kW p.e.p. | |
| FT-75 Transceiver | £99.00 | DC-200 DC PSU | £46.50 | 160-10m. | £122.00 |
| FP-75 AC PSU/SPKR. | £22.50 | FR-400DX Receiver | £120.00 | FT-401 Transceiver, S60W | £230.00 |
| DC-75 DC PSU/SPKR/Mount | £22.50 | 160-10m. | £120.00 | FV-401 Remote VFO | £38.00 |
| FT-101 Transceiver, 250W | £249.00 | FR-400SDX Receiver | £160.00 | SP-401 Speaker | £10.00 |
| FT-101 Trans. fitted 160m. | £255.00 | 160-10m., 4m., 2m. | £160.00 | FT-560 Transceiver, 560W. | £195.00 |
| FV-101 Remote VFO | £38.00 | FL-400 Transmitter | £146.00 | YC-305 35 MHz Counter | £85.00 |
| SP-101 Matching spkr. | £10.00 | | | | |
| USED EQUIPMENT | | FT500 | £149.00 | KW2000A | £150.00 |
| KW2000 + AC and DC | | Heath GR78 | £60.00 | KW Atlanta | £150.00 |
| P.S.U.'s | £150.00 | KW77 | £60.00 | Collinx 7551 | £175.00 |
| | | | | Drake R4B 2 months old | £210.00 |
| | | | | Trio TS510 | £135.00 |

Send S.A.E. for further details and specifications or 15p for post paid spec. prices and 50-page catalogue including all antennas and masts. The best HP terms available only 10 per cent deposit - Part Exchange. House of business, Monday to Friday 9 a.m.-5.30 p.m. Saturday 9 a.m.-12.30 p.m.

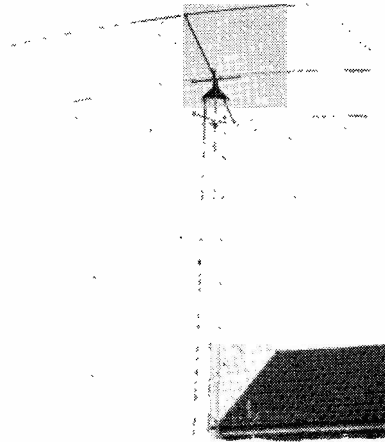
AGENTS: MIDLANDS —Andy Martin, G3UDR Tel.: Shipston-on-Stour 61839
BUCKS. —Ian Partridge, G3PRR Tel.: Chesham 024-054143

OSBORNE ROAD . TOTTON . SOUTHAMPTON SO4 4DN. TELE: TOTTON 4930 or 2785

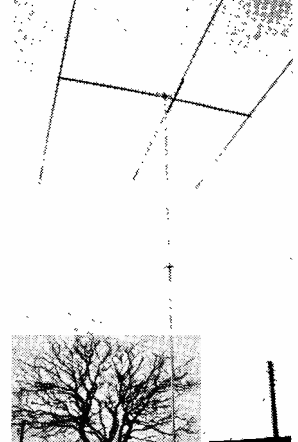


TELETOWERS

The finest value in guyed, galvanised steel towers which telescope down to 25". Price (carriage paid): 42' £77.00 57' £107.00 79' £132.00 101' £169.00



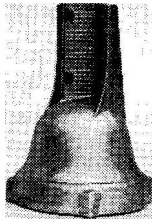
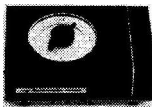
A self-supporting galvanised steel tower for HF band beams. Each 10' side weighs only 22 lbs., so the tower can be erected single-handed. 30' HAM TOWER Price : £55.00 carriage paid.



The best in telescopic rotatable masts. Can be erected single-handed in minutes and extends vertically upwards. Prices (carriage paid):
 Mast only Mast and Rigging kit
 30' £15.00 £20.30
 40' £17.00 £27.00
 50' £20.00 £33.50

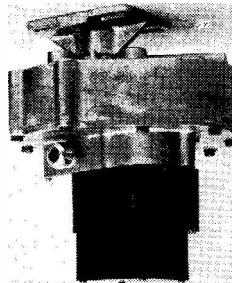
TOWERS

VERSATOWERS
 Immediate delivery from our stock! Self-supporting tilt-over towers for 40', 60' and 85'.
 P40, £121.75, P60', £146.50, T85', £275.00.



Rotators
 Ex Stock
 24/48 hour
 Securicor
 delivery £1

Shown far left
 AR20, left
 AR22R, right
 Hy-Gain 400.



We stock the best range of rotators, CDE and HY-GAIN and spares. Our stocks are good so you'll get fast delivery plus the after-sales service which counts.

- AR20** This model replaces the old AR10 and is ideal for VHF beams. £20 (40p)
- AR22R** This model will turn HF antennas of TA33 Jnr. size and can be mounted on the top of masts up to 2 1/16" diameter or onto a flat plate. It can carry a deadweight of 150 lbs. Requires a 4-wire cable, £75 (65p).
- TR44** This model is also for HF beams as the AR22R but carries a 500 lbs. load and has better braking. The control unit requires a 7-wire cable, £45 (75p).
- HAM-M** This best of the CDE range. Carries 1,000 lbs. deadweight for large HF beams and employs a solenoid operated brake. Requires an 8-wire cable, £70 (80p).
- HY-GAIN 400** It's a brute but takes masts up to 3" dia. and automatically rotates to the desired direction by setting the compass control knob points as required. Mounts to standard tower plate on Versatower, £115 (£1).

Note—All above rotators are ex-stock and orders are despatched the same day

MOSLEY (Carr. pd.) (Ex Stock) from us for fast delivery

- Mustang, 10-20m. 3 ele. 2kW ... £45.50
- TA33 Jnr. 'E' for 2" mast ... £37.00
- TA33 Jnr., 10-20m. 3 ele. ... £36.50
- TA32 Jnr. 1-20m. 2 ele. ... £26.00

BANTEX FIBREGLASS MOBILE ANTENNAS (Carr. 50p) including base

- 70 1/2. 70 MHz, 1/2 wave ... £3.00
- 144 1/2. 144 MHz, 1/2 wave ... £2.85
- BGA, 144 MHz, 1/2 wave ... £6.15
- B5, 144 MHz, 3/4 wave ... £4.35

G WHIPS (Carriage 50p coils, 20p) THE FINEST MOBILES (Ex Stock)

- Tribander 10, 15, 20m. ... £9.45
- LF40 40m. coil ... £4.00
- LF80 80m. coil ... £4.00
- LF160 160m. coil ... £4.00
- Whip for LF coils ... £1.00
- 160/80m. Duobander ... £9.00

J BEAM ANTENNAS (Carriage paid)

- 10/4Y 10m. 4 element array ... £24.10
- 4/3Y 4m. 3 ele. folded ... £4.25
- 4/4Y 4m. 4 element folded ... £5.60
- 2/4Y 2m. 4 element folded ... £2.90
- 2/6Y 2m. 6 element folded ... £3.50
- 2/8Y 2m. 8 element folded ... £4.20
- 2/10Y 2m. 8 element folded ... £9.00
- 2/14P 2m. 14 element ... £14.20
- 2/10XY. Cross polarised 10 ele. ... £12.10

RF COAXIAL CABLE AND PLUGS (Carriage extra)

- 50 ohm UR43 -2" dia. per m. 15p
- 50 ohm UR67 RG8AU " 30p
- 75 ohm -22 dia. UR70 " 15p
- 75 ohm UR39 -3 1/2" dia. " 22p
- 75 ohm UR57 -4 dia. per m. 30p
- 75 ohm twin " 5p
- 150 ohm twin " 5p
- 300 ohm twin " 5p

AGENTS, G3UDR, Shipston-on-Stour G1839. G3PRR, Chesham (02405) 4143.

WESTERN ELECTRONICS (U.K.) LTD.
OSBORNE RD . TOTTON . SOUTHAMPTON SO4 4DN

HY-GAIN

- Hy-ower, 10-80m. (self-sup.) £110.00
- 18V, 10-80m. vertical " £12.85
- 12AVQ, 10-20m. vert. " £16.50
- 14AVQ, 10-40m. vert. " £24.50
- 18AVT, 10-80m. vert. " £35.50
- LCOBQ, 80m. coil for 14 AVQ £7.75
- TH6DXX, 10-20m. 6 ele. beam £97.00
- TH3MK3, 10-20m. 3 ele. 2 kW £75.00
- TH3 Jnr., 10-20m. 3 ele. 600w. £51.00

ANTENNAS

- Hy-Quad, 10-20m. 2 ele. ... £74.50
- BD10-15, 10-15m. 3 ele. ... £57.50
- 204BA, 20m. 4 ele. beam ... £80.00
- 203BA, 20m. 3 ele. beam ... £72.00
- 153BA, 15m. 3 ele. beam ... £36.00
- 153BA, 10m. 3 ele. beam ... £28.50
- 18TD, Reetape portable dipole £41.00
- LA1 Lightning arrester ... £14.50
- LA2 Lightning arrester ... £2.50

SWL Listeners dipole ... £12.50

Note. Deduct 50p from price o aerial if base is not required.

- 80m. coil ... £4.00
- 160m. coil ... £4.00

- 70/16 70 cms. Double 8 slot fed ... £5.60
- 70/14Y 70 cms. 14 ele. folded ... £7.10
- 70/18P 70 cms. 18 ele. ... £7.45
- 70/MBM/46 70 cms. 46 ele. £10.50

- UHF in line coupling connectors 60p
- UHF 'L' angle connectors 90p
- UHF 'T' angle connectors £1.20
- UHF panel socket SO239 ... 27p

Hours of business : Monday-Friday, 9-5.30 p.m. Saturday, 9-12.30 p.m.

TEL. TOTTON 4930
or 2785

AMATEUR ELECTRONICS G3FIK**BIRMINGHAM 021-327 1497 021-327 6313**

MEMBER OF THE AMATEUR RADIO RETAILERS ASSOCIATION



**SINCERE GREETINGS TO ALL FOR CHRISTMAS
AND THE NEW YEAR**

1973 will see an unwelcome development, sad to say, in that for the first time ever we shall see a tax on our hobby in the form of V.A.T. This will mean significant price increases on all items of amateur gear and many thinking people will be making a special effort to purchase before the 1st April. This is sound common sense, of course, but it will inevitably result in some last-minute shortages of imported gear, so the moral is—don't leave it too late in the day!

At the moment, however, we have excellent stocks of gear by all the major equipment and accessory manufacturers, including the latest developments and in addition to this we have other items in the pipeline which we hope will be available within the next couple of months or so.

TRIO All items from stock including the excellent new TS-515 TRANSCEIVER at £210 with its companion TL-911 LINEAR AMPLIFIER at £140.

NEW! The TR2200 2 metre PERSONAL TRANSCEIVER at £62.50.

YAESU/SOMMERKAMP The FULL range plus a completely new line of SOMMERKAMP 2 metre gear including the latest repeater call equipment. All the well-known YAESU types plus the SOMMERKAMP FT-505S which has the same specification as the FT-401 but with AM also.

COMING SOON!!! THE NEW SOMMERKAMP FT-501 DIGITAL READ-OUT TRANSCEIVER.

K.W. As authorised K.W. distributors we offer a first-class service on all items by this leading British manufacturer. A LARGE S.A.E. WILL BRING YOU FULL DETAILS BY RETURN OF ANY ITEMS MENTIONED ABOVE

USED EQUIPMENT. As readers will know we carry large stocks of quality used gear and show below a selection of items available at the time of going to press:—

COLLINS KWM-2 TRANSCEIVER with matching P.S.U. Near new £650.00

COLLINS KWM-2 TRANSCEIVER with matching P.S.U. Excellent £550.00

COLLINS 312B-5 STATION CONTROL. Immaculate condition and little used. Offers invited but preferably to be sold as a complete package with one of the above.

COLLINS 75S-1 RECEIVER. Factory modified to 75S-3 specification £170.00

COLLINS 75S-3 RECEIVER. Fitted CW filter. Mint £225.00

HAMMARLUND SP600-JX RECEIVER. Newly in, good condition £95.00

KW 2000A TRANSCEIVER. Exceptional condition ... £155.00

KW 2000B TRANSCEIVER. Indistinguishable from new £195.00

GEC RC410 RECEIVER. Digital read-out. Superb ... £300.00

KW 1000 LINEAR. As new, first sold this year ... £105.00

TRIO TS-510 TRANSCEIVER. Excellent condition 3 months guarantee £150.00

TRIO JR-310 RECEIVER. Very good condition ... £65.00

KW-201 AMATEUR BAND RECEIVER. Very much above average £85.00

KW-201 AMATEUR BAND RECEIVER. Most excellent condition... .. £90.00

RCA AR88D RECEIVER. Absolutely as new with spare valves, trimming tools, etc. £80.00

SOMMERKAMP FR500SDX RECEIVER. Mint, fitted 2 and 6 metres £120.00

EDDYSTONE 840C RECEIVER. Very clean condition £46.50

SWAN CYGNET TRANSCEIVER. As new in all respects £175.00

HEATH SB301 RECEIVER. Fitted extra AM filter ... £105.00

HEATH SB300 RECEIVER. Fitted extra CW filter ... £92.50

N.B.: All items with the exception of AR88D Receivers are priced to include carriage. Carriage on AR88's—£3.50 plus £5 refundable deposit on special transit case.

PLEASE REMEMBER! We carry complete stocks of ANTENNAS, ROTATORS, COAXIAL CABLES, FILTERS, TRAPS, POWER METERS to meet every requirement, details as below.

Osker Block SWR200 Power Meters. The ultimate in SWR/Power Bridges ... £19.25

TTC SWR/Bridges C3042. Single meter model £5.00

TTC SWR/Power Bridges C3005. Twin meter model... £7.85

Sansei Miniature SWR/Power Model SE406 ... £3.80

Medco Filters. The best there is:
FL50A and FL75A 50 ohm. Belling connectors £6.00
FL50B and FL75B 75 ohm. PL259 connectors £6.50
FH40 High Pass ... £2.10

Copal Clocks
All types ex stock. Illustrated list by return.

Amphenol PL259 Connectors ea. 30p
50 ohm Heavy Duty Coax... ..per yd. 22p
(Carriage extra)

J-Beam Antennas. Latest catalogue on receipt of your S.A.E. Full range in stock.

Rotators. All post paid.
Stolle Memomatic 3001 £20.40
Stolle Automatic 2010 £25.65

CDE AR20 £20.40
CDE AR22 £25.65
CDE TR44 £45.75
CDE HAM-M ... £70.80

Wightraps
Standard pairs ... £2.90
High Power ... £3.90

G-Whip Antennas
All ex stock — Catalogue by return.

Shure Microphones
Model 201 Hand Mike £5.75
Model 444 Desk Mike £13.25

Hy-Gain Antenna Range
I2-AVQ Vertical ... £16.50
I4-AVQ Vertical ... £24.50
I8AVT/WB Vertical £35.50
LC-80Q Loading Coil £7.75
TH3 JNR 3 ele. beam £51.50
TH3 Mk.3 3 ele. beam £75.50
TH6 DXX 6 ele. beam £97.00
BN-86 Balun ... £8.00
(Carriage extra on Hy-Gain)

May we remind you that all items above are priced to include carriage/postage unless otherwise stated. If writing for details please forward an adequate stamped addressed envelope.

Southern Agents: **J. H. Associates Ltd. (Jeff Harris, G3LWM)**
Cricketfield Lane, Bishops Stortford, Herts. Tel: 0279-56347

ELECTRON HOUSE, 508-514 ALUM ROCK ROAD, BIRMINGHAM 8

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

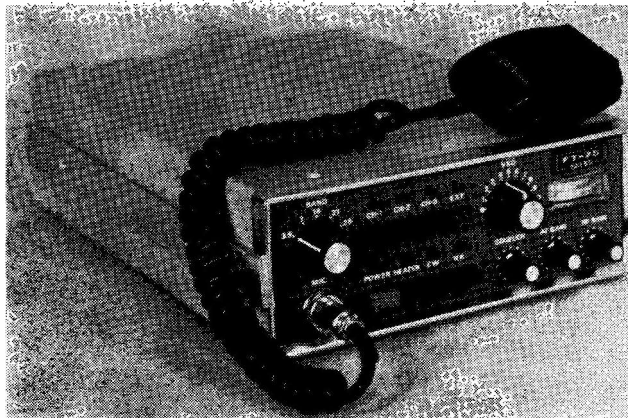
Hours: Tuesday to Saturday 9-5.30 (closed for lunch 1-2 and all day Monday)

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.

SERVICE ONLY (evenings and weekends): Dave Dryden, G3BKQ, 205 Main Street, Thornton, Leics.

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.

**MERRY
CHRISTMAS**



**MERRY
CHRISTMAS**

| | | | | | |
|--------------------------------|--------|------|---------------------------|--------|--------|
| FT-101 Transceiver, new model | ... .. | £255 | FT-200 Transceiver | ... .. | £134 |
| SP-101 Speaker for FT-101 | ... .. | £10 | SP-400 Speaker | ... .. | £10 |
| FP-200 A.C. p.s.u. for FT-200 | ... .. | £38 | FL-400 Transmitter | ... .. | £146 |
| FV-200 Remote VFO for FT-200 | ... .. | £38 | FL-2000B Linear Amplifier | ... .. | £148 |
| FR-400 Super de luxe Receiver | ... .. | £160 | FT-401 Transceiver | ... .. | £230 |
| FL-2100 Linear Amplifier | ... .. | £148 | SP-401 Speaker | ... .. | £10 |
| FV-401 Remote VFO | ... .. | £38 | YC355 Frequency Counter | ... .. | £111 |
| FT-2FB 2m. Transceiver | ... .. | £89 | YD844 Table Microphone | ... .. | £12 |
| FT-2 Auto. (Fitted 4 channels) | ... .. | £143 | YD846 Hand Microphone | ... .. | £5 |
| FR-50B Receiver | ... .. | £59 | FT-75 Transceiver | ... .. | £99 |
| FL-50B Transmitter | ... .. | £68 | FP-75 A.C. p.s.u. | ... .. | £22.50 |
| FV-101 Remote VFO | ... .. | £38 | DC-75 D.C. p.s.u. | ... .. | £22.50 |

FT101 OWNERS

We are obtaining conversion kits from the factory to improve the I.M. performance of older rigs. It is not a "do-it-yourself" kit but must be done properly with the appropriate test equipment. Any of our customers who feel the need for improved I.M. performance can drop us a line for further details.

OTHER EQUIPMENT

2m Equipment

Inoue IC21 £130 Matching VFO £35 Liner 2, 2m. SSB tunable £138

For the very few who have learnt that if you want top quality you usually have to pay for it, we offer the range of equipment made by Braun of W. Germany.

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| Braun SE600. No compromise, top quality, AM/CW/SSB/ FM rig | £460 | Braun 432 MHz converter, DGTC1702 | £36 |
| Braun SE600DIG with digital read-out | £535 | Braun 144/432 Varactor tripler LW270 | £35 |
| Braun SE280, 80 channel FM | £198 | Braun 144/432 transverter TTV1270 | £24 |
| Braun 2m. converter, DGTC22 | £20 | Braun tunable filter CWFO2 | £15 |

AERIALS

Fixed Vertical

Echo 8G 40-10 trap vertical, £18-50.
Diamond KB103 80 and 40 trap vertical, £26
Diamond KB104 20, 15 and 10m trap vertical, £17-50
Diamond KB105 80, 40, 20, 15, and 10m trap vertical, £34-50.

Multi-Element Beams

Asahi full size 3 element 20m. beam, £60 Asahi full size 4 element 10m. beam, £33.
Asahi full size 3 element 15m. beam, £32 Asahi full size 3 element 10m. beam, £18.
Asahi full size 4 element 15m. beam, £40
Carriage paid on fixed antennas.

Mobile Antennas

Diamond DP-100S complete 80-10m, £35 carriage paid.
This includes bumper mount. "Cor! what a price," you say. Yes, but cor! what a beautiful mobile antenna.
Tavasu base loaded 160 to 10m. complete set, £13-75 postage extra 30p.
Full range of "J" Beams in stock.

2m. Beams

G-Whips

Tribander (20, 15, and 10m.), £9-45.
Duobander (160 and 80m.), £9-00.
Multimobile 71 (20, 15, and 10m.), £12-50.
160, 80 and 40m. loading coils for Tribander and Multimobile, £4 each. Top whip section for loading coils, 70p.
Base section for all G-Whips, £1-45.
Carriage The whips are too long to go by mail, so we send them British Rail costing 50p. We can, if you wish send them Securicor for £1-75.

2m. Whips

The G-Whips $\frac{3}{4}$ vertical, £4-30 post paid.
Diamond DP-SH144 $\frac{3}{4}$ vertical with gutter mount, £9-50 carriage paid.
Diamond NGE 144 $\frac{1}{2}$ vertical with suction attachment for roof mounting, £8-50.

Coaxial Cable

| | |
|--|-----------|
| UR43 52 ohms, 5-1mm. dia., 4-33 dB attenuation per 100ft. at 10 MHz, 8p yard. | Carriage |
| UR70 72 ohms, 5-8mm. dia., 4-65 dB attenuation per 100ft. at 100 MHz, 10p yard. | extra |
| UR67 (equivalent to RG8/U) 50 ohms, 10-2mm. dia. 2-2 dB attenuation per 100ft. at 100MHz, 22p yard | on cable. |

Balanced Twin Feeders

Type 302. 75 ohm 2-9 dB attenuation per 100ft. at 50 MHz, 5p yard.
Type 306/B. 300 ohms 1-0 dB attenuation per 100ft. at 50 MHz, 5p yard.

Wattmeter

Kuranishi switched 0-12 ; 1-120 watts. This wattmeter/dummy load presents a constant 50 ohm impedance with better than 1:1-2 SWR over the frequency range of 3 to 500 MHz. Here is a piece of professional test gear at an Amateur price, £32.

Rotators

AR22R for 2m. beams or similar, £25.
TR44 for bigger arrays, £45 and the Ham-M for full size, heavy beams, £70.

Rotator Cable

For AR22R, 15p yard, for TR44 and Ham-M, 30p yard. This is heavy duty cable, well on top of the minimum requirement. Carriage extra.

Headphones

Low impedance padded types, very comfortable. These are stereo and fitted with a moulded stereo plug. Easily converted to mono, instructions enclosed, £2-75 post paid.

Morse Keys

Standard, plain brass with ball bearing pivots, £1 post paid.
Electronic Keyers, Katsumi EK9X, £8-50 post paid.

CW Code Practice Oscillator

A nice little oscillator with built-in speaker and tone control. Requires 1½v. per light battery, £2-20 post paid.

Microphones

50K dynamic PTT. Yaesu YD846, £5 YD844 Table Model, £12 post paid.

SWR Meters

The very popular Hanson SWR3 at £4-70 post paid or the top quality Asahi twin meter at £7-20 post paid.

VALVES

| | | | |
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| 6AH6, 80p | 6BZ6, 40p | 6CB6A, 42p | 6EH7, 45p |
| 6CL6, 50p | 6AN8, 74p | 6EW6, 75p | 12BY7A, 70p |
| 6BM8, 50p | 6AV6A, £1-15 | 7360, £2-10 | 6JM6A, £1-25 |
| EF183, 45p | 6GK6, 92p | 6JB6A, £2 | 572B, £8 |
| 6JS6C, £1-75 | 6KD6, £1-75 | | |

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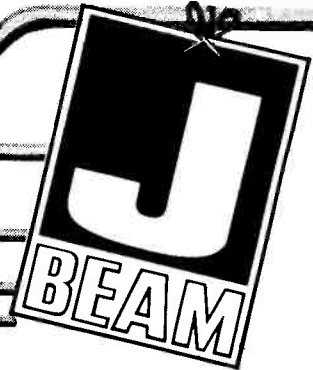
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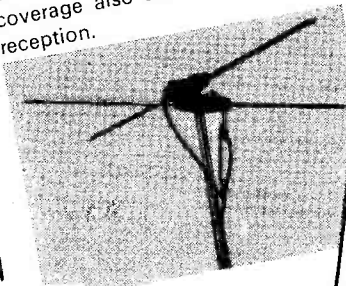
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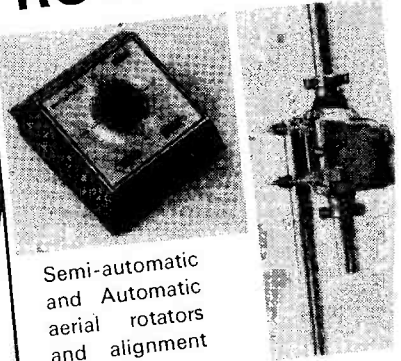
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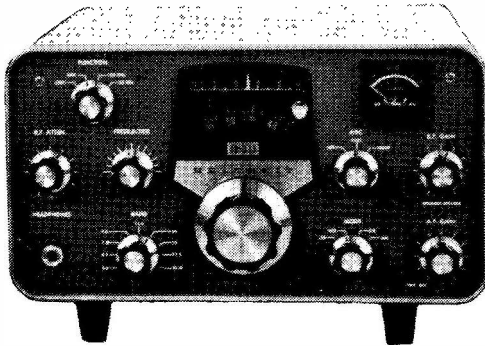


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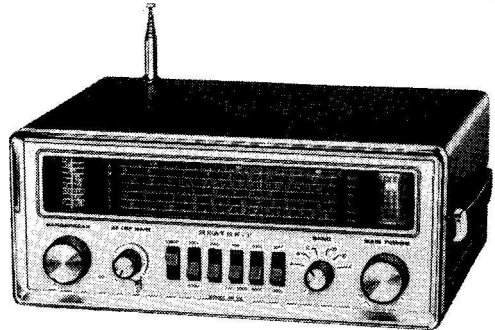
Nine switch-selected shortwave bands between 3.5 and 21.8 MHz : receives SSB, CW, and AM with professional fidelity. A 5 kHz AM crystal filter is supplied with the kit, with separate SSB and CW crystal filters available as optional accessories. Advance-design all solid-state circuitry including 19 transistors—four of which are MOSFETs; 11 oscillator crystals and one IC. Preassembled and prealigned Heath LMO. Large dial calibrated in 1 kHz increments. An IC crystal calibrator provides markers every 100 kHz or 25 kHz. Other features are a transistor-regulated power supply, a new RF attenuator, virtually backlash-free dial tuning, modular plug-in circuit boards plus ready-to-use wiring harness, and special extender boards for troubleshooting.

Kit K/SB-313 (less speaker) £185.00 Carriage 90p.

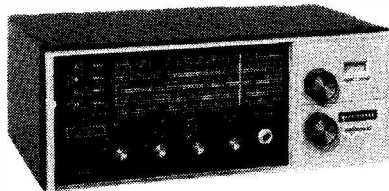
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Kit K/GR-78 £69.00 Carriage 50p.



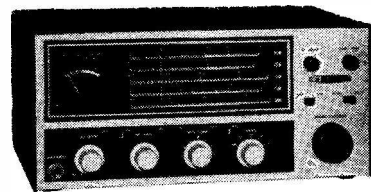
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550 kHz to 30 MHz in 4 wave bands.

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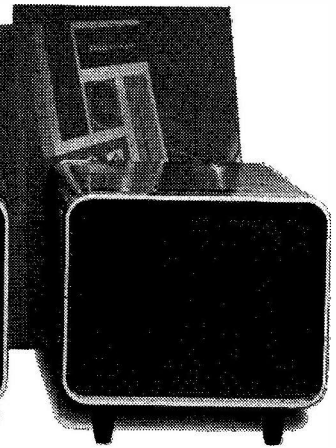
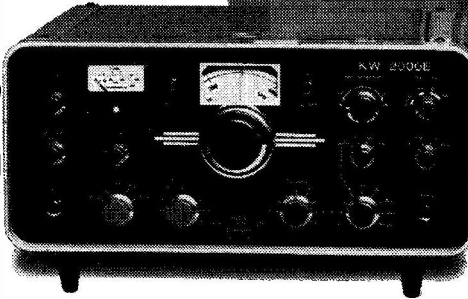


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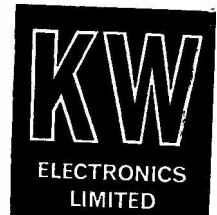
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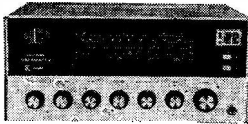
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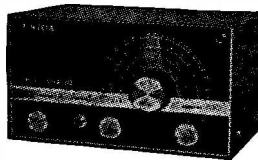
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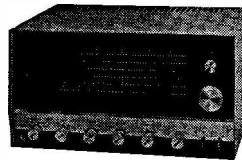
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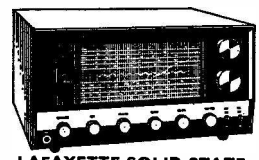
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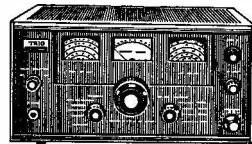
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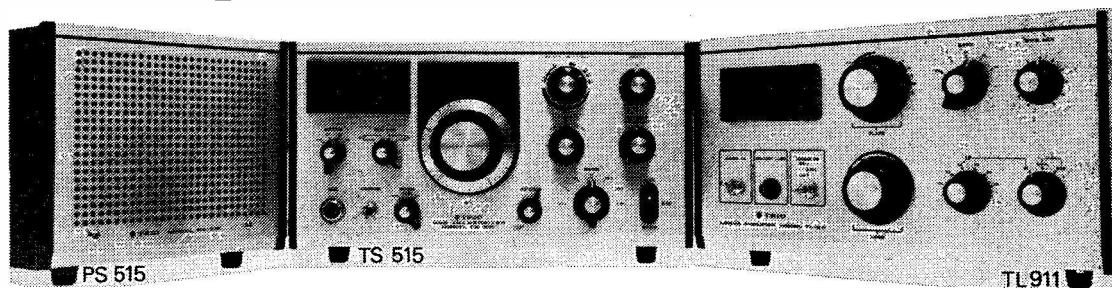
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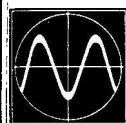
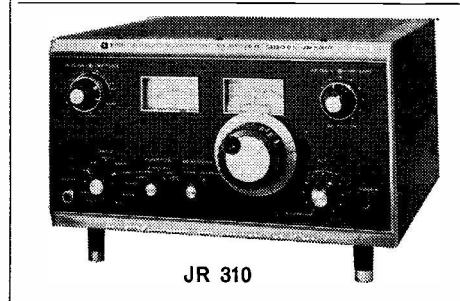
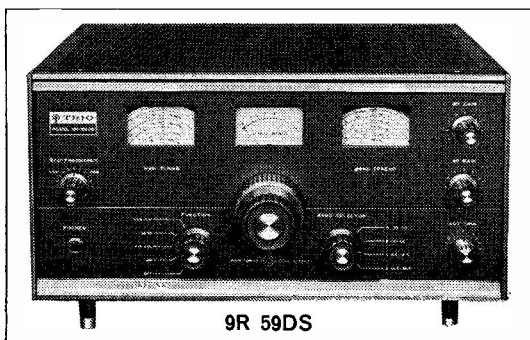
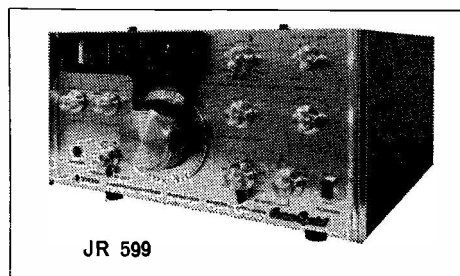
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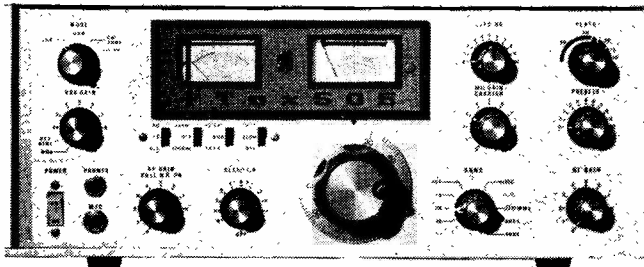


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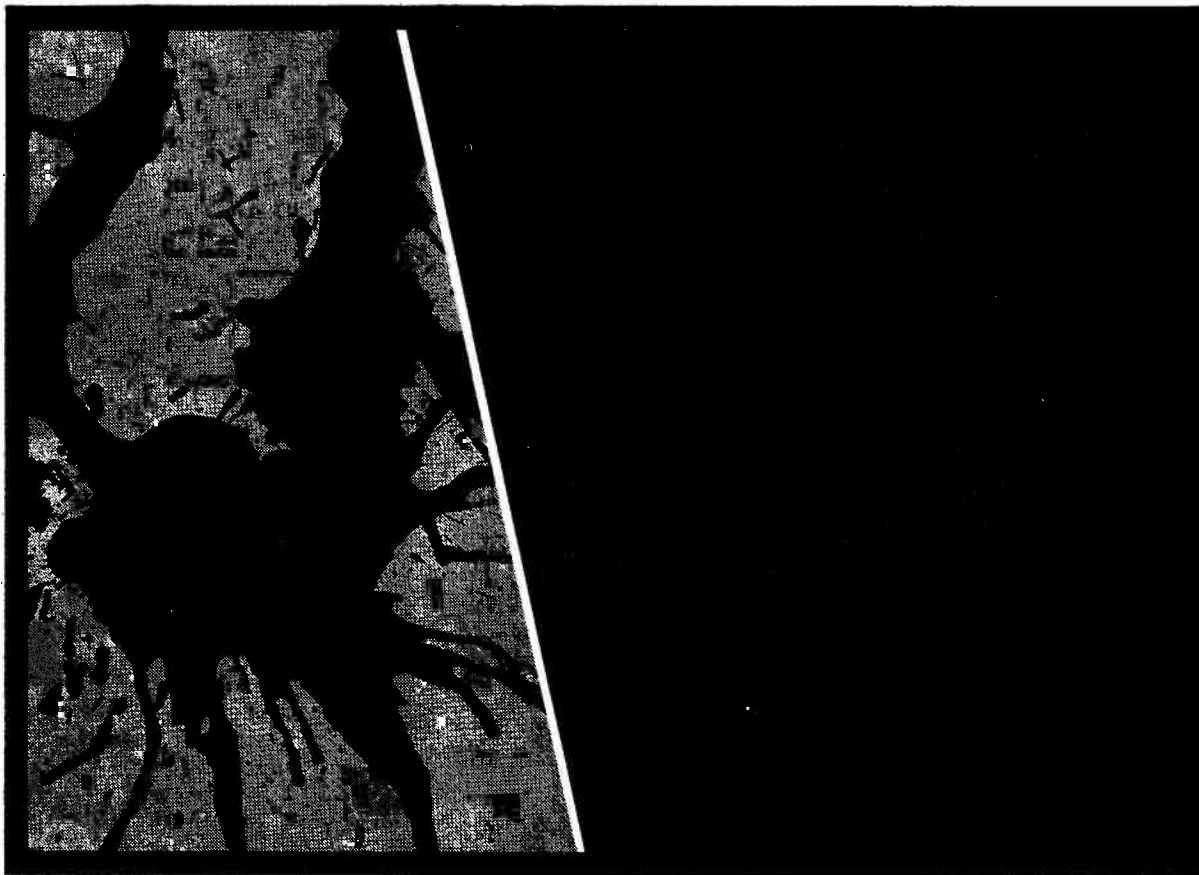
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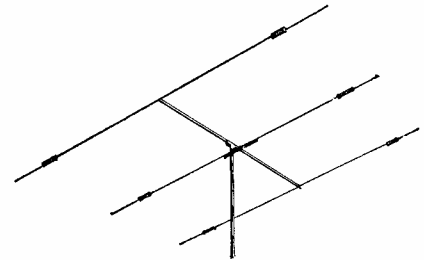
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The SHORT-WAVE *Magazine*

EDITORIAL

Leicester

Elsewhere in this issue, some pages of pictures report the A.R.R.A. Show, the first Amateur Radio Exhibition on a national scale ever held outside London.

There are conflicting opinions about it—what there was to see and to do. In the first place, that part of the Granby Halls used for the occasion was pretty dreary, judged even by London New Horticultural Hall standards. The parking was not at all as expected (it is true that road-work was going on all round the area, and the sign-posting was confusing) while catering and wash-room facilities were marginal by any standard.

Nevertheless, having said all that, the fact remains that the Exhibition itself was an undoubted success and a great credit to the organisers—in particular Les Hellier, G3TED (“Taurus Ted”) and Tom Darn, G3FGY, of Derby, who were responsible for laying it all on. It was probably not appreciated even by the exhibitors that in order to save them £100’s, stand construction was done by the organisers and all the electrical work undertaken by G3TED himself who, fortunately for everybody concerned, is a registered electrical contractor and so could over-ride any local objections.

Much will have been learnt from this Exhibition—by organisers and exhibitors. There is every reason why an Amateur Radio show on these lines should continue. Any such future effort by the Amateur Radio Retailers’ Association will have our unstinted support.



Christmas

It is now the time when we have the opportunity of sending all who see these lines Season’s Greetings. We are very fortunate in having a large body of readers and advertisers whose support over the years we have always cherished—for on them we rely for keeping us to our task of furthering the cause and interests of Amateur Radio.

Happy Christmas!

*Austin Forsyth
G6FO*

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

AS your conductor settles himself down to write this, early in the evening, the onset of winter conditions is beginning to become noticeable, by way of an increase in the "noises off" from various heighbourhood thermostically-controlled gadgets operating from the mains, not to mention the fact that Twenty is beginning to close a bit earlier in the evening—we shall soon be in that winter state where the workers of the world arrive home too late for any but exceptional conditions on the HF/DX bands.

Of course, for the hardy souls, there is always Forty—never a dull moment, some say—never a decent moment, in the opinion of others equally qualified to pass an opinion. However, with due respect to both sides, Forty as a band is not half as bad as it sounds when conventional SSB equipment is carefully driven in the "receive" mode, or adequate selectivity used for CW, always in conjunction with what is nowadays regarded as normally good SSB-standard stability in receivers.

As an additional precaution, use a constant-voltage transformer on the mains-input and an RF attenuator ahead of the favourite receiver on 7 MHz—a newly-licensed G4 in the shack recently was quite amazed at the amount and quality of the phone signals revealed by use of the attenuator, which were all quite inaudible under the band noise with the aerial directly connected. Why not give it a whirl?

Bits and Pieces

Talking of Forty, Wirral DX Association are having a QSO-Party on December 31, from 1400 to 1700z. Score 1 point for a non-member G station, two points for a member or associate in the U.K. and 3 points for a non-U.K. station. An extra point can be gained when you meet another Wirral DX Association member by giving him a list of the previous 5 QSO's.

Contest exchange to include name and QTH when working non-member. Any mode goes. Entries to G3OKA—QTHR—by January 10, 1973. Anywhere on 7 MHz.

Slow-Scan TV addicts will be interested in the third World-Wide Slow-Scan TV contest, sponsored by *CQ Elettronica*. The contest is over the period 1500-2200z on February 10, also 0700-1400z on February 18. All details from Prof. Franco Fanti, Via A. Dallolio 19, 40139 Bologna, Italy.

A couple of the **Top-Band DX Contests**: The ARRL event is from 2200z December 8 to 1600z December 10. *No DX-DX contacts*; you score for working W's—contest exchange will be RST plus ARRL section or country, CW only. Entries by January 10, to ARRL Hq., 225 Main Street, Newington, Conn., 06111.

Then there is the **CQ WW DX**

160 Contest, 2200 January 26, to 1600z January 28—Rules are the same as last year, details and summary sheets from *CQ Magazine*, 14 Vanderverter Avenue, Port Washington, L.I., N.Y. 11050, U.S.A. Details of date for entering logs not quoted as yet, but will no doubt be with us by next CDXN.

For the **QRP** types, a contest put on by the West Germans, 1500z January 6, to 1500z January 7, with a pause of at least eight hours divided into one or two parts. *Less* than 10 watts input to the PA. Exchange a seven-figure number comprising RST, plus the QSO number starting from 001, plus a stroke and the number of watts input rounded to the nearest whole number. Add an "X" if the Tx is crystal-controlled, e.g., 579 001 /9X. Score 1 for own country, two for another country in the same continent, three points for a DX QSO, plus three extra points



Not just another lighthouse but the QTH from which GW3UUZ, "Andy the Light", now operates. Previously, he was at Nash Point Lighthouse, Glam., whence he was very well known on Top Band. Since, he has been posted to The Skerries Light, on an island near Holyhead, where he has a 250ft. wire, up 119ft. at one end, to a mast on a neighbouring islet. His duty roster is two months at the Light and then 28 days off. He runs a Sommerkamp FT-250 transceiver from the QTH we see here, where the winds are so strong that it is difficult to keep antennae airborne. He is on most Sundays around 3725 kHz from about 1430z, and would like to work old friends.

if the QSO is with another station entering in the contest, *i.e.*, 4, 5, or 6 points. Further, the points claim may be doubled if you are either crystal controlled or running below three watts. For multiplier, each DXCC country in your own continent counts one, each DXCC country elsewhere counts two. Separate logs for each band, with a summary sheet to show the full score of QSO points times multiplier, go to Hartmut Weber, DJ7ST, D-3201 Derneburg, Am Walde 83, West Germany, by January 29, 1973.

Anyone fancy a trip to 4X4 next June? Israel Amateur Radio Club is holding an International Amateur Radio Symposium from June 24-29. Enquiries to Israel Amateur Radio Club, Tel Aviv, P.O. Box 16271, Israel.

More word from DL1CU regarding the recent SY1MA operation, during which they made 2,300 QSO's. The operation, says DL1CU, has received approval from ARRL as a new country for DXCC purposes. DX QSL's *via* Postbox 1209, Athens; Europeans via DJ6TK; and SWL's to Felix, DL1CU, Box 585, 7 Stuttgart 1, with envelope and IRC.

A recent QSO between G8NY (Folkestone) and VK9RY is of interest. Ron is looking-out for G's during 1000-1200z, over either 28540-28600 kHz or 21270-21300 kHz. He also warns, "do not be sucked in by promises of QSL cards by Bureau from VK9/Papua/New Guinea, as no such arrangements exist." VK9RY has a Yaesu FT-DX400 barefooted, plus a six-element wide-spaced monobander on Fifteen and a four-element Quad on Ten, not to mention a ground-plane on Twenty. Tnx to G8NY for passing on this information.

80, 40, and QRP

Taking the last first, QRP is a rewarding way of attacking Amateur Radio operating, in the view of G3ZOD (Stockport), who has a Codar AR5 on Eighty, at twelve watts, to a rather poor end-fed aerial system coupled against a three-foot copper rod earth twenty feet away from the transmitter. With this set-up, CW covers all of Europe handsomely—reports from S7 to S9, some after calling other stations, some after CQ calls. In



The widely-known firm of John Mowlem & Co., Ltd., civil engineering contractors, celebrated their 150th anniversary during September. As the secretary of the Company is G3RYV and its managing director G3WUE, naturally they decided to have an amateur-band station on the air for the occasion. Here we see G3RYV operating GB3MLM, using K.W. equipment, with which all continents were covered within two days.

addition, by staying up late one Thursday evening, W1 and W2 contacts were made, and a KP4 raised but lost; 23 QSO's, spread over four days, plus the usual around-G contacts on CW, adds up to a statement that if the man behind the gear has skill, low power and a poor aerial system need be no bar to pleasant operating in the DX context. G3ZOD does not claim to be an 80-metre dab as his normal operating habit is VHF, his LF-band CW being just a pleasant diversion.

G2NJ (Peterborough) continues his collection of QRP contacts, and during the period in question worked G2CAS (5w.), G4AWT/P (5w.), G4QX(5w.), G4BJS(4w.) for the latter's first QSO, and G8PG (5w.), who has 31 countries worked on this power. To round it off, the day after his first letter, he worked G3TLX (Edgware), who used to be a regular correspondent to this piece until work got in the way; G3TLX was using just one watt of input.

G3DCS (Ipswich) only found time on Eighty and Forty to work G's and nearby Europeans, his weekends of late having become rather full of HF operation in the process of testing-out some new aerial ideas.

Early mornings on *Eighty* have not been encouraging enough to get G2DC to use the band, there

having been far too much commercial QRM to be fought through. On *Forty*, Jack has carried out some interesting experiments to determine the best time to work the band with minimum QRM—he finds the pattern to be 0001-0200z for S. America and Africa; 0200-0500z for Asia; 0600-0700z for VK/ZL, and between 2200 and 0500z for North America. In the course of his experiments, G2DC raised, all on CW: EP2BQ, HK4AJF, PY1DVG, UI8AAB, UL7EAM, UW9WR, UA0KAN, VK2BRK, VK2HW, VK2EO, VK2OQ, VK3MR, VK3APN, VK6HD, VK7GK, all W call areas, VE1-7, ZL1BHQ/M and ZL4BO.

It may be recalled that GW4BLE (Newport, Mon.) set out to work 100 countries in his first month—despite TVI he managed it in the first three weeks, and after six weeks operation had got up to 139 worked. *Eighty* did its share outside TV hours, Sideband accounting for CN8HD, W1, W2, W3, W4, WA4WRW/TF, VO1, VE1, VE3BBN, ZL2BT, ZL4LM, ZL4KF, ZL4LT and XE11IJ; CW saw to CN8CG. *Forty* was not so popular, and gave only CN8HD, one morning at 0700z.

One of the things that maintains the interest in Amateur Radio is its unexpectedness—G2HKU worked VE1ASJ on SSB on 3.5 MHz, on a band that was otherwise dead. The

VE was well over S9! *Forty* CW yielded CM2AM, VE3AKG, VK3MR and 9H1BM, while the other end of the band where the SSB is "gave" with OY5NS, VE3MP/P/4X, YV4AGP and 4M1BI.

G4AMT (Penzance) is, at the time of writing, the only member of the "Pirates of Penzance" to put in an appearance this month. He mentions that brother Paul, G4BKI, who reported for the first time last month, is still at the tender age of 14—will he make DXCC before his 15th birthday, we wonder? Terry has raised the G4AMT aerial for *Eighty* up to 70ft. and kept it as a straightforward dipole. It produced ZM4FG, CN8CG, ZC4DS, VP1BH, XE1IJ, ZD3X, CR4BC, many VE's, VO1FG, VO1HI, VO1MUN and a very interesting contact with K2LWR, who was S9+ at 0930 till past 1000, and

reckoned his signal was coming off the Aurora, as his beam was headed that way. Aerial experiments have also resulted in changes on *Forty* at G4AMT, where there are now crossed dipoles, fed separately and switchable, one at 60ft. and the other at 70 feet. The difference in gain on some stations has been as much as 20 dB and it also can do things to the QRM. SSB contacts were made with VK's, YV4TI, 6G1AA, FP8AA, HR1RF and VE3MR/4X, while CW made it with all W call areas, VE3BCH and VK3MR at 1530z.

GW3ZQN (Cardiff) tried the 90 watts his M & G transceiver gives on *Eighty* quite effectively—he hooked about 250 stations, of whom the best was VP2LX.

Top Band

Listening to MCC showed the band to be a bit more like we used to know it two or three years back—of late the activity has dropped remarkably, which is a sad sort of situation.

W1BB sends his *Bulletin*, reporting that the summer season was not bad at all—in terms of the Trans-Equatorial tests, indeed, a raging success until August, when things quietened down. There was, for instance, the PYØDVG operation from Martin Vas Is. which was queered by S9-plus noise, which must have annoyed PY1DVG no end, and FPØCA, St. Pierre, not to mention DU1PAR and VR1W/KB6DA. Data for this year's **Trans-Atlantic** and **Trans-Pacific** tests were given in this piece last month (p.539), so we will not repeat them. On a different tack, EL2CB made life a pleasure for quite a few, both in the U.S. and Europe. W4BRB found something interesting when Hurricane Agnes was around over June 17/18, and DX to the South was heard from dusk until the small hours, much of it being worked despite the terrific QRN level from the hurricane—its centre was about 250 miles away at the time. But, and this is the interesting bit, there was next to nothing to be heard, and that very weakly, north of the Florida/Georgia line.

On a more domestic note G2HKU bewails his lack of time, due to QRM from washing machine repairs, daughter's spin drier, pond pump, vacuum cleaner, friend's TV, apple

picking, hedging, ditching, and earning a crust, not to mention sleeping; but Ted still managed CW with GW3GCZ and SSB to DLØPG, DLØWW, GM3ONS/A, GM3YCB, GW3UCB and PAØPN, just to keep his hand in.

Top Band for GW3ZQN meant countries in the form of DK2BI, DL5KS, OH1VR, OH1RG, DLØWW, DLØPG, 4U1TU, OH2BO/1, and GM3YOR/P in the contest, with KV4FZ a gotaway. On the home front counties score, as the table shows, is now over the 100 mark, by way of 34 on CW and 66 on Phone, although, as with so many more of us, the loss of the GI portable activity during the summer has resulted in a shortage of Irish counties, only Down and Fermanagh being in the list.

Talking of counties, this month's end sees also the *end* of the counties game in its present form, with the changes in counties which become effective before very long. This means the need to think up a new entertainment for the competitively-minded evening Top-Band user, as distinct from the dawn DX-chaser. Various thoughts have been going through the mind on this subject, but perhaps everyone who brings their final tally up to date next month or in February's issue—or, indeed, anybody else with any idea—will drop a line with their own suggestions, so that, hopefully, we may contrive not to only invent a new game, but at the same time bring the activity level up on the band, both CW and Phone.

Down to Ten

G4AMT says he thought conditions of late had been pretty good, but he nevertheless did not spend much time on the band, though his short visit made SSB with 5B4AA, MP4TEE, VK6JJ, OD5BA and ET3USF.

Since he found Ten to be the only band on which he can operate without TVI trouble, GW4BLE has given it quite a going over. Among his 97 countries worked on the band in six weeks, we find A2CAA, A2CEW, CE5GO, CW3AA, YX5AJ, TI2IO, ZP5AQ, SM2AGD/CEØ (Easter Is.), 5VZYH, TG9DX, VP2LX (St. Lucia), 6G1AA—a special Mexican prefix for the contest—4M4UA, also a special,

BRIEF DX DATA

| Call | Details |
|--------|--|
| FYØRU | One for the Prefix-hunters. Try 14163 kHz, 1845z; 21295 kHz at 1715z. Jean-Pierre asks for QSL's via P.O. Box 336, Cayenne. |
| KA1DX | Minami Torishima, ex-Marcus Islands. 14205 kHz, 14195 kHz appear to be favoured, 0600-1100z. QSL via WA6AHF. |
| TJ1BF | Operator is K1ZES. 21285 kHz 1530z, or 14282 kHz around 2230z. QSL to WA4WTG. |
| TT8AC | 14240 kHz, 0700z; 28710 kHz, 1009z; 14265 kHz 1920z. Send the card to DJ1LP. |
| VQ9HCS | Aldabra Is. Harry has KW-2000B and a ground-plane, and will be available till March 1973. Try 28600 MHz around noon, or 21335 kHz, 1800z. QSL's to P.O. Box 84831, Mombasa, Kenya. |
| 4W1BC | Perhaps your best chance is by looking out for the Commonwealth DX Net, 14170 kHz, at 1500z on weekdays. NC is G3SUW, to whom 4W1BC QSL's are to go. |
| ZK1MA | Can be found on 14 MHz. 0400-0700z, using HW-100 and dipole; but his QSL manager, W6KNH, has received no logs from him for fifteen months. |

from YV—CX3WQ, ZF1EP, W7RM, VU25DK, 9G1HE, FY7AG, VP2MAH, W4GIW/VP7, VP2GBL, HT0A (a special from YN-land), CT2BG, PJ1AA, XT2AC, YA1DX, YA1OS, VP8KF, ZD3X, 9C9BQ (special from Iran), 3B8CZ, 8R1N, KG4FS, HR4DHS, KV4CF, VP2AA, VP2KF, ZD8KO, FB8XX, UI8OAA, ZS3CJ, 9J2WR and 9M2DQ, plus a goodly array of South Americans and Africans.

Now, at this point, let us look at Ten as seen through the eyes of 9M2DQ (Penang). James used GB3SX as a good indicator of conditions; it was audible on almost every day during the spring and the current autumn lifts in conditions, bearing out so many people's opinion that the trouble with Ten is more lack of activity than conditions. During a 21/28 MHz contest, James worked 82 U.K. stations, in a time-scale restricted because he has a local BCI problem. 9M2DQ also reminds U.K. stations of the activity of the British Commonwealth Net, now to be heard from Monday to Friday on 14170 kHz around 1500z, with G3SUW acting as controller, G3LQP having given up the task after four years. On a different train of thought, 9M2DQ remarks that *ex*-VK8MR has come to Penang and settled right opposite—the Quad looking straight into the beam at such range that when 9M2MR has his FT-101 switched *off*, the RF from 9M2DQ is enough to move the 9M2MR SWR meter! Many G's say to James that they envy him and his DX call; but as he says, they should consider the drawbacks—on *Fifteen* there is a JA to every kilocycle, on *Ten* to the U.K. there is the barrier of UA's with FM, to be battered through and, at this time of the year, every night, one can look around the sky and see lightning flashes in some direction or other, all night and every night—lovely QRN!

Unusually for him, G2DC applied SSB modulation to his rig on Ten, as the meat of the activity seemed to be in that mode; he worked G3MUL/CE3, MP4TEE, JA1-9, KG4FS, KP4DEC, LU4DSZ, RA0ABE, UA9CBO, UG6GAF, UI8OAA, VK6JJ, VS6AI, W1-Q, ZS5NZ, ZS6ZE, ZD8KO, ZC4BJ, ZE1BP, ZE6JN, XX6FL, 9J2AY, 9M2DQ and 9Y4MH. However, Jack did



G3LEX, Yeoman Warder Roy Reed, operates from 13, The Casemates, H.M. Tower of London, E.C.3. Here he is in full fig (less the uniform headgear) with his KW-2000B, which works into a trap dipole, rather hemmed in by the Tower buildings. G3LEX was licensed in 1956 and has done 22 years' service as a telegraphist in the Royal Air Force. His overseas postings brought him into contact, as an operator, with YL2AM, ZC4RC, KH6EJN and 9M4NA. He was appointed to the Tower last June.

not completely forsake his key, using it to raise UD6UHU, UL7IB, UA9GW, UA9SAA, UA9HAD, VK2EO, VK4KX, VK4YP, XW8BP, all W call areas, ZE3JO and ZL4BO.

At G3DCS there was an outcry on the subject of TVI; when Enver went to look at the offending Lantern, he found some kind soul had got there before him and fitted a high-pass filter. Great, you may think. *But*, inside it there was a whisker of copper from the braid, touching the inner conductor. A touch with a finger, and *exit* the TVI—there must be a moral to this tale! In the interim, G3DCS has been continuing to play with aeriels, but found time to work CW with UA6HBK and UA6AE, while SSB gave him SV0WJJ, RA3ACQ, and 9H1C.

W6AM (Long Beach) is a great 14 MHz man—but to stay at the top of the tree for as long as he has you have to look elsewhere sometimes. In the process, W6AM made a contact with XV5AC, who told him the station would be on all bands 160 to 10 metres during the

CQ WW contests—another new one possible on Top Band?

Having received a tip from the local SWLs that Ten was giving, G3YRR, to his surprise worked ZP, KZ5, CN, YA, W5, KV4 and other DX-y signals, the while getting little or no joy on the other bands. However, all things however good have to come to an end, and the G3YRR fortnight of DX abruptly became a week of DX when someone else went sick and G3YRR had to get up and hold the fort. Such is life!

Twenty Metres

This is where the action is, the QRM is, the noises-off are, and the power is. For your conductor, much of the time which could have been used for operating has been occupied with the construction of the ultimate secret weapon for the shack to make the DX come back, which at this writing is now complete and awaits only the actual construction, as against design work, of its power supply—we *must* remember to get a soldering-iron . . . On a different

line of thought, DX'ing at its most frustrating was represented by WA9OTH/TF a couple of days or so ago, booming in at strengths up to S9, and working Europeans; but every time we began to feel we were near the top of the pile, he either faded out for a few minutes or was wiped out. We never did get to working the guy.

Not so G2HKU, who confined himself this month to keeping his regular skeds, and so regularly worked ZL1VN, ZL3JQ, ZL3RS, and ZL3SE on SSB.

Another one on exciter power was GW3ZQN who at last has managed to achieve his ambition to work a ZL—ZL3JC did the honours. Other star turns were KL7GQH, who stumped up with a very rapid card, and HL9HM who called *him* when the GW3ZQN call to a VO1 failed to raise a reply! All the working was done with 90 watts to a Top-Band dipole.

W6AM has his pet stamping-ground on *Twenty*. CW accounted for EI2BY, UT5TZ, VR1AA, and SSB for EP2YL, W5NW, 5R5AT, 4W1BC, DL5DD, SY1MA, VP8MJ, SV0WUU, JY7YL, MP4TEE, DL7FT, 4X4CW, 4X4FS, TL8LI

and W6RLP/MM "Region 3, near Singapore." Incidentally, readers of long memory may recall that a few years ago W6AM disposed of some large part of Rhombic Farm; at that time he kept four choice plots of building land, 1100 feet high overlooking the Pacific, and the rest of the aerial farm. Now Don is letting the four building plots go, so if anyone wants a really *choice* DX QTH, W6AM is the man to talk to!

It looks rather as if G3DCS spent most of his operating time on *Twenty* or *Fifteen*; on *Twenty* CW there were various W's, VE's, PY1HQ, G3ZXH/MM, G3TZL/MM, CR4AG, YV5BZ and W2DXL/VP9, while the SSB talk power was used for QSO's with various W and VE stations, also CR6IK, ZD3X, 9G1WW, PY1CAD and XV5AC.

In the view of G2DC, conditions on *Twenty* were about "par for the course" as the golfers say, although Jack did not spend much time there thanks to the counter attractions on *Ten* and *Fifteen*. Nonetheless, he found CW time for VK1-9, VR1AA, ZL1-4, JA1-8, and 6W8EM, plus SSB with VK2-8, ZL1-4, UA0ZAI, UA0ZP, W1-0

and VE1-7.

As we indicated elsewhere, GW4BLE has TVI problems, but he did try a hand at *Twenty* out of TV time, and came up with CO8QS, KP4DPN, VB1AA, VP8HZ, VP8MS, XX6FL, ZB2BL, ZD7SD and the usual VK/ZL contacts.

With all his gaggle of skywires, G4AMT still does not run to a beam on *Twenty*; however despite this handicap, as compared with other bands, *Twenty* gave him ZS5EL, OD5GU, W6PWR, W6UYC, WB6KUC and VP9GE on SSB, plus ZM4NH (at noon), CN2NR and C31EG.

The Sex War

The Phone end of the YL/OM contest takes place from 1800z February 24 to 1800z February 25, while the CW section is over the same period of the weekend March 10-11. OM's call "CQ YL" and the women "CQ OM," and score one point for each QSO between the sexes. The multiplier is the sum of the number of countries and ARRL sections worked. If you have 150 watts or *less* CW, or 300 watts or *less* p.e.p. SSB, multiply the resulting score by 1.25. Send separate logs for the two contests, postmarked no later than April 1 and April 23 respectively, to Eila Russell, WA8EBS, 4348 W. 223rd Street, Fairview Park, Ohio 44126, U.S.A. Incidentally, the contest exchange is quite a normal contest one, comprising QSO number, RS or RST and ARRL section or country, logs to show date, time, band, power and transmitter.

Fifteen

Let G3ZPF (Dudley) have a say at this point; anent our comments on using WN's on *Fifteen* for CW practice, David has run up against some who can drive a pretty nifty pump-handle—and their T9x signals need to be copied by a proportion of the Europeans, both sides of the Iron Curtain. The SSB signals worked were JA2JW, 3X1P, VS6FB, HR2HHP, 9M2DQ, CR7TJ, ZS6ZE, 7X0GM, KG6JBO, HR1CN, PZ1CU, HC2LF, 3B8CZ, 7Q7LA, VPIBH, PY2BCQ, ZD8RW, VU25DK, HS4AGZ, IG9BAF, VP9BO, CW2CS, LU9EAK, PJ1AA, TG0AA, GB3ARE (all of sixty miles away!),



Arthur Bevington, G5KS, 53 Knotsall Lane, Langley, near Birmingham, was licensed in 1925 at the age of fourteen. On retirement, he decided—having been through all the rest in the Amateur Radio contest—to try A/TV, and with this equipment he now signs G6AFV/T. With his son (background), they have an A/TV studio set-up and can transmit good pictures well received over the local area.



We were very glad to get, recently, yet another OT-picture—this time that of G2BY, H. E. Whatley, The Coppice, Llanvair Close, South Ascot, Berks., and here is his station as it was in 1929. The Tx then was TPTG with DE5B bright emitter and plug-in coils for all bands, power being from an ML rotary-converter. The Rx was an O-V-1 (and how sensitive we could make them in those days!). The phones he is wearing are Brown's Type A, still in use today with undiminished sensitivity. G2BY, who now runs at FT-401, remarks that he no longer looks as young as he does in this picture!

ZD3X, 5Z4MG and all W call areas, also VE1, 2, 3, 5, 6, and 7. CW was not neglected too much, being used for working W2YLE, WN1QPE, WN6MPT and WN8LWW. On a different line, G3ZPF has now accumulated the needful 100 cards, although he has worked 175 countries, so his batch of cards will soon be aimed in the appropriate direction for a DXCC certificate.

Just a couple of QSO's on Fifteen appear in the W6AM log, but G3KFE wouldn't actually object to a QSO with either of 6W8AL or ZD8RW!

For G3DCS the fun was fast and furious, most W's being booked in, also VE's, G3KMO/VP9, KZ5PY, UM8DZ, W1BPW/VP9, VK3AZY, UK9MAA, JA6GU, JH3FGV, JR6II and UA0AN on CW, not to mention lots of W's and VE's on Sideband.

While he does not go so far as some of our correspondents, G2DC will admit conditions were quite good, although in the morning the band is full of JA's and if you work one you find yourself with a queue of them. On the other hand, afternoons are not so hot, Ringwood area at least having a peculiar surging sort of "thing," believed man-made, which plasters most of the CW segment and makes life difficult.

SSB gave CE8AO, CR6GA, CR7AF, EP2BQ, EP2TW, ET3USA, JA1-9, KH6RS, KH6GMP, K6CIT/KH6, TI2FCD, TR8VE, TT8EC, TG9YN, LU1AEP, UK0SAA, VK4RH, VK4RX, VK4AK, VK9RY, VE1-7, W1-0, YS1FEA, ZS1WX, ZS6ZE, ZD8KO, 3X1P, 5N5VSH, 5X5NK, 9H4D, 9V1PQ and 9G1SC. The CW standby came up with contacts to JA1-9, UA9BB, UW9WS, VK2CX, VK2EO, VK2BAN, VK2GW, VK2APK, VK3MJ, VK4MY, VK6HD, VK8HA, ZM2AH, all W call districts, VE1-4 and VE7.

Thanks to his concentration on Ten, GW4BLE had little time for Fifteen, although he managed to QSO CR6QA, ET3USB, HR3AC, UK6FAC/UD6, YA1AH, VE7SV, 9J2DT and 4W1BC, who is incidentally, ex-G4ATQ.

That Quad on Fifteen at G4AMT seems to be doing its stuff well enough, says its owner, who does not propose to alter it for the moment. It connected him with all W call areas (including 21 W7's), VE1-8, JA1ELY, JA2SWJ, JA3WGM,

JA8MWU, JA8AYN, JH1GTQ, CR7LE, YA1IOS, YA1TCA, EP2TW, VQ9R, VK3VK, UI80AA, W0DAE/KH6, 9E3USA, ZD3X, XT2AC, 5T5BH, VP9GE and HP1LC. CW found JR1FVI, and VP9GD.

Here and There

Has anyone got a tame, mechanically minded, climbing monkey? This request, although not quite in these terms, comes from G3YRR, who finds he has a multi-band vertical perched on a chimney fifty merry feet above ground, in a position where it can only be got at by calling in a firm of scaffolders—and the darn thing seems to have the capacity-hat working loose, so that one of the wires moves gently in the breeze.

G3DCS has been enjoying his other interest, playing with aerials; on Twenty, there are a brace of quarter-wave verticals, driven through a switch-box embodying phasing lines, so that by feeding both, in appropriate phase, various directive patterns can be obtained—it is interesting to observe that often the required aim for the best signal bears little relationship to the Great Circle direction, re-inforcing the warning so often forgotten that it is always worth while, when you hear a DX signal in the beam, to check whether the signal is best in some odd direction—he might be beaming the "wrong way round," and so appear opposite where he could be expected. Another aerial ploy at G3DCS is to use the same box of lines with a couple of vertical 28/21 MHz common-feeder dipoles, and made of twin feeder, fed to give some gain and directivity; however, the system is not proved out yet insofar as more work needs to be done to get the VSWR right—as a matter or interest, these antennae are hung up by pieces of string from the legs of the 80-metre rectangle.

That hurricane around Fiji in the third week of October set G2DC wondering as to how VR1AA had coped. He and G3JAF decided to call ZL on SSB and enlist their

Reporting the HF Bands

COUNTIES TABLE

| Callsign | TOP BAND | | Total Score |
|----------|-------------|-----------------|-------------|
| | Counties CW | Countries Phone | |
| GM3YOR | 69 | 41 | 110 |
| GW3ZQN | 34 | 66 | 100 |
| G3VLX | 33 | 41 | 74 |
| G4ALG | 44 | 25 | 69 |
| G4ASV | 3 | 65 | 68 |
| GW3WSU | — | 57 | 57 |
| G3YPT | 44 | 8 | 52 |
| G4AXP | — | 43 | 43 |
| G3DCS | 14 | — | 14 |

This Table will run till December 31, 1972. Starting date January 1, 1972. Any mode goes.

help; they raised ZM2SA on the morning of October 25, and the latter promptly asked G2DC if "the blacksmith at the bottom of the hill was still operational." The following day, they raised ZL2APT to ask for news, when who should show up on the channel but VR1AA himself, very weak, but able to say through ZL2APT that all was well. It's a small world, our radio one!

G2HKU comes back to our thoughts on pile-ups in a previous piece, commenting that you can always avoid them if you want to. Ted is far more perturbed about the bad language and deliberate QRM on Top Band and Eighty, which cannot be to the common good. As a thought, G2HKU suggests that



Arthur Orchin, G8PT, Kerajo, Marina Avenue, Appley, Ryde, I.o.W. runs a K.W. Vanguard Tx and a Trio receiver, and goes mainly for the early morning stuff on Forty. Being much-travelled in France he is well known to many of our French colleagues.

this country should adopt a somewhat similar form of self-policing to the American ARRL "Official Observer"—perhaps he has a point, at that.

Conclusion

And so we come to the end of another CDXN, and the end of another year. To all our readers

and correspondents, best wishes for a Happy Christmas, and a Successful and Prosperous New Year. For next time, in the January 1973 issue, your deadlines will be to arrive by first post December 2, addressed "CDXN," SHORT WAVE MAGAZINE, BUCKINGHAM, so we can at least try to beat the Christmas Rush on the mails.

"LICENCE POINT"—CORRECTION

On the Editorial page for November, the item under this heading was somewhat ambiguous because in the printing-off a line had been dropped. This was to the effect that only those who have never passed the R.A.E. would "have to go through it all again". In other words, an R.A.E. pass-certificate is valid for life. But in fact the paragraph as printed *does* apply to about 25%-30% of those listed in the current U.K. *Call Book*. These comprise all pre-War licence holders; those with an AA licence before 1939 (the G2/3's) who had their permits automatically made "full" as an act of grace after the War; and the large number of G3/3's who were given full licences by virtue of Service exemption (long since discontinued). What it amounts to is that if you've never passed the R.A.E. and you let your ticket slip for a year, you'll be required to re-prove your worth! (And we hope that this is the end of *that* one!)

RSGB FINANCES

To anyone having an interest in unravelling balance sheets, the current RSGB statement of accounts is worth some scrutiny. It shows a surplus of £4,000+ on the year's working. As the total income was about £76,000 it can be said that the earning represents about 5% or so as profit—while this is not much, at least it goes to reduce the heavy deficit incurred over recent years. Figures of particular interest are the increase of income for the year of £20,000 and a staff bill increased by about £3,000.

We are unable this year to recommend nominations for the RSGB council because the voting papers had to be in before this will appear in print. The lists reached us too late for comment in the November issue. There were 12 nominations for three vacancies (a healthy sign) and it will be interesting to see whether Balestrini, G3BPT; Pratt, G3KEP; and Wainwright, G3YMH were elected.

THE 1972 J-O-T-A

*Fifteenth International Scout Event
October 21-22, 1972*

DESPITE the general feeling that conditions were not as good as last year's, it would appear from reports received that results were up to about the same level. Conditions for DX working were poor and the number of VK/ZL stations accounted for is certainly down on the 1971 result. There are no reports of J-O-T-A stations worked in the U.S. West Coast regions and whilst fewer South American contacts are recorded, conditions for Africa were generally better. On the other hand, DX propagation was showing a marked improvement (Murphy's Law again!) as the Jamboree drew to a close.

Reports suggest that more than 250 U.K. stations were taking part (in G, GI, GM and GW) and the total "attendance" of Scouts and Guides at these stations is estimated at ten to fifteen thousand.

Our U.K. J-O-T-A supporters worked between them more than 350 different stations overseas, in about 50 countries. European participation was again at a high level, there being on the air for the event some 30 I's, 28 LA's, 22 OZ's, 30 PAØ's and 36 SM's, all taking part specifically in the J-O-T-A context. More stations than ever joining in throughout the world were operated by licensed members of the Scout Movement. And many more Scout operators were taking advantage of being able to exchange information about their countries and matters affecting Scouting generally. This *not* being a Contest, there was more time for chat, which is in the spirit of the event.

Once again, it was a vintage year for J-O-T-A and

all reporting in say "Looking forward to 1973".

* * *

Following are some of the individual reports received in our Editorial Dept. from those taking part in this year's Scout Jamboree-On-The-Air, now an important international event in the Amateur Radio calendar of activities.

Geneva, HB9BS: This was the Hq. station of the Scout World Bureau and the target for much of the EU J-O-T-A activity. But they were handicapped by severe Wx conditions affecting their antennae, and a power supply failure. They had to call it a day by 1600z on the 22nd, having worked (under very difficult operating conditions) 120 Scout stations in 27 countries.

Baden-Powell House (London), GB3BPH: From the comparative comfort of the U.K. Scout Hq. station, with eight licensed Scout operators working all bands, including two metres, to their unutterable astonishment results were *exactly* those of last year—141 different Scout stations raised in 18 countries. (This is another sort of Murphy's Law!) Best Scout DX is shown as PJ2CE, PJ7RO, VO1EI, W3KWH and ZE1JM.

Nottingham, GB3NCS: On the air for the 24th Cavendish Scouts, operated by the local Club from the Scouts' own Hq., using mainly SSB on 15-20-80m., also a two-metre AM rig. Some 160 contacts were made (25 of them on two metres) about half those on the HF bands being with other Scout stations in the U.K.

Cavan, EI2CBS: Put on by EI8AI and EI6S, for their fourth J-O-T-A occasion, from the Scout Den in Cavan. More than 300 QSO's were effected, no less than 84 being with Jamboree stations. Their best (Scout) DX was with VK6, ZE1 and EP2—nice going, and they are to be congratulated on a worth-while effort.

EI2CBS, Cavan, Eire, with members of the 2nd/4th Troops Cavan Scouts—EI8AI at the microphone, assisted by EI6S, standing. This was their fourth J-O-T-A appearance and more than 300 contacts were made.



The GB3MLA (Maidstone District Scouts) set-up, with G3YJS at microphone, G3XUN (background, left) and some of their visitors. They were assisted by four other local operators and G3NRU, who is also the local Scout Commissioner.



Limassol, ZC4AVU: For the Akrotiri (Cyprus) Venture Scouts and kept on the air for 43 out of the 48 possible hours, operation being mainly by ZC4TE and ZC4DS, with local Club assistance. They had two complete rigs in action, alternately. All continents were worked, their best Scout DX being PY2DJJ (197th Rio Franco), VK2BWJ (1st Roseville) and WA4MBP (637th Buffalo), Their total of Scout stations worked was 109 in 27 countries, and their aggregate of 228 QSO's covered all-Italy (11 to 19); most of the U.S. and Australia; and all South African call areas. Of course, with their ZC4 callsign it only needed one "CQ Jamboree" call to initiate a pile-up, with many Scout stations standing-by patiently for a word. The ZC4AVU report says "though Italians and Russians did break-in on our J-O-T-A QSO's and insisted on a contact for the QSL, the manners of all Jamboree stations were impeccable, keeping QSO-time to a minimum and moving off the channel so that J-O-T-A stations waiting could work us". Much else of interest is included in this excellent report, including a detailed log—we only wish that we had the space to cover it all.

Cullingworth, Yorks., G2SU/A: For the 11th Keighley (Cullingworth) Scout Group at their own Hq., arranged by the Northern Heights Amateur Radio Society, working all bands and two metres. Interesting Scout-station contacts were G3OBD/A (Brownsea Is., Poole Harbour, where it all started with the very first Scout Camp, early in the century), GB3BPH, Baden-Powell House, the U.K. Scout Hq.; LA6JAM and I6TAD. The BBC's "Radio Leeds" OB team visited G2SU/A and recorded their QSO with I6TAD Scouts. This was subsequently played over the local Leeds station news broadcast. For the visiting Scouts, diversions were provided in the shape of closed-circuit A/TV, the working of RTTY and a display of 1925-style wireless equipment by G3USH. At the start of operations, the trap dipole being used with the rig did not appear to be working too well; something

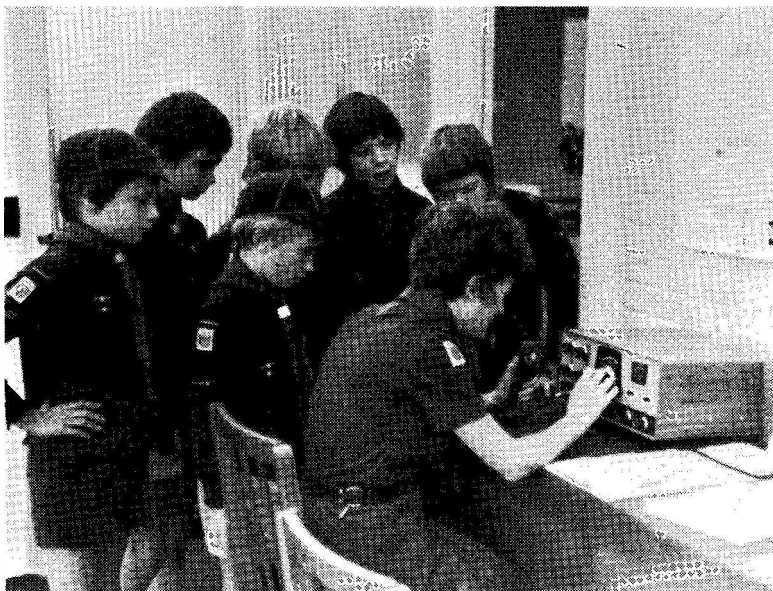
seemed to be amiss. An investigation, in pitch darkness, disclosed that the balun had been connected back-to-front and upside down (by a G3/3 who wishes to remain anonymous!).

Hale Barns (Cheshire), GB3HBS: For many J-O-T-A years now, a station has been operated for the 1st Hale Barns Scout Group by Geoff. Barnes, G3AOS, assisted this year by G3WWX. In all, some 200 contacts were made with 50 countries, these including 40 Scout stations outside the U.K. and 38 within the British Isles. Of particular interest was their QSO with W3USS, the U.S. amateur station on Capitol Hill, Washington, D.C. Another was with ZD8RR (Ascension Is. Scouts). Their list includes many interesting DX contacts in the Scout context—such as HP, CT2, ZL, ZE, VE, CR7, LU, 9Y4 and 8P6—proving the strength of the Scout Movement in distant parts. Here again, the local BBC's "Radio Manchester" took an interest, making recordings which were subsequently broadcast.

Carlisle, GB3CUS: Put on by the R.A.F. Carlisle Amateur Radio Society for the 8th Carlisle (Upperby) Scouts, and kept on the air for 47 of the 48 hours (*phew!*) with eight operators, running two stations and also an SWL Rx set-up (Racal RA-17, 150ft. Ae., with ATU—*nice!*) covering 15-20-40-80m. The log totals add up to 163 contacts in 29 countries, of which 70 were with Scout stations in 16 countries—as the report says "nothing spectacular but most interesting, one QSO being with W3ESE in Carlisle, Penna. Not a sausage on Ten".

Southampton (Dibden Purlieu), GB3NFE: Operated by G3OZT, the Scout Leader for the 3rd New Forest (East) Scouts, he worked 32 Scout groups in 13 countries, entirely on 20 metres. A very good effort by a single-station J-O-T-A operator.

Stone, Staffs., GB2JOA: Five operators from the North



Miss José Brooker, G3ZZZ, 20 Farnham Avenue, Hassocks, Sussex, with members of her 1st Hassocks Scout Group for this year's J-O-T-A. Keeping to 20m. and 80m. for most of the time, 43 Scout stations in all were worked. She and her father, G3JMB, previously gave talks on Amateur Radio to Scouts and Venture Scouts so that they would have some idea of what the operating was all about.

Staffs. Amateur Radio Society put on three rigs for the 5th (Stone) St. Michael's Scout Group. In 30 hours' operation they worked nearly 200 stations, of which 69 were J-O-T-A, 17 of them being overseas. Interesting SCOUT DX included VK2AWH, HV3SJ, ZS6KE and PY1EMM, also several EU stations on for the event. GB2JOA was on two metres as well as the HF bands.

Hassocks, Sussex, G3ZZZ: Operated by Miss José Brooker (holder of the c/s) for the 1st Hassocks Scout Group, for which she is one of the Cub Leaders. Using 20m. and 80m. more than 40 Scout stations were worked over the period, 18 of them in nine EU countries. It was their most successful J-O-T-A participation yet, and G3ZZZ had the assistance of her father (G3JMB) and G3WZD—they all thoroughly enjoyed themselves.

Cyprus, 5B4AA: On the air for a limited period with the 22nd Famagusta Scouts, operated by ZC4PE, ex-G3XMQ, who, in addition to several U.K. stations, worked his father G3XTG, operating for the Exeter District Scouts—the latter was also tape-recording all good DX contacts heard with the idea of producing a record for future J-O-T-A publicity—a Good Thought!

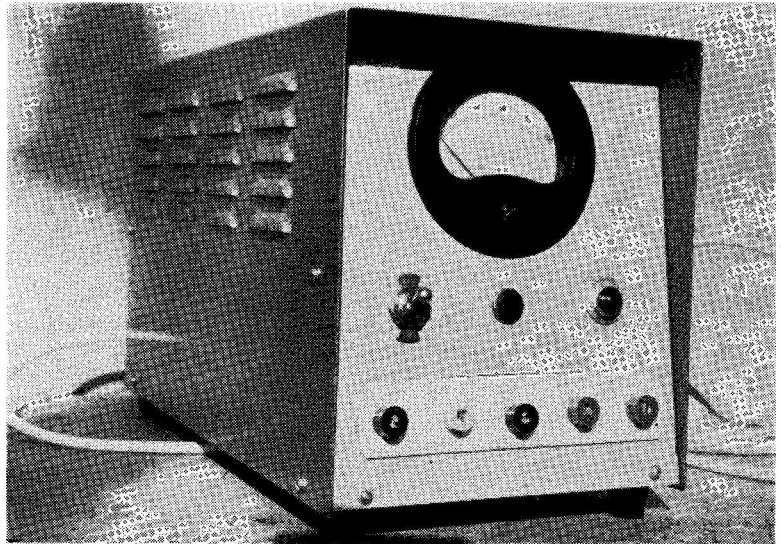
Ladock, Cornwall, GB3CSM: Organised by the Cornish Radio Amateur Club and put on under "real Scout conditions"—meaning that they camped out on a windy hillside, prepared to endure all the rigours of the weather; in the event, it turned out a fine weekend for them! Aerials put up were an inverted-Vee for 80m. and a TA-33 for the HF bands. About 150 stations were worked, most of them on in the Scout interest.

Saltash, Cornwall, GB2SS: For the 2nd Saltash Scout Group, laid on by the Saltash & District Amateur Radio Club, with six operators, running all bands 10-160m. and two metres, they made 141 QSO's in 32 countries; of these, 77 were Scout stations in 22 countries. The best Scout DX worked included CR3KD (23rd



The Akrotiri (Cyprus) Venture Scouts had ZC4AVU on the air for the 15th J-O-T-A. They kept going for 43 out of the available 48 hours, working 109 different Scout stations in 27 countries, the total of QSO's being 228S/47C. It worked out at one contact every 11 minutes, and one Scout station every 22 minutes.

Form of construction for the PSU, in a cabinet about 6 x 6 x 9 in., such as the "Home Radio" "BX19. Bottom socket line for HT/LT outputs, with on-off switch and tell-tale lamp above.



USEFUL GENERAL-PURPOSE PSU

TO GIVE UP TO 300v. AT 150 mA

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

FOR a Top Band transmitter, or 2m. or 4m. equipment running at an input of up to 15 watts or so, a 300-volt power supply is very useful indeed. The PSU described here utilised a substantial *Radiospares* "heavy duty" transformer which has been easily and cheaply available for some time, and will be found excellent for transmitting equipment of this kind.

Small power supplies often have a capacitor input circuit to the rectifier. This gives the highest output voltage for a given winding, but has the disadvantage that the voltage soars when only a small current is drawn, while it is necessary to provide a minimum effective source resistance for the rectifiers, often of a few hundred ohms, to limit peak rectifier current. As an example, a typical 100 mA 300v. pack with capacitor input would probably give this voltage when 100 mA is drawn (if designed to do so) but the voltage could be expected to rise to around 325v. at 50 mA, and go up to

more than 350v. on a load of 25 mA or so, using average component values.

For this reason choke input is used, and with any external load of 25 mA to 150 mA the voltage only varies from about 305v. to 295v., rising to no more than 315v. if no current is drawn. The supply is thus substantially around 300v. for normal fluctuations in the current load likely to be encountered in use.

Circuit

In the circuit, two fuses F1 and F2 protect the transformer, rectifiers, and choke against all possible types of breakdown in rectifiers, C1, or choke. The choke has a DC resistance of 70 ohms, a low DC resistance being beneficial to regulation. A "swinging" choke is more suitable, with an inductance of 15-20H at low currents, but any substantial choke rated 150 mA or more will do as well.

R1 is a safety bleeder to drain C1 when the OA2 is extinguished. The latter provides a regulated 150v. supply, useful for the VFO of a transmitter and other similar purposes.

Two 6.3v. windings give 3 amp. and 2.5A outputs. The remaining 6.3v. 2A winding is used merely for the indicator L, a 6.3v. 0.3A pilot lamp, run from the 5v. tapping, as more than 5.5A at 6.3v. is not required. Power from this winding could of course be taken to an external socket, if wanted for other purposes.

As the voltage does not exceed 315v. on no-load with the OA2 in, C1 can be 350v. working. A 450v. capacitor was fitted, being to hand.

Table of Values

Parts for The PSU

| | |
|--|--------------------------------------|
| <i>Radiospares</i> "Heavy Duty" transformer, 350/0/350v., 150mA, 6.3v. 2A, 6.3v. 2.5A, 6.3v. 3A. | R1 = 100,000 ohms, 1w. |
| Choke, 50-100 ohm DC, 150 mA or larger. | R2 = 5,600 ohms, 5w. |
| SR1, | L = 6.3v. 0.3A pilot lamp and holder |
| SR2 = silicon rectifier B0680, 1,000v. p.i.v. 1A, or similar | C1 = 450v. 64 μ F or similar |
| | F1, F2 = 250mA fuse and holder |

Construction

The transformer and choke were bolted directly to the bottom of a Series 80 case (available from *Home Radio, Mitcham*) as this was to hand. The OA2 holder is on a bracket, while a group strip with two rows of tags, mounted vertically on brackets, holds F1, F2, R1, R2 and C1. Provided C1 was large, it was found not

worth while having an extra choke and capacitor for a 2-section HT filter.

A tag-strip anchors a 3-core mains lead, and this runs to a 13A plug fitted with a 2A or 3A fuse.

Since a 100 mA meter was to hand, it was decided to shunt this with resistance wire to double its full-scale reading to 200 mA. A 150 mA meter would be chosen if purchased for the purpose, or the meter could be omitted altogether. The meter reads the whole current load (excluding the 3 mA drawn by R1, which can be disregarded).

Five sockets were used for output purposes, but an octal socket, or other multi-way connector, could be used.

Provided leads are well insulated, and joints soundly made, no difficulty is likely to arise in wiring.

Modifications

If the regulated 150v. supply is not wanted, a 15K 8-watt or similar resistor should be connected from the 300v. line to chassis, to act as a bleeder. If particular equipment requires a 108v. regulated supply, an OB2

may be inserted, and R5 can be changed to 10K.

As choke input is easy on the transformer, and this is designed for continuous operation, an intermittent load of somewhat over 150 mA is in order, since periods of transmission are followed by intervals when no external HT current is drawn. However, a check should be made that the transformer does not run too warm.

Should 12.6v. be wanted for the heaters of some equipment, this is easily obtained by using two of the 6.3v. windings "in series," in such a phase that a meter shows that 12.6v. is obtained. This can supply up to 2.5A. at 12.6v.

In case it may ever be decided to increase the HT voltage by using capacitor input, it should be noted that the extra capacitor and C1 ought to then be of 500v. rating, with a 47-ohm 2w. resistor in series with each rectifier to limit peak current. R2 should also be 10K, for the OA2, and the no-load HT supply will exceed 450v. Generally, however, the choke input circuit shown will be much more suitable for the purposes suggested.

TERMINAL UNIT IN SOLID STATE FOR RTTY

CIRCUIT AS FINALLY EVOLVED — OPERATING RESULTS

Part II

J. M. OSBORNE, M.A., F.Inst.P. (G3HMO)

The first part of this article appeared on pp. 550-552 of our November issue.—Editor.

Going on from p.552, November and now to finalise: First, in the diagram Fig. 6, there should be an upward-looking arrow line from the VCO to the Phase Detector, to complete the loop. Secondly, in Fig. 7, R5 should be terminated at the (1) connection on the 710 OPA, and R6 at the (2) point. The discussion at the last part of the article then fits.

Fig. 8 shows the final circuit which is a combination of Figs. 7, 5 and 4 in that order. The setting up and operation raises no problems although it might be awkward without an oscilloscope and AF signal generator to check out the individual stages. It may be of interest to note that the discriminator section (Fig. 7) was assembled on μ DeC, the integrated circuit version of S-DeC, in about half an hour and apart from adjusting C1 to the VCO approximately on frequency, worked first time. C1 was made up of 0.1 μ F, 0.033 μ F, and 0.022 μ F in parallel. The exact value is not critical as the fine tuning is accomplished by VR1.

Operating Results

This TU will operate on any frequency shift as it does not involve audio tuned circuits. Commercial FSK comes through with a clean square wave irrespective of

the type of code, frequency shift or speed as shown on the CRO connected to the level detector. (It is, of course, impossible to read 8-figure code at the wrong speed on the Creed 7B.)

The ability to read weak signals through QRM and noise is difficult to evaluate as I have no previous experience. It is possible to see switching on the CRO when the signal is hardly audible on the monitor speaker due to adjacent-channel QRM. Noise produces spurious switching of the level detector but the time constant of the printer magnet is long enough for short spikes to be ignored so that the system will tolerate high noise-levels before misprinting occurs. The ability to hold a signal depends on the stability of the LO and BFO of the receiver; these need to be very good or excellent, nothing less being of any use. The two-metre AFSK is quite uncritical although it has not yet been proved on weak stations. (I am using an old IC-2F Rx modified for optional AM reception.) The audio is taken from the external speaker socket at the rear. If the jack is not pushed fully home the internal speaker remains in circuit as a monitor.

If noise on weak stations should prove a problem it is proposed to experiment with audio filters and amplitude limiters between the Rx and TU. However, the beauty of the system is its ability to lock on to a weak signal in the 2-3 kHz region. If it locks full square-wave keying results.

Power Supplies

There is nothing critical about the power supply except that the ripple on the (A) and (C) outlets in Fig. 9 should be small. It might be an advantage to replace D1 with a full wave bridge rectifier (Fig. 10) now that potted versions such as the *Radio Spares* REC 60 are so cheap. The magnet supply is basically constant current as set by R14. This is a mains dropper with mounting bracket included. By mounting it in the power supply, external wiring to the printer, TU and so on is less critical as the supply can be short-circuited with impunity.

It is possible that the magnet current could be

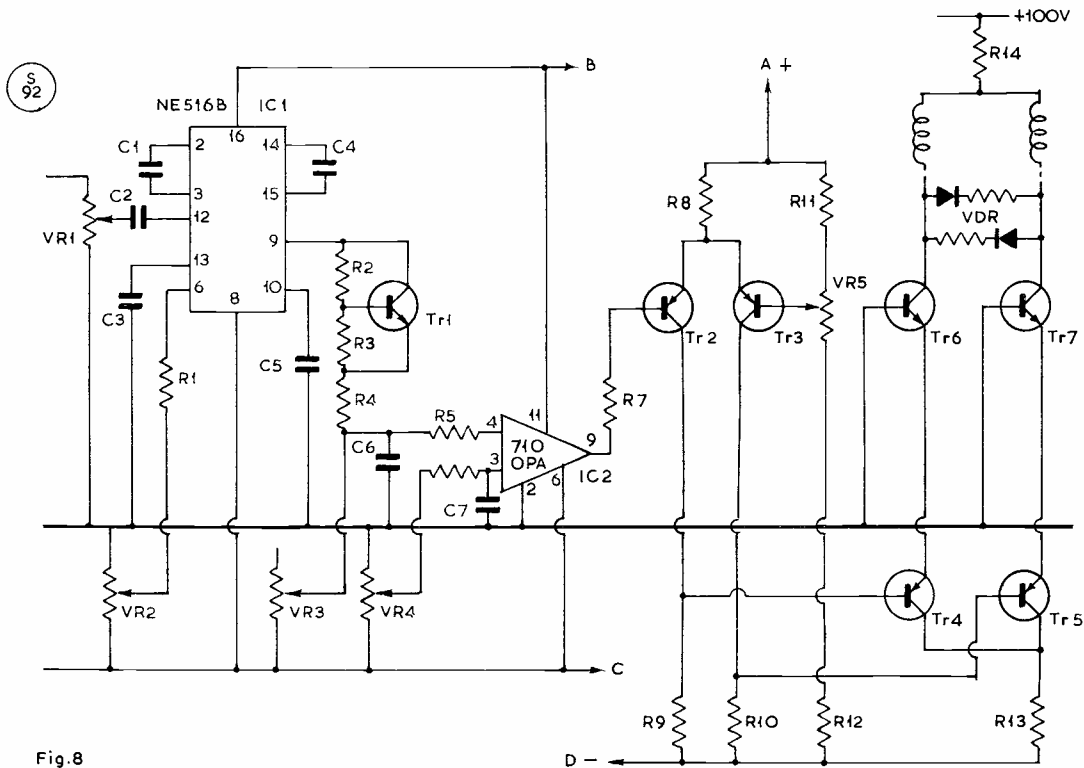


Fig. 8

Fig. 8. Final circuit of the complete Terminal Unit, excluding power supplies.

Table of Values

Fig. 8. Circuit of the TU complete

| | |
|---|--|
| C1 = 0.155 μ F | Tr6, 7 = RCA 40546 (J. Birkett) |
| C2, C3 = 0.47 μ F | IC-1 = NE-561B (or NE-560B) |
| C4, C7 = 0.033 μ F | IC-2 = 710 OPA RS Components Ltd. |
| C5 = 0.047 μ F | VDR = Voltage depend- ent resistors (STC) |
| C6 = 0.1 μ F | D1, D2, D3 = 1N4001 |
| C8, C10, C11 = 250 μ F | ZD1 = BZY88, 12v. |
| C9 = 5,000 μ F | ZD2 = BZY88, 6.2v. |
| C12, C13 = 16 μ F | BR = REC-65 Radio Spares bridge rectifier |
| R1, R3 = 3,000 ohms | T1 = 16.3v. Radio Spares Std. Fil. Transformer |
| R2 = 8,000 ohms | T2 = 13v. Radio Spares Std. Fil. Transformer |
| R4 = 2,000 ohms | T3 = 80v. 150 mA mains trans- former |
| R5, R6 = 10,000 ohms | |
| R7 = 1,000 ohms | |
| R8 = 4,700 ohms | |
| R9, R10 = 2,200 ohms | |
| R11 = 20,000 ohms | |
| R12 = 8,000 ohms | |
| R13 = 56 ohms wire- wound | |
| VR (1-5) = 5,000 ohms | |
| R14 = 800 ohms 0.3A mains dropper | |
| R15 = 450 ohms | |
| R16 = 150 ohms | |
| Tr1 = ZTX108 (or any n.p.n. silicon) | |
| Tr2,3,4,5 = ZTX500 (or any p.n.p. silicon) | |

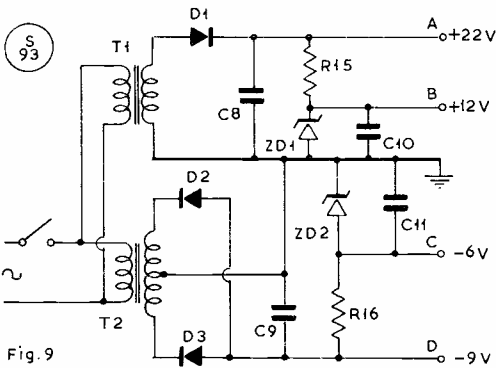


Fig. 9

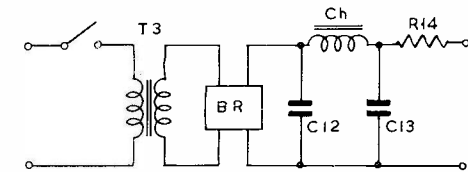


Fig. 10

Fig. 9. Simple PSU for the Unit. Fig. 10. The printer magnet supply. As the series resistor R14 is incorporated, external wiring is proof against short circuits.

Note: The voltage-dependent resistors used for suppressing the inductive surge across the printer magnet were at hand. No supplier is known. The device is a wire-ended resistor in a white ceramic tube about 2-watt size marked at one end with a diode symbol in red followed by two yellow and a silver band. It also has a faint number and is marked STC, who may be able to identify. Readers may be able to help?

reduced considerably by increasing R14 and/or decreasing the supply volts but it has not been tried. This might reduce the problem of inductive spike suppression. In this connection it should be noted that diodes across the coils would *not* be satisfactory as coils are coupled transformer fashion by the iron armature and the polarity is

being reversed.

In conclusion I should like to thank G3YKB for his invaluable assistance, generosity with Creed spares and extensive over-the-air tests. Without his help in converting my Creed to the Murray Code, my ex-computer read out machine would still be printing gibberish.

TWO-METRE NBFM WITH THE FT-101

CIRCUITRY, SETTING-UP AND APPLICATION

A. H. DORMER, C.Eng., F.I.E.R.E. (G3DAH)

THIS article describes a simple method of operating the FT-101 transceiver on NBFM to give an output suitable for feeding into a two-metre transverter. No modifications to the internal wiring are required. (But see Note 5). All that is necessary is that a suitably compressed and amplified signal from the microphone be applied at the correct level to the "Clarifier" circuit in the FT-101, and the job is done. The significant phrase here is "suitably compressed and amplified signal at the correct level", and the article explains how this can be achieved.

Fig. 1 is the block diagram of the arrangement. The microphone in this case is a Shure 201, but any microphone giving some 15 mV output on speech peaks will serve. The tone oscillator is designed as an integral unit, but any *sine* wave signal generator with an output of about four volts peak-to-peak at 3 kHz will do the job. The compressor itself is the "EMU-pressor" (as advertised) which has a compression ratio of up to 250, and a change of input level by 60 dB results in an output change of about 6 dB only. Both attack-time and gain are independently variable. The amplifier is an IC, and Fig. 2 shows the connections for the $\mu A709$ and $\mu A741$ types, both of which are suitable and available at about 40p each on the surplus market. This is

just about the cheapest way of getting a gain of around 100.

The $\mu A741$ is to be preferred, since it has internal frequency compensation, and therefore fewer external components are required—but whichever type is selected, the dual-in-line configuration lends itself readily to copper-strip *Veroboard* construction. It is *essential* that the supply voltages for both the compressor and the amplifier be very well smoothed. Only 2mV of hum on the 12v. lines will be audible on the transmission. The switching shown enables compressed/uncompressed speech and/or 3 kHz *sine* waves to be applied to a number of transmitters, and may be omitted if inappropriate.

Setting-Up

This is best achieved using an oscilloscope and the procedure is as follows. Set up the FT-101 at the normal signal level, in the AM mode, on the band used for injection into the transverter. Tune in the two-metre signal on a receiver with an FM discriminator fitted. Connect the DC input of the oscilloscope to the output of the discriminator and, with no audio applied, centre the horizontal trace. Vary either the Tx and Rx tuning by ± 3 kHz and observe the vertical excursions of the trace. Note the limits of travel, and measure, either directly on the oscilloscope if the trace is calibrated, or with a high resistance DC voltmeter applied to the discriminator output if it is not, the voltage swing. In the author's case, this amounted to a total of 3 volts, representing the maximum permissible peak-to-peak audio signal to give a deviation of ± 3 kHz, as specified in the IARU ruling. Now locate the junction of the lead from the "Clarifier" control in the FT-101 and the cold (decoupled) end of the varicap diode circuit, (in some models, this is clearly marked as a pin on the VFO

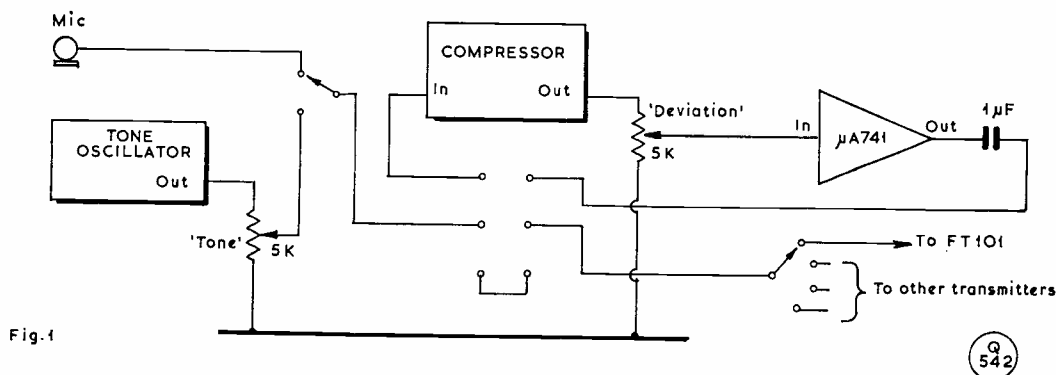
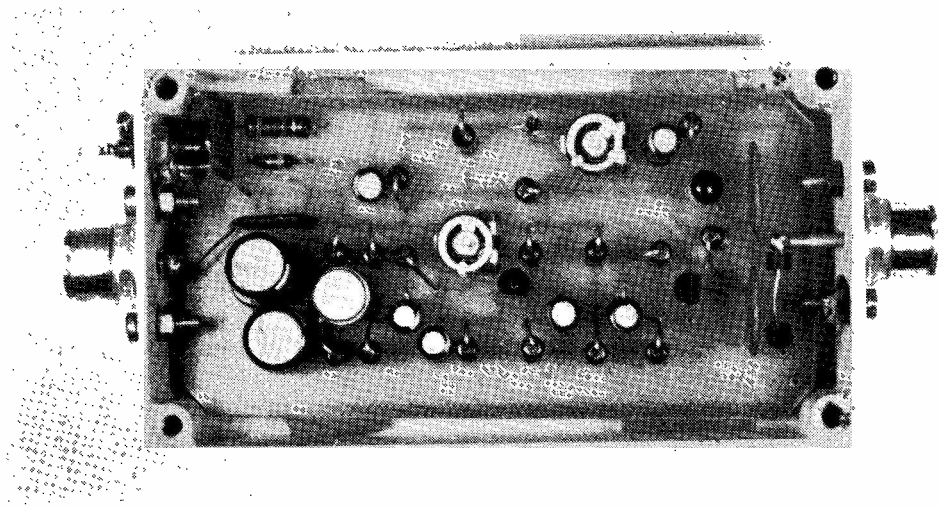


Fig. 1

Fig. 1. Diagram showing general circuit layout.



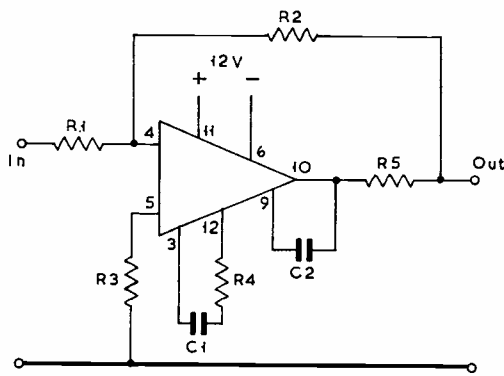
Complete NBFM Unit for the FT-101.

circuit PCB), apply the 3 kHz sine wave from the generator to this point and adjust, and note, the setting of the "Tone" control to give 3v. p-p on the 'scope. You now have a standard which is of use both to you and to other operators who wish to set up a discriminator accurately.

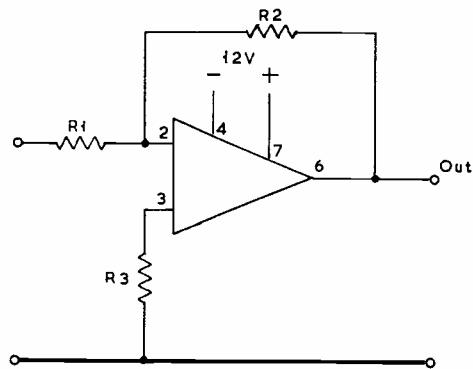
Having established this result, we can now turn to the speech compressor and amplifier. The requirement is to obtain a compressed speech output of 3v. p-p. While some compressors will deliver this voltage directly, it is often preferable to perform the compression at low level and amplify subsequently, and for this reason the Operational Amplifier IC is used. With the components specified, the gain is 100 times, but if some other figure is required, changing the value of R2 is all that is necessary, as the gain of the Op.Amp. varies in proportion to

$\frac{R2}{R1}$. With the figures for microphone peak output and gain quoted above, it can be seen that the compressor must have a gain of two to achieve the 3v. required at the varicap to give the correct deviation. To compensate for component tolerances, and differing microphone outputs, the gain of the compressor is set to be about three times by feeding in the 3 kHz tone at a level comparable with the output of the microphone in

Values for Fig. 2, for either IC, can be : C1, 100 pF ; C2, 3.3 pF ; R1, R3, 10K ; R2, 1 megohm ; R4, 1.5K ; and R5, 51 ohms.



(a) $\mu A709$



(b) $\mu A741$

Fig. 2

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Fig. 2. Connections for the IC types.

use, and adjusting the compressor gain control accordingly, measuring input and output waveforms with the 'scope, and checking that no distortion has been introduced by the compression process. Note that this procedure merely sets the gain of the compressor. It does *not* represent the final setting for speech waveforms.

With microphone, compressor and amplifier all in circuit and connected to the "Clarifier" pin, speak into the microphone and adjust the "Deviation Control" to give 3v. maximum swing on peaks, as observed on the 'scope at the output of the Rx discriminator, and as previously determined. The system is now correctly set up.

Finally, as a check of overall linearity, connect the output of the integral tone oscillator to the input of the compressor, adjusting the "Tone" control to give correct deviation, and note its setting. The flick of a switch will now give you an instant indication that all is well—or not, as the case may be!

Notes

(1) It is *essential* that stringent measures be taken to avoid hum pick up. The compressor is already boxed, and the Op.Amp. *must* be treated similarly. Preferably, the supply leads to both the tone generator and the IC should be run in screened cables, but failing this, they should be twisted tightly together and be routed well clear of any mains leads or transformers. They are decoupled with .001 μ F feed-through capacitors where they enter the screening boxes. Leads to and from the two variable controls must also be run in screened cable.

Any RF getting into the system at any point obviously will play havoc with the results!

(2) The 1 μ F capacitor at the output of Op.Amp. is fitted inside the screening box, and the "Deviation" control may be similarly mounted, although many operators will find it desirable to have it on a front panel where it may be easily adjusted, particularly if the 2m. FM signal from the transverter is to be tripled for use on 70cm., in which case the deviation must be reduced by a factor of three to give ± 3 kHz at the higher frequency.

(3) Supplies should be stabilised, by zener diode if not by some other method, and fixed resistors should be $\frac{1}{4}$ -watt high stability.

(4) Although designed for use with the FT-101, the system will work with *any* transmitter the frequency determining circuits of which can be varied by the application to them of a DC voltage.

(5) The connection of the audio output from the IC between "Clarifier" and earth on the FT-101, may be made *via* screened lead and croc. clips, but a more elegant method would use one of the sockets at the rear of the transceiver, such as the "Phone Patch" (unlikely to be required in this country), disconnecting the existing leads and running a screened lead directly to the "Clarifier" tag.

(6) No attempt has been made to provide NBFM receive facilities on the FT-101, as this would involve internal modifications and external circuitry to give demodulation with adequate selectivity while by-passing the built-in filters.

MULTI-BAND AERIAL FOR RESTRICTED SPACE

LAYOUT WORTH TRYING IN THE SMALL GARDEN

S. N. GALL (G3UCM)

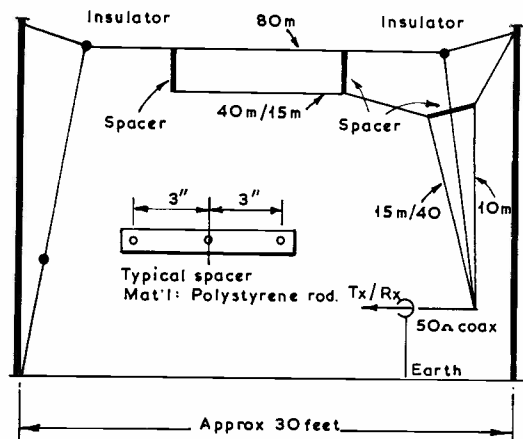
THIS aerial was designed for use on 80, 40, 15, and 10 metres, with a length over the ground of 30ft. or less.

Basically, the aerial consists of quarter wavelength sections in parallel, one for each band, except for 15 metres, where the 40-metre section is three-quarters of a wavelength. These sections are all end-fed, using 50-ohm coax feeder, which gives a reasonable match on all bands. The aerial can, of course, be used on other bands merely by adding extra sections, or shortening existing ones. The length of each section is given by $L = 234/f$, where L is in feet, and f is in MHz.

Since the aerial is semi-vertical, and is fed against earth, it requires either a good earthing system or radials. The overall diagram of the system is shown in a typical arrangement, but this can easily be varied to suit different circumstances. The basic aim is to have as much *vertical* as possible, especially the first fifteen

feet, which form the current portion.

The wires are spaced-off by spreader insulators, which can be of polystyrene rods, drilled as indicated to take each wire. *Insulated* wire is normally used, such as 20g. then it does not matter if the sections "kiss" in the wind. The common ends are brought down to the feed-point, and soldered to the 50-ohm feeder.



NOT TO SCALE

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In the prototype, the screen (braid) of the feeder (coax outer), was taken to three earth-spikes driven into moist soil. It is advisable to bear in mind the effects of weather, and accordingly the joints on the aerial should be sealed to prevent the ingress of moisture. Also, the spacers should be of solid construction, and securely fixed to the wire sections. On the original, the wire was wrapped around each spacer twice, at each spacing-point, the spacing being three inches, or more. It is important to note that the sections must be spaced at least three inches, except for the feeder end, otherwise tuning will be critical, and the VSWR poor.

In use, the aerial has given the expected results,

with reasonable SWR figures. VSWR figures obtained are as follows: 80m., 1.2 : 1; 40m., 2 : 1; 15m., 4 : 1 and 2 : 1 on 10 metres. The 15-metre measurement is high—as it always seems to be in multi-band systems—but the others were achieved without problems, and a little judicious pruning, with the aid of a GDO, is quite in order.

This aerial is not intended for working weak DX under difficult conditions but rather as an efficient layout for multi-band operation.

Since there are no traps, the aerial is quite inconspicuous, and because the windage is low, should survive our typical British weather!

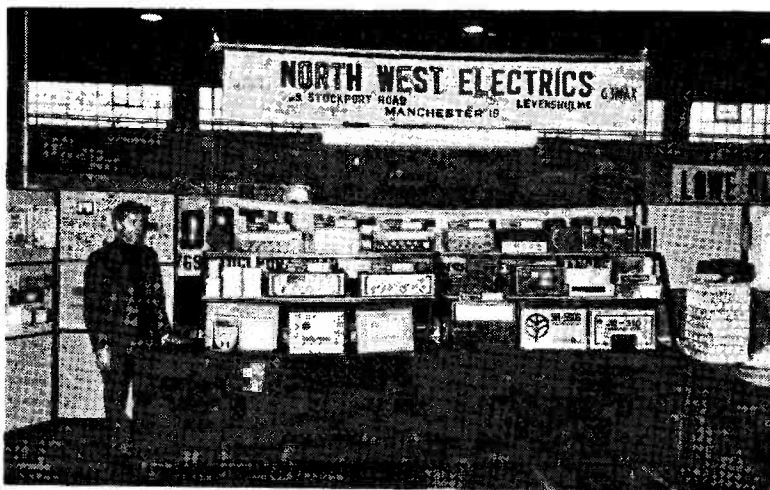
THE LEICESTER EXHIBITION

On right, the stand of Amateur Electronics, Birmingham, presided over by Ken Perfect, G3FIK, in the business for many years.



General view, on the afternoon of the opening day of the Amateur Radio Retellers' Association first annual Exhibition at the Granby Halls, Leicester, October 26-28. The total paid attendance for the three days was 4,690—not bad for a first attempt outside London.

Fred Nicholls, G3MAX, with his North-West Electrics stand at the Leicester Amateur Radio Exhibition.



G3LMR and his wife of Eley Electronics, Leicester, at their stand at the A.R.R.A. Exhibition.

Lowe Electronics had one of the largest stands at Leicester. Bill Lowe (right) in this group with his team. We are told that business was very satisfactory for them during the Exhibition.



Western Electronics also had a very fine display of all the equipments they factor and advertise—personalities shown here are Haf Perkins, G3NMH (centre) with his wife, the others identified being G3TBJ (left), XYL G3WCJ (on G3NMH's left), G3WCJ and G8CKZ.



(Above) Part of the stand of Terry Edwards, G3STS, of Radio Shack, Ltd. (assisted by Anne Edwards) this end being devoted to a small display in the "Short Wave Magazine" interest.

(Left) Mr. S. R. Boakes, G3HXN, is one of executives of the well-known firm of Heath (Glos.) and here is showing the completion (from kit) of their fine SB-220 high-power linear amplifier, running a pair of fan-cooled Eimac 3-500Z's. The Heathkit stand at the Leicester Exhibition featured a representative selection of their wide range of Amateur Radio and hi-fi equipment.

Oscar 6

OSCAR 6 finally went into orbit, albeit not quite the planned one, on Sunday, October 15 and contacts were made through it as early as the second pass. The *official* nomenclature is now Noaa II, but the title remains as *Oscar 6* for amateur purposes. The notes which follow are intended as a guide for those not already experienced in space and satellite technology but who would like to have a shot at some unusual DX.

Orbital Data

Knowledge of the following parameters is essential if one is to plot *Oscar* orbits and make serious attempts to work through the device.

Life: Estimated at one year.
Orbital time: 114.99 minutes. *Orbital inclination:* 11.74°W. *Orbital shift:* 24.74°W. (Note all these figures are decimal). *Height:* 1460 km. (about 905 miles). *Up-Frequency:* 145.9—146.0 MHz. *Down-frequency:* 29.45—29.55 MHz. *Beacon and Code-store:* 435.1 MHz.

For those who prefer to do it the hard way and ignore printed predictions, or for those who want a check on predictions which they have already worked out, NASA/AMSAT have verified orbit No. 273 as crossing the equator at 1143z on November 6 at 223.6°W on a North/South path. This corresponds to a time of 1222z at 38°W for a crossing at 52°N if calculations are to be made for that latitude.

Operation

Some trouble is being experienced with the equipment on board the satellite. The logic circuits are not functioning continuously accurately, due to difficulties with voltage surges from the solar cell supplies. This has resulted in spasmodic interruptions to the transmissions on some orbits. On other orbits, the transmitters have been switched off by control from the ground in order to conserve battery supplies. In yet further cases, the use of excessive power by station operators has generated control voltages which have shut down the transmitters. A malevolent operation of Murphy's Law has ensured that most of these non-events have occurred during passes which are most favourable for this country!! There is no evid-

VHF BANDS

A. H. DORMER, G3DAH

ence at all that it is a deliberate act.

The 70 cm. beacon is giving good service and is carrying the Code-store and telemetry information and, occasionally, messages in clear, having taken over some of the functions of the 29.45 MHz beacon which unfortunately has not operated as planned since the first orbit.

Initially, the satellite appeared to be tumbling, but the magnetic stabilisation has now taken over, and the rapid fading on the signals may be attributed to the vagaries of propagation, both HF and VHF.

Working through Oscar

First of all, it is as well to recall that the output power of the repeater is low, so don't expect 59+ signals from it. If the output is 2 watts and 100 stations are using it at any one time, the power per signal is only 20 milliwatts!!

If you cannot hear your own two-metre call coming back on 10m., then you never will get a contact. There are obviously several reasons why this may be the case, and the various possibilities cannot be examined at this stage, but read on—you may find the answer. It is also unlikely that you will get a contact if you use NBFM or AM. Nobody seems to be listening for these modes anyway, and the Doppler shift (about ± 3 kHz) distorts the signals too much, so SSB or CW should be used.

The next thing is to find out where

Oscar will be at a specified time and here *Table 1* will give you the detail you require. The times and bearings given herein are for crossings of the 52°N parallel.

If you want equatorial crossings, a simple sum provides the answer. To take an example, consider Orbit No. 586. This is shown as a N/S pass crossing 52°N at 36°W. To get the equatorial crossing on a N/S pass add 5° from West, which gives $36 + 5 = 41$ °W. If the crossing is to the East and the pass again N/S, the 5° must be deducted. For example, Orbit No. 584 shows a N/S crossing at 21°E—the equator crossing then becomes $21 - 5 = 16$ °E. (Note that a crossing at, say, 3°E at 52°N corresponds to 3 °E—5°W = 2°W at the equator). For S/N crossing, the procedure is similar, but the figure to be deducted from West now becomes 19°. Consider Orbit No. 604. The 52°N crossing is shown at 38°W. The equator crossing becomes, therefore, $38 - 19 = 19$ °W. Had the crossing been to the East, as for example in Orbit No. 590, subtracting 19° from West is equivalent to adding 19° to the figure of 5°E = 24°E.

All as clear as mud? Try it a few times and you will get used to the idea. Incidentally, the reason for these subtractions is that account must be taken of the speed and direction of rotation of the earth beneath the satellite during a pass, the *Oscar 6* circulation remaining constant as Earth goes round within that circulation.

Now, listening times: If absolute accuracy is not required, then it suffices to listen ten minutes or so either side of the times quoted in *Table I*. If you are working on equatorial crossings, then allow about 40 minutes on to that crossing time for a N/S pass to come within range, and about 10 minutes on for a S/N pass. The duration of the signals will vary according to the position of the transit. For a near-overhead pass, it will be about 20 minutes, whereas for a pass at, say, 45°W it will be just a few minutes as the satellite will only appear above our horizon for that short interval of time. It should be noted here that *Table I*—which was provided as part of a computer print-out by members of the Kent University Radio Club—eliminates

transit beyond 45°E or W as these will be out of range. It also rounds off times and degrees to simplify presentation, but corrections are made in the computations to compensate for this.

Space does not permit the publication of all orbits for the interval between the appearance of successive issues of *SHORT WAVE MAGAZINE*, but, as the orbits, with minor adjustments, repeat every 25 passes, the detail given in the Table should enable you to work out the remainder for yourself. All that is required is that 5 minutes be deducted from the crossing times and 1°E added to the position every 25th orbit. These figures are not exact, but over short periods they do not differ significantly from the precise data, and in any case we shall up-date the information every month to give you new starting points. Consider Orbit No. 584 on December 1st: This gives the time as 0825z and the position as 21°E; 25 orbits later, at No. 609, the time has become 0819z and the position 23°E, the slight discrepancy being due, in this case, to a rounding off of the figures, and is corrected in subsequent data. If you want greater accuracy, then start with the figures and orbital data given for Orbit No. 273, and simple addition will give you precise answers.

To help you to understand just what is involved in these tracking problems, it is recommended that you read the article by John Osborne, G3HMO, entitled "Satellite Reception Made Easy" in the March, 1971 issue of *SHORT WAVE MAGAZINE*. John really does know what he is talking about, since he has been tracking weather satellites for some considerable time, and various articles by him, describing his results and the equipment he uses, have been published in the *Magazine* over the years since the appearance of the first *Sputnik*.

Equipment

We have been asked by AMSAT to say that power should be kept to 100 watts with an antenna gain of 10 dB, *ie.*, an e.r.p. of 1 kW. This does not mean that one *must* use such power. Checks at G3DAH have shown that one can get into the repeater with about half that. The 8-ele. Yagi is probably typical of many amateur installa-

TABLE 1 - Oscar VI Prediction Data

| (a) Orbit | (b) Date | (c) Time (GMT) | (d) Position | (e) Direction |
|--------------|-------------|-------------------|-----------------|------------------|
| 584 | Dec. 1 | 0825 | 21°E | N/S |
| 585 | | 1020 | 07°W | N/S |
| 586 | | 1215 | 36°W | N/S |
| 589 | | 1735 | 34°E | S/N |
| 590 | | 1930 | 05°E | S/N |
| 591 | Dec. 2 | 2125 | 24°W | S/N |
| 596 | | 0725 | 36°E | N/S |
| 597 | | 0920 | 08°E | N/S |
| 598 | | 1114 | 21°W | N/S |
| 602 | | 1830 | 20°E | S/N |
| 603 | | 2025 | 09°W | S/N |
| 604 | | 2220 | 38°W | S/N |
| 609 | | 0819 | 23°E | N/S |

tions, and this has a gain of 10 dB with a horizontal beamwidth at the half-power points of 40°—so with the ubiquitous QQV06-40A in the PA, you should be able to get in.

Used on its own, such an antenna cannot provide the optimum answer unless it can be made to rotate in both azimuth and elevation—a motor-driven lock/follow device would be ideal—or two separately steerable antennae could be used, but those who have had the experience of working through *Oscar* will know already that a third hand would be a decided advantage, which postulates that a fourth, to steer the second antenna, would be a requirement!! So, the good old compromise must be accepted by all except the most scientific (and wealthy) of observers or, of course, those with four hands! What about crossed dipoles? Well, no steering will be required, but to make up the 1 kW e.r.p., considerably more power than is permitted under the terms of the usual licence will be necessary to compensate for low gain. The question of high angle radiation, or lack of it, also remains. In practice, it has been found that although it is difficult to get into the satellite when it is overhead, the loss of signal when using a horizontal array persists for a few minutes only, and the low angle of radiation of such a beam means that one does get into it as the satellite approaches the limits of the radio horizon, and that is where the real DX is. For most operators, the answer will lie in using the existing 2m. antenna and accepting some loss of signal at TMA (Time of Maximum Altitude) on near proximity passes.

For similar reasons, the existing 10m. aerial is also likely to be pressed into service, but if a new one is to be constructed, a vertical and/or crossed dipoles, will give satisfactory results.

The 2m. Tx must cover 145.9—146.0 MHz and the 10m. Rx 29.45—29.55 MHz. Although not a necessity, it is a good thing to have a 70 cm. Rx tuning the beacon frequency of 435.1 MHz, since this signal is received some five minutes or so earlier and later than the 10m. signals—radiation at this frequency will penetrate the F-Layer while low-incidence signals at 29 MHz will not. Additionally, tracking on a beacon is easier than trying to find your own signals coming back on 10m. and rotating the 2m. beam accordingly. Had the down link been on 70 cm., we should have got longer passes, but there are special reasons why this was not planned.

Procedure

Once you have acquired your own signal back through the satellite, QSO's are not much more difficult than those made by normal tropo. propagation, although fading is a bit more rapid. What is important is to keep the call short—*very* short. His callsign, your callsign twice and "K" does the trick. You are likely to get back your call, his and an RST report, and that is all. Don't try to pass station details, name and QTH, etc.—he won't have the time, even if you have, and the chances are that you will lose QSO altogether.

G8/3's are reminded again that it is quite permissible for them to work crossband to 29 MHz, but only those with SSB have a real

chance of making a contact. SWL's can also take part in the exercise if they have receivers tuning 29.45—29.55 MHz, with a vertical and horizontal dipole cut for 29.50 MHz. Their reports would be appreciated, to this feature.

Band Planning

Following upon decisions taken at the IARU Region 1 VHF Conference at Scheveningen earlier this year, it has become necessary to review our existing Band Plans for both 70 cm. and 2m. Accordingly, a meeting was held with representatives of both SHORT WAVE MAGAZINE and RSGB present, to see how the plans might best be adapted with the minimum of disruption to users while conforming with the Conference decisions and catering for present-day usage.

The 70 cm. Band Plan required major changes to bring it into line with current practice in the U.K., and to incorporate the IARU decisions. Since geographical area/frequency allocations are largely ignored these days, this seemed to be an appropriate time to go over to what is virtually mode/frequency working. That being said, it became a fairly simple matter to fit in the IARU recommendations. It remained then to make provision for special interests in the U.K., such as the fixed-channel FM mobiles, and this was done by allocating to them discrete channels in the communications segment of the band. Phase 1 of the Plan, to be introduced by January 1, 1973, is shown in the Panel. Phase 2, which will move beacons to the sub-band 432.0—432.05 MHz, will be introduced as soon as practicable thereafter.

The two-metre Plan presented a more difficult problem to ensure that all interests were catered for. In certain Continental countries, notably Germany, where repeater working has become the order of the day and FM mobiles abound, large sections of the band are allocated for FM operation, both mobile and fixed. But that situation does not obtain in the U.K. where we have only one repeater, and that only on evaluation trials until Spring, 1973. Our number of fixed-channel FM mobiles has barely reached a significant proportion of

the total number of licences issued and AM and FM fixed-station operators share geographical allocations without mutual recrimination (except in cases of flagrant over-deviation or over-modulation!).

The meeting carefully considered the claims of the mobile FM groups to unique frequencies and decided that, while the current situation did not justify the allocation of the proposed spaced channels at every 25 kHz from 145.025 MHz up (a preposterous suggestion in terms of two-metre band usage) there was a case for allocating special frequencies for their exclusive use. This decision is reflected in the detail of the Plan which takes account of the channels already in use by members of these Groups. At the same time it avoids involving large numbers of operators in Zones C and D in the crystal changes which would be required if the existing Zone allocations were abolished, as would be the case if a new Band Plan were established on a mode/frequency rather than an area/frequency basis. However, should there be indications that the situation is changing radically, then a further review of the requirements of all users will be undertaken.

The second important factor to be considered was whether indeed we should retain the geographical aspect of our current Plan. The consensus of opinion was that this Plan works well and that, without substantial evidence to the contrary, it should not be disrupted. Although the extended use of FM above 145 MHz was one of the recommendations of the IARU Conference, it had to be recognised that in the U.K. this mode was still a minority interest, and while it was important to cater for minorities (and Amateur Radio has many of them) this aspect should be kept in perspective. For this reason also, it was agreed that our present Plan should be perpetuated but should include discrete frequency allocations for specific, if limited, interests.

There were no objections to the implementation of other aspects of the IARU proposals. Beacons, with the exception of the long-established GB3VHF, would go to the HF end of the band, and the international SSB and RTTY frequencies would continue as at

70 Centimetre Band Plan—Phase 1

| | | |
|-------------------|---------------------------------|-----------|
| 430—432 MHz | Microwave and duplex Telegraphy | talk-back |
| 432—432.1 MHz | All modes | |
| 432.1—433.45 MHz | Beacons | |
| 433.45—433.50 MHz | Television | |
| 433.50—440 MHz | | |

The following sub-bands are allocated:

| | |
|---------------------------|------------------------------|
| 432.15 MHz | } FM mobile calling channels |
| 433.30 MHz | |
| 433.0 MHz | |
| 432.48 MHz, | |
| 432.80 MHz and 433.20 MHz | |

present.

In the event then, in spite of lengthy discussion (in an atmosphere of complete harmony) the changes required to bring our Plan up-to-date were comparatively minor. The Plan finally adopted for introduction as soon as possible consists of the existing Zone frequency allocations plus SSB and RTTY channels and adds, for fixed-channel FM mobiles, 144.4 MHz in Zone A, 144.48 MHz in Zone B, 145.2 MHz in Zone C, 145.6 MHz in Zone D and 144.48 MHz as a national calling channel.

It was entirely recognised by the meeting that any Band Plan could be made to work only with the goodwill of *all* VHF operators. No plan was mandatory and no operator could be *forced* to observe it, although without general acceptance of, and co-operation with, the provisions it contains, only chaos can result.

* * *

VHFCC Awards: Because of pressure on space this time, the usual listing of VHFCC issues has had to be held over—the recipients are G8CIT (No. 15, 70 Cm. and No. 172, two metres); G8DWD (No. 167); G8EEM (No. 168); G8FBI (No. 169); GM3ZVB (No. 170); and G8FCY (No. 171).

The Scottish Scene

News of Old Timers: GM4NC now has a "Two-er" installed in the car and is laying down a very good signal from the halo antenna. As an ex-G he spends much of his free time in England, and as an erst-

THREE BAND ANNUAL VHF TABLES

January to December 1972

TWO METRES

| Station | Counties | Countries | Total |
|---------|----------|-----------|-------|
| G3BW | 79 | 13 | 92 |
| GD2HDZ | 75 | 16 | 91 |
| G3NHE | 67 | 17 | 84 |
| G8CIW | 66 | 12 | 78 |
| GW8FKB | 63 | 14 | 77 |
| G8CUT | 63 | 14 | 77 |
| G8FUI | 66 | 11 | 77 |
| G3DAH | 59 | 17 | 76 |
| G3YRH | 62 | 11 | 73 |
| G5DF | 59 | 10 | 69 |
| G8AGL | 53 | 9 | 62 |
| G8BXX | 54 | 7 | 61 |
| G3OHH | 55 | 6 | 61 |
| G8ERM | 53 | 5 | 58 |
| G8ATS | 49 | 9 | 58 |
| G4AVX | 48 | 8 | 56 |
| G8DYK | 47 | 9 | 56 |
| G4AJE | 44 | 11 | 55 |
| G8BKR | 48 | 6 | 54 |
| G8DWT | 48 | 5 | 53 |
| GM8BDX | 44 | 9 | 53 |
| G3RAF | 46 | 6 | 52 |
| G3PQF | 42 | 9 | 51 |
| G3DAO | 39 | 12 | 51 |
| G8FIH | 43 | 8 | 51 |
| G8FKL | 46 | 5 | 51 |
| G2AXI | 42 | 8 | 50 |
| G8FIJ | 42 | 6 | 48 |
| G8CBU | 40 | 6 | 46 |
| G8EMS | 42 | 4 | 46 |
| G8FAG | 41 | 4 | 45 |
| G4BKJ | 38 | 6 | 44 |
| G4ALN | 39 | 5 | 44 |
| G8JVJ | 37 | 4 | 41 |
| G8COG | 34 | 5 | 39 |
| GM3ZVL | 31 | 8 | 39 |
| F6BOH | 24 | 7 | 31 |
| G8GJN | 26 | 5 | 31 |
| G8GBV | 26 | 3 | 29 |
| GM3ZVB | 24 | 4 | 28 |
| GW3CBY | 22 | 5 | 27 |
| G8BMD | 23 | 4 | 27 |
| G3MEW | 23 | 4 | 27 |
| G8GBH | 23 | 2 | 25 |
| G8FNH | 20 | 2 | 22 |
| G3EKP | 16 | 5 | 21 |
| GM3IBU | 19 | 2 | 21 |
| G8BBP | 16 | 4 | 20 |
| G4AZK | 14 | 2 | 16 |
| G8FVI | 15 | 1 | 16 |
| GW3FTQ | 13 | 2 | 15 |
| G8FSO | 6 | 3 | 9 |
| G8DBX | 6 | 2 | 8 |
| GW8CGH | 5 | 2 | 7 |

SEVENTY CENTIMETRES

| Station | Counties | Countries | Total |
|---------|----------|-----------|-------|
| G8ATS | 38 | 6 | 44 |
| G8CUT | 35 | 7 | 42 |
| GD2HDZ | 34 | 8 | 42 |
| G3DAH | 32 | 8 | 40 |
| G5DF | 33 | 4 | 37 |
| G3NHE | 29 | 6 | 35 |
| G8BXX | 30 | 2 | 32 |
| G3YRH | 24 | 7 | 31 |
| G8FUI | 23 | 4 | 27 |
| G3SMU | 23 | 3 | 26 |
| G3OHH | 23 | 3 | 26 |
| G4ALN | 22 | 3 | 25 |
| G8BKR | 19 | 2 | 21 |
| G3FIJ | 14 | 3 | 17 |
| G8CBU | 13 | 2 | 15 |
| G2AXI | 12 | 1 | 13 |
| G8AGL | 9 | 1 | 10 |
| GM8BDX | 4 | 4 | 8 |
| C8COG | 7 | 1 | 8 |
| GW3CBY | 6 | 2 | 8 |
| G8EMS | 6 | 1 | 7 |
| G8DWT | 4 | 1 | 5 |
| G3EKP | 2 | 2 | 4 |

FOUR METRES

| Station | Counties | Countries | Total |
|---------|----------|-----------|-------|
| G5DF | 52 | 6 | 58 |
| G3OHH | 51 | 6 | 57 |
| GD2HDZ | 32 | 4 | 36 |
| G3DAH | 34 | 2 | 36 |
| G2AXI | 28 | 2 | 30 |
| G3EKP | 23 | 6 | 29 |
| G3FIJ | 11 | 2 | 13 |
| G3PQF | 5 | 1 | 6 |
| G3SMU | 5 | 1 | 6 |
| GW3CBY | 3 | 1 | 4 |
| G3YRH | 2 | 1 | 3 |

while member of the 14th Army in Burma he would enjoy a contact with any ex-comrades-in-arms. GM6XI is now QRV on 70 cm. with *Micro-wave Modules* converter and varactor tripler from which he is getting excellent results. GM4HX (Paisley) is being copied regularly on 2m. in the East of the country.

GM8DIJ, Brian Philp, was secretary of the Glasgow University Radio Society but, having graduated with a B.Sc. in Electrical and Electronic Engineering, he has now joined the staff of a well-known electronics firm in Edinburgh and radiates both SSB and AM on 2m. from that City. He hopes to be on 70 cm. shortly. GM8BJF has now completed his solid-state Rx; this will handle all modes—SSB with a mechanical filter and NBFM with an I.C. in a circuit recently described in *SHORT WAVE MAGAZINE*. GM3AOR is secretary of the Lothians Radio Society and is very active on Two. For local working he uses a *J-Beam* omnidirectional Vee, and will shortly be radiating SSB with a *National NC-200* via a transverter. GM8DMZ is the new chairman of the South Scotland VHF/UHF Group, and reports that they have some very interesting developments on the agenda for the 1973 contest season.

There has been a significant increase in the radio amateur population of Heriot-Watt University this term. Newcomers include the George Watson's College DX-expedition team of GM3ZVL, GM3ZVB and GM4AIS together with GM8CWH and GM4AOR. With GM3LAV on the staff and this new team we should be hearing quite a bit of activity from that revered seat of learning!

There are considerable doings on the northern shores of the Forth these days. The new town of Glenrothes has a very active radio club, and R.A.E. classes have already

been started. GM3OLK (Leslie) and GM3NVF (Cardenden) are both putting down cracking good signals in the Lothians. From his own experience, your scribe can confidently assert that the lads in that area certainly are keen. While out mobile near there last year, GM3DAH/M put out a CQ and was answered by a Glenrothian who delightedly reported that this was the first QSO he had had in three months! The difficulty is, of course, the mountainous terrain.

GM8FFX/M was a welcome visitor to the South recently and was able to contact many stations who had worked him while he was operating as GM8FFX/A during the recent openings. He had a fine SSB rig in the car with him.

News Items

Oscar 6: Many reporters this month have made the same comment about our satellite—it's all very interesting *but* as a time-consuming occupation it cannot be beaten! However, it seems to be working well and some operators have made good long-haul contacts through it. G3NHE (Sheffield) has spent many hours trying to work it and as many listening to the *post-mortems* of the locals who have failed to get in! However, he made it with DL, F, G and EA with OH, SM, LA and W2 all as near-misses or partial contacts. He queries the power being used by some of the regularly heard Continental stations. This is not known accurately, since the opportunity has not been there to find out over the air, but certainly in some cases it is known to be up in the 5 kW e.r.p. region, in spite of the appeals to keep things down to 1 kW e.r.p. G3NHE has found that a hand-held three-ele. beam is better than the outdoor 10-ele. at 38ft. for close passes where much upward radiation is required.

It is interesting to note that G3NEO (also of Sheffield) has made it with W and VE with 20 watts to a 5/5 and that G3MOT has done so with much the same power. G3BHW (Margate) has worked SM, PA, G, DK, EO, F, GW and OE so far, and has been called twice by OH but couldn't complete the contact. G3DAH has succeeded with SM, DL, G, EA and K2. G8BCG (Manchester) heard LA,

OZ, SM, G, F and OE on the very first orbit, and G3USA of the same City logged UA1 on orbit No. 2. 'BCG worked a DJ on orbit No. 4 when *Oscar* was at 60°E which is very nice going, and 'USA got in with a W5.

23 cm.: There is no doubt at all that this band is becoming more popular and that some very good long-haul contacts are being made on it. G3EHM (Stoke) has worked G8ARM (London), but couldn't quite make it with PA0GPL. G3LTF (Chelmsford) had a 5 & 9 contact with G3KMS (Bolton) over 190 miles of difficult country. 'LTF used 100 watts to a dish and 'KMS was running 10 watts to a similar antenna.

70 cm.: G8ACN (Saffron Walden) is just about the strongest signal on the band in the Midlands. He runs 150 watts into a 4CX250B with a 64-ele. stack. He has A/TV and 23 cm. available. OZ9LU was a 5 & 9 signal during the early October openings and was calling for 23 cm. but no contact was heard. G8SMU (Manchester) heard ON4HN at about the same time and signal strength. '8SMU runs 60 watts to a blown 3-20A with a Multibeam. G8AGL (Solihull) is now on the band with 45 watts to a Parabeam and has video available—just waiting for the G6/T to come through.

Two Metres: GW3NNF (Anglesey) worked DK4LI on October 5 and G8DJM (Birmingham) and G3MWQ (Kidderminster) both raised OZ9OT at about the same time on that day. On October 13, G3BA logged OE, LX, PA and HB9, all on SSB. GD2HDZ found this to be just about the best day for DX since he settled in I.o.M. four years ago. First QSO was with DJ2OI in Munich, and a few minutes later up came OE2OML with whom he also had a 70 cm. contact, to the delight of them both. Two "Firsts" one would think! HB9AMH/P was the next in the bag, to be followed by LX1DT. Three contacts with French stations completed a most successful evening.

G3YRH also found this a memorable evening in that his log includes DL3XE and HB9AMH/P, although he couldn't raise the latter—the first HB9 heard at his Newcastle-on-Tyne QTH. (The HB9 was also heard on 70 cm. working G3COJ). G8C1W

(London) also has an impressive list of contacts—the first evening he had the 400-watt linear on the air, he made it with EI6AS, GI3GXP, SK6AB, GD3FOC, OZ4IP, OZ9PZ, GW8FKB and GW3RBM and followed this a day later with four F, one DJ and one HB9.

Up in Scotland, GM3ZVL (Edinburgh) has been having a ball *via* the Bergen experimental repeater run by the local radio club. He says that operation was much more orderly than it was on the German repeater, DB0XA, which he was hearing at the same time. He worked 9 LA's through the device, some of whom were using walkie-talkies and whip antennae! The repeater has not yet been allocated a callsign, but the input frequency is 145.08 MHz and output on 145.85 MHz (which seems an odd spacing) and access is merely by the presence of a carrier.

The French launched *Anjou 2* on Sunday, October 11. G8CFZ (Sussex) first heard signals from it at 0858z and worked 11 French stations altogether. The 145.9 MHz beacon was last heard at 1040z. This was the experiment that failed to get off the ground on September 24.

G3NHE (Sheffield) found October 5 to be particularly good for him. He worked SM, OZ, DL, PA, GM and F with the best DX as DL7QY in Berlin, with whom, *mirabile dictu*, he also made it on 70 cm. for a really good one. In spite of the decline in conditions on October 6, Martin was still able to prise LA5UG and LA8OJ away from the GM's! October 13 was also good for him with DL, OE, HB9 and F among the prefixes worked.

When he has had time to spare from *Oscar*, G3BW (Whitehaven) hasn't been wasting it. During the October openings he made it with HB9 and GC for a couple of new ones, and reports hearing HB9HB up to S6 at times. He comments that, of the stations he hears while listening to *Oscar*, 98% are calling CW, 1% are trying to start a QSO and the other 1% are actually making a contact. A common experience, one would say.

Four Metres: The 70 MHz Cumula-

tives got off to a reasonable start on October 15, with some 30-40 stations active as far as could be gathered. The second stage on October 29 suffered from poor propagation conditions, although the fact that several reports of "449" were heard would seem to indicate that some people were digging for the DX. During a quick contest over, G3OHH (Mow Cop) mentioned that he was handicapping himself this time by using CW only. He may work fewer stations, but the DX should be better. Back on 4m. in a big way is G3MHW operating from a hilltop (1,200ft.) cottage in Welshpool. He finds the natives very friendly and generously attributes this to the good public relations fostered by G3NUE! The rig runs 50 watts to a QOV06-40A and a 3-ele. Yagi, soon to be replaced with a 6-ele. Two good contacts recently were with G3SMU/M in Manchester and G3SNA/M in Oldham. A future VHF Tables leader, one feels! Just a reminder that the next 70 MHz Cumulatives are on December 10, January 14 and 28th, 1973.

Club and Group News

The B.A.T.C. are organising a Cumulative Activity Contest for January 8, 16th and 24th, 1973, and February 1, 9th, 17th and 25th. The rules are quite lengthy and detailed, so write to Malcolm Sparrow, G8ACB/G6KQJ/T, *QTHR*, for copies.

A U.K. FM Group (Southern) has been formed in Hants. Anyone interested in this activity is invited to write the secretary, Dick Ferryman, G4BBH, The Haven, Windsor Road, Four Marks, nr. Alton, Hants.

Deadline

Deadline for the next issue is **December 2**, as we shall have delayed mail and the Holiday period with which to contend and which, in effect, robs us of a full working week. The address for news, views claims and comment remains: "VHF Bands," *SHORT WAVE MAGAZINE*, BUCKINGHAM. Cheers for now *de G3DAH*, and a Very Happy Christmas to all followers of this piece.

*Further Oscar VI Predictions, for the first days
of January 1973, will appear in the next
"VHF Bands"*

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for February issue: January 4)

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

FOR the 27th year, the "quiet" (if you can call it that!) of Top Band was shattered when MCC burst into life on the evenings of November 4-5. This is not a considered report—at the moment of writing we have yet to see the entries—but some brief observations from the monitoring of both sessions.

In the first place, Club activity appeared somewhat down on previous years, though it is difficult to judge this with certainty because so many MCC signals were "in the fourth layer".

Even if the QRM belied the apparent activity, conditions were not too good and generally better on the Sunday than on the Saturday evening. From the point of view of general noise, Top Band was much quieter than it very often is during the early evening period.

No startling GDY was being worked though, as usual, several Europeans joined in without really knowing what it was all about. (We do *not* publicise MCC in the EU journals—it would lead to enormous complication for very little result).

It would seem that the real difficulty with Top Band these days is the high level of "commercial QRM", in the sense that progressively more frequencies have become occupied by official transmissions of various kinds, all through the band. This makes amateur working, especially under Contest conditions, very much more unsatisfactory than in earlier years—self-generated QRM we understand and can cope with, but it is not comfortable to be working through, under or over numerous commercial transmissions.

The present state of the 160-metre band after dark at this time of year suggests that for the future we might have to re-cast the whole MCC concept.

However, when it comes to the final reckoning, with all the reports in, we shall know a great deal more about conditions and results. It will all be fully discussed in the next issue, due out on December 29.

* * *

Our first group this month comprises the national and international organisations, of which the top of the pile is **Nigerian**—always a newsletter to look forward to with news of people and their doings both in 5N2-land and back home, Nigerian and expatriate.

The **Royal Navy** Newsletter is another welcome compilation, for the jokes, the cartoons, the technical articles, and particularly for the history, as presented by "senior citizens who were here at the time".

Radial comes to us each month with news of RAIBC members' activities—the current copy shows quite the

biggest intake of new members and supporters for some time, giving them a total of 400+ members. If you, reader, know of someone disabled or blind and interested in Amateur Radio, whether licensed or SWL, or just interested, you will be doing that person a real service by putting them in contact with the RAIBC—Secretary's QTH as Panel p.628.

Southern England

West Kent are top of the pile here, and they write to tell us of their alternate-Friday meetings at the Arts Centre, Monson Road, Tunbridge Wells. On December 1, they will be listening to G3JIX, giving his talk on Vintage Radio, while on the 15th they drop all formalities for a Christmas Party.

For **Cray Valley** we have four dates to note; the Natter sessions crop up on December 21 and January 18, with December 3 down for G8CIU's talk on RTTY, with a demonstration. Then on January 4, the art of D/F will be explained and demonstrated by members of the Dartford Heath D/F club.

At **Brighton Technical College**, the programme shows an informal session in Room B7—the Club station—on December 11, and another meeting, with programme yet to be finalised, on January 8.

Bishops Stortford seem to have taken root in the British Legion club in Windhill; there they go to suffer a talk by G3KFE on December 18—Aerial Matching is to be the theme. In January they have their booking on the 15th, for the all-important AGM.

There will only be one evening out for the lads at **Edgware** in December, they having decided they will *not* be fit to travel to Watling Community Centre, 145 Orange Hill Road, on the 28th! Thus, the trek to that Hq. will be on December 14, first for a Quiz and then, when brains have been exhausted, to see G3PSP's film, shot on last Field Day, to remind them of the glories of summer.

An AGM has just been passed by the **Bedford** lads, with changes in chairman and treasurer to record; all thanks are offered to the retired officers, G3UQR and G3XNG, for their hard work. For December 7, there will be a tape-and-slide lecture (on the ARRL Headquarters) to provide the entertainment, followed on the 14th by a talk on HF and VHF Mobile, a combined effort by G3SOA and G8ALQ. On the following evening comes the annual dinner, at the Red Lion in Elston; back to the normal routine on December 21, with G4ACP talking about his Top Band Transverter. On Christmas Eve there is a net on 3-670 MHz, and a prize

is going begging on the 28th, for the best of the slides and film brought along by members.

Members of the **Medway** club foregather at the Aurora Hotel in Gillingham every Friday, and this year they celebrate their Jubilee Year. From the early part of December part of their effort will be diverted to running R.A.E. lectures for hopeful aspirants to a ticket.

A brief note from the **Wimbledon** Secretary tells us that on December 8 they have the Annual General Meeting, but clearly they like to do things properly just after the AGM so December 29 is programmed for "The Project," as indeed is January 29. January 12 is also covered, by way of a Film Show, to give the incoming committee time to "play themselves in."

The **Echelford** group obviously like a good chuckle, since we notice for December 11 a hint that the film show will consist, in addition to the ARRL film, of—they hope—some "Tom and Jerry cartoons"! If the hall is available there will be a natter night on December 28; January 8 is down for a talk on RTTY if all goes well,

while January 25 is a Constructional Evening. The Hq., incidentally, is St. Martins Court, Kingston Crescent, Ashford, Middlesex.

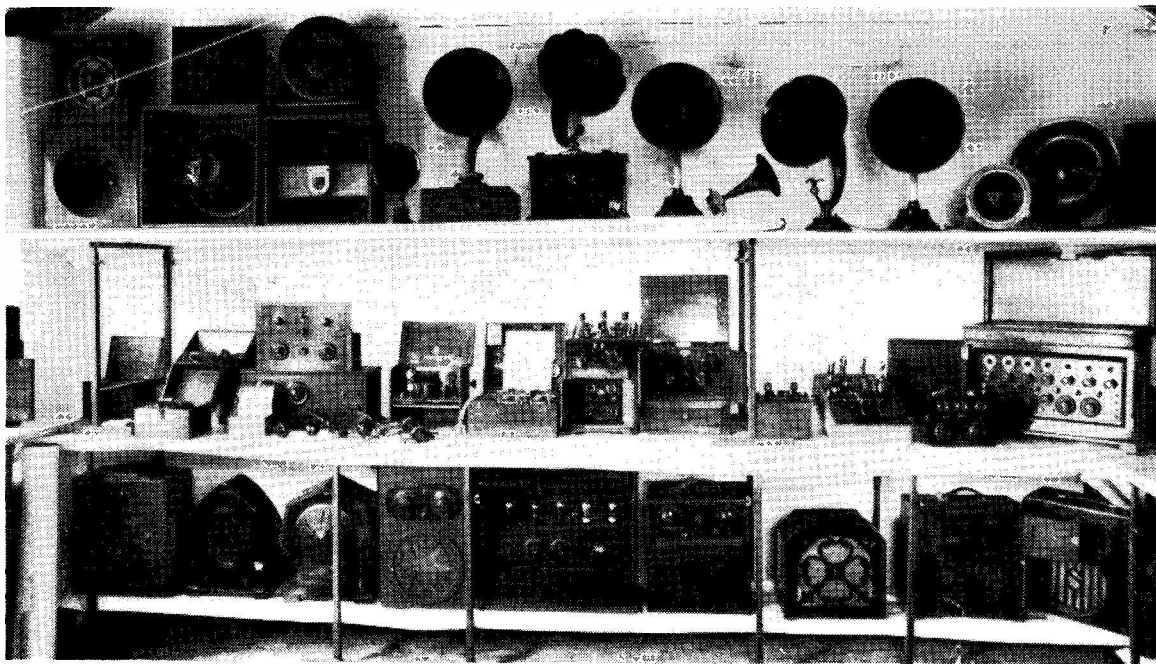
A familiar handwriting appears next, that from **Acton, Brentford and Chiswick**, advising us that on December 19 G3CCD will demonstrate his FT-101 transceiver to the members, while on January 16 comes the AGM. The venue for both these events is, as usual, the Chiswick Trades and Social Club, 66 High Road, Chiswick.

Dunstable Downs are a busy lot of bees; on December 1, while the one group are having their AGM, the others are encouraged to bring some tackle and put RF up the spout; December 8 is a lecture on TVI, and on the 15th, Dennis License of Enthoven Solders has the stand. The club-room is closed on the 22nd, but at 20.30 sharp, on 145.05 MHz, the Net will serve as a substitute. There are some "between weeks" now, namely those on December 29, January 12, and January 26, with the gap on January 5 filled in by John Gould, talking about Electronic Power Supplies. That leaves January 19,

Names and Addresses of Club Secretaries Reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W3-8LB.
 BASINGSTOKE: P. Sterry, G3CBU, Ashley, Orchard Road, Salisbury Gardens, Basingstoke, Hants.
 BEDFORD: J. Bennett, G3FWA, 47 Ibbett Close, Kempston (2427), Bedford.
 BISHOPS STORTFORD: E. P. Essery, G3KFE, 17 Ascot Close, Parsonage Lane, Bishops Stortford (2501), Herts.
 BLACKWOOD: R. B. Davies, GW3KYA, 16 Vancouver Drive, Penmain, Blackwood, Mon., NP2-OUQ.
 BRADFORD: R. Harker, 65 Whitby Road, Bradford (43791), BD8-9JN.
 BRIGHTON (Tech. Coll.): R. J. Henley, G2CMH, 35 Wilmington Way, Brighton, BN1-8JH.
 BROMSGROVE: J. Dufranc, 44 Hazelton Road, Marlbrook, Bromsgrove.
 BURY & ROSSENDALE: F. S. Burnett, 13 Rhiwlas Drive, Bury, BL9-9DD (061-764 7554).
 CANNOCK CHASE: T. A. Mitchell, G8EHY, 78 Farmdown Road, Stafford.
 CHILTERN: M. I. Connell, 38 White Close, High Wycombe (31314), Bucks.
 COVENTRY: G. A. Whenham, 33 Chapel Street, Bishops Itchington, Warwickshire.
 CRAY VALLEY: P. F. Vella, G3WVP, 78 Hurst Road, Sidcup, Kent.
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, SE23-3BN. (01-699 6940.)
 DARTFORD HEATH D/F: Mrs. M. Worbey, G3XVC, 13 Havelock Road, Dartford (22889), Kent.
 DUNSTABLE DOWNS: C. G. Powell, G8BPK, 1 Wenwell Close, Buckland Wharf, Aston Clinton (600), Aylesbury.
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 HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (3237).
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 LINCOLN: F. Day, 5 St. Marks Avenue, Cherry Willingham, Lincoln. (51058.)
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 MID-SUSSEX: E. J. Letts, G3RXL, 87 Meadow Lane, Burgess Hill (3552), Sussex.
 NEWBURY: W. B. Mansell, G2CPM, 10 Wyndham Road, Shaw, Newbury, Berks., RG13-2NJ.
 NIGERIAN: E. A. Lomax, 5N2ABG, PO Box 68 Kaduna, Nigeria.

NORTH DEVON: H. G. Hughes, G4CG, Crinnis, High Wall, Sticklepath, Barnstaple, Devon.
 NORTHERN HEIGHTS: A. Robinson, Candy Cabin, Ogden, Halifax. (44329.)
 NORTH STAFFS: D. Maxfield, G3ZRQ, 40 Fegg Hayes Road, Stoke-on-Trent, ST6-6RA.
 NUNEATON: J. Lee, G4AEH, 131 Green Lane, Camp Hill, Nuneaton.
 OXFORD: D. R. Ward, G4AOQ, 2 Lincoln Road, Oxford (47771), OX1-4TB.
 R.A.I.B.C.: Mrs. F. Woolley, G3LWY, Woodclose, Penselwood, Wincanton, Somerset.
 ROYAL NAVY: CRS A. G. Walker, RNARS, H.M.S. Mercury, Leydene, Hants.
 SLADE: J. E. Drakeley, 186 Conway Road, Chelmsley Wood, Birmingham 37.
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 SPALDING: R. Harrison, G3VPR, 38 Park Avenue, Spalding, Lincs., PE11-1QX.
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 SUTTON & CHEAM: J. Korndorfer, G2DMR, 19 Park Road, Banstead.
 TORBAY: Mrs. G. L. Western, G3NQD, 10 Truro Avenue, Hele, Torquay.
 VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford, Herts., WD2-5JQ.
 WARRINGTON: D. F. Catherwood, G3ZRN, 9 Summerville Gardens, Grappenhall, Warrington, Lancs.
 WEST KENT: H. Richards, 17 Reynolds Lane, Tunbridge Wells.
 WIMBLEDON: F. W. Hill, G3WDO, 20 Sunnymead Road, London, SW15-5HY.
 WIRELESS PRESERVATION: D. Byrne, G3KPO, Homa House, Quading Watergate, Spalding, Lincs. (Gosberton 485.)
 WIRRAL: A. Fisher, G3WSD, 34 Glenmore Road, Oxton, Birkenhead, Cheshire. (01-652 5078.)
 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.
 YEOVIL: D. L. McLeann, G3NOF, 9 Cedar Grove, Yeovil, Somerset.
 YORK: J. A. Rainbow, G8BOK, 14 Temple Road, Bishopthorpe, York, YO2-1QN.



Part of the museum being developed by the Wireless Preservation Society, where numerous pieces of equipment from pre-War days (the Kaiser's and Hitler's) are on display, many of them in working order. The museum is the brain-child of Douglas Byrne, G3KPO (Homa House, Quadring, Watergate, Spalding, Lincs.—Tel. 077-584 485) who is curator and hon. secretary of the Society. With distinguished support, under the presidency of Mr. W. Geddes of the Science Museum, South Kensington, the intention is to form a representative display of historical interest in the field of communication by wireless. Naturally, to make the exhibition truly representative and comprehensive requires the support of those who may have interesting historical apparatus to donate. We know that several such collections are being formed privately—it might be an idea if they were to get in touch with G3KPO, whose interest in the Wireless Preservation Society is entirely that of the connoisseur. It is open to public view by appointment with G3KPO.

which is set aside for the annual dinner—long enough after Christmas for appetites to recover!

On to **Southdown**, where they take the first Monday of each month, at the Victoria Hotel, Latimer Road, Eastbourne. That gives December 4, for a talk on Pulse Code Modulation, and January 1 for G8CFZ and his Transistorised Transmitters.

What a wonderful combination! **Crystal Palace** have, on December 16, a combined meeting, comprising a Junk Sale, and a Christmas Party rolled into one. That should satisfy about everyone, with the possible exception of the odd XYL having to receive the "new" junk into her house! This one is at Emmanuel Church Hall, Barry Road, London, S.E.22.

The **Dartford Heath D/F Club** seem to be maintaining their progress, running hunts frequently in summer and nearly as often in winter, and now it is understood they are also booking the first and third Fridays in every month at the Scout House, Broomhill Road, Dartford.

The **Southgate** gang meet at the Civil Defence Hut, Bowes Road (opposite the Arnos Grove Tube) on December 14, the programme details not being noted in the issue of their *Newsletter* which we have on hand as this is being written.

It is nice to see a Club making definite provision for the beginners in its programme—this is done on December 2 by the **Basingstoke** group, leaving the old hands to have a good natter. December 16 should be of

interest to all members, as it is a film show. Both these dates are at Hq., Chineham House, Popley, Basingstoke.

The **Oxford** chaps write to advise as that they are still going strong, although they have changed their Hq. address, and now get together on the second and fourth Wednesdays in each month, at the University Mansfield Road Club. On December 13, the subject is to be "Front-end Selectivity and Noise" but the meeting for the 27th will be scrubbed, to allow tummies time to settle.

Surrey throw open their meeting on December 19 to all comers, whether members of the Club or not, to hear Tim Hughes, G3GVV—the subject is as yet undisclosed. Venue, as usual, is the Swan and Sugarloaf in South Croydon. Incidentally, Surrey is one of a handful of Radio Clubs to have maintained strength and activity since before the War, the inaugural meeting having been held on October 29, 1935, since when the membership has varied between 75 and 130.

(over

"CLUBS" JANUARY

In the next issue, the usual "Clubs" space will be given over to the report on the recent MCC—the Magazine Club Contest. "Month with The Clubs" will resume in the February 1973 issue (to be published on January 26) for which Club reports are requested not later than January 4.

Western

Perhaps our first stop could be called the "gateway to the West," since it caused us so much bother trying to decide which section it should go in—**Newbury**. The lads get together on the first Monday of every month at the South Berks. College of Further Education; on a recent meeting, we are told, G3LLK, the chairman, talked about direct-conversion receivers, supporting his talk by a demonstration of a transceiver, embodying direct conversion techniques and diode change-over facilities.

The **Blackwood Hq.** is at Oakdale Community College, where they have been meeting for about a year; it is understood the College has been very forthcoming in the way of assistance to get things going, and already a transceiver, a 400-foot end-on wire, and a newsletter are visible fruits of the co-operation—the Secretary, GW3KYA, is very enthusiastic about the prospects. For details, contact him, address as in Panel, p.628.

At **Torbay** there are 70 members, and 16 are taking the R.A.E. course at Club Hq., which has meant doing some internal alterations to separate the rig from the class. During the aerial overhaul, it was found that the multi-band dipole has a feeder-full of water! On December 16, they have that yearly Christmas Party and Quiz between themselves, Exeter and Plymouth, with a trophy to be competed for and won. As for the venue, it is in Bath Lane, rear of 94 Belgrave Road, Torquay.

Talking of attendances, while it is easy to get 70-plus at a venue in a populous area, it is surprising how big attendances can be secured in the remoter parts; for example, at **North Devon**, as many as eleven people turned up at Crinnis, High Wall, Sticklepath, Barnstaple to a recent meeting. For December 13 there is a talk, the date for December 27 is "scrubbed," and on January 10 there is another talk, with a natter-session to roundoff on January 24. Incidentally, since this group meets at the QTH of the Secretary, should anyone be thinking of attending or visiting, it would be nice to let him know in advance. On a different tack, the North Devon crowd are doing their best, still, to organise an R.A.E. class, possibly on a different evening. If anyone reading this who lives within striking distance of Barnstaple (and "striking distance" is an elastic term for the truly keen!) and wants to learn and pass R.A.E., will they get in touch with G4CG *quickly*, his address being shown in the Panel.

Midlands

Here our first task is to announce the formation of Clubs at the various **Joseph Lucas** factories—G3GVN mentions one at the Forman's Road works and another factory in the Birmingham area, and says they would like to make contact with groups formed, forming, or otherwise, in other factories outside Birmingham but within the Lucas group. G3GVN can be contacted at the address in the Panel p.628.

One snag of having a summer break, which tends to be obligatory for organisations meeting in Technical Colleges, is that of re-establishing contact with members after it. This problem is being wrestled with at **Nuneaton**. It would be a shame to have to lose members and hence to lose the clubroom, when there are the facilities of lab.

test gear and so on at their disposal. If any backslider sees this, or any reader in the Nuneaton area, put a red mark by December 5, and use it as a reminder to attend the Club at Nuneaton Technical College, Hinckley Road, on that date.

Wolverhampton have an interesting date on December 4, when they listen to G3HCT talking about the Bermuda Contest; on the 11th they have a Natter Nite, and on the 18th a talk on Simple Direction-finding on Top Band. The details for January 1 are yet to be announced, but on January 3 comes the big event—the New Year Party at Tattersall's Suite, Wolverhampton Race-Course. The other meetings of course are at the Hq. at Neachells Cottage, Stockwell Road, Tettenhall.

Coventry have a new Secretary after several years of continuous hard work by the previous incumbent, who now finds he has not the time spare to do the job as well as he likes it done. From this chair we can say that we very much doubt if the Coventry club members generally realise just how much effort their late hon. secretary put in on their behalf.

On to **Midland** where the wives and girl-friends will be joining the chaps at the Midland Institute in Margaret Street for a cheese-and-wine party, on December 19.

Next we have a report from G3KPO of the **Wireless Preservation Society**, an organisation devoted to the collection, preservation and restoration of veteran and vintage wireless and electronic equipments. The Society maintains a museum, the details of which are to be obtained from the secretary-curator—see Panel.

It is a while since last we heard from the **Lincoln** group, and they seem to have had a change of venue in the meantime, to the Lincoln Astronomical Society Lecture Rooms, Westcliff Street, Burton Road, where they may be found on any Wednesday evening, and where visitors will be welcomed.

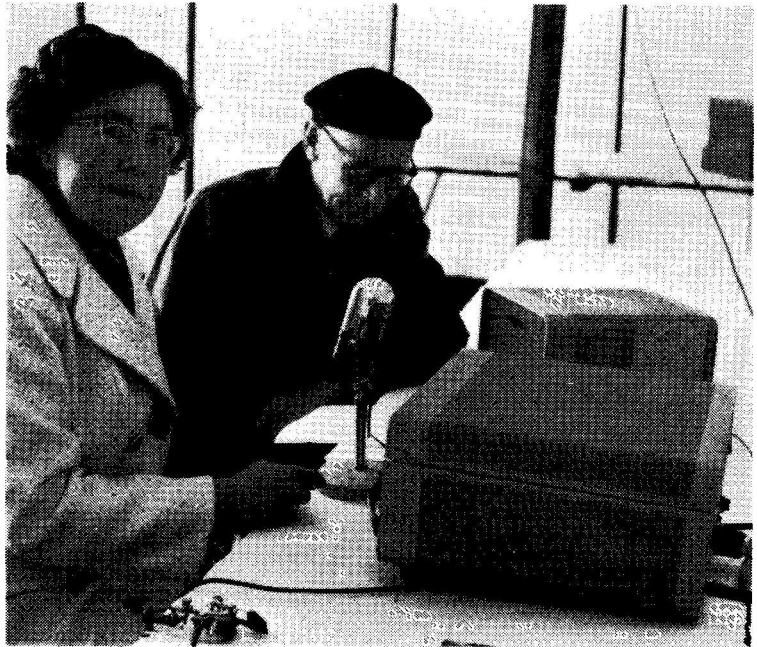
The lads at **Spalding** seem to get around a bit, although their "home address" remains at the Ship Albion, Albion Street, Spalding. Here they have their Christmas social-and-sale, on Friday, December 15, when visitors will as always be welcomed from a wide area, after the goodies in the sale or on the stand of J. Birkett; the admission charge is 15p, as usual for these events. January 22 sees them gathered at the same venue for a more serious business, namely the A.G.M. Both events start at 7.30 p.m.

Yet another group to combine a Christmas party and a junk sale is **South Birmingham**, on December 6 at their Hq. at West Heath Community Centre, Hampstead House, Fairfax Road, West Heath. Incidentally, the shack there is open every Friday evening, for the benefit of members and visitors.

The get-together at **Bromsgrove** on December 8 should be interesting, as we understand G3ZU and G6AGT/T are to combine forces for a presentation of Video. A KW-2000 transceiver has recently been purchased for use in the Club shack during contests. They can be found at the Royal Oak, Barley Mow Lane, Bromsgrove, on the second Friday of each month.

It didn't take long for the **Melton Mowbray** crew to get organised after the members had signified their wishes at the AGM. This month we have a preliminary notice which shows already the detailed programme through till June 1973. For December 15, G5UM will

At the Civil Service Show at Cheltenham in July last, an amateur-band station was set up and operated by Barbara Janes, G3XYL (a callsign for which she waited long after she qualified!), assisted by G6QM, who is responsible for handling through the Bureau the QSL cards for the (ever-dwindling) number of G6's. They used the callsign GB3CSS for the occasion, and thought the £3 rather a high charge for a few hours on the air for a public occasion!



be talking about "VHF Then and Now," and on January 19, G4AMK takes over to talk about Marine Radio. The venue is, as for so long, the St. John Ambulance Hall, Asfordby Hill, Melton Mowbray, starting at 7.30.

A novel way of sending in a report is adopted by **North Staffs.**—they sent a car-window sticker which tells that they are at Harold Clowes Community Centre, Stoke-on-Trent, every Monday evening from 7.30. One would think that this is an idea which could well be taken up by others as a form of local publicity, roping in people who might not be reached otherwise.

How nice it is to see **Northern Heights** back "in sync" with us again—we missed those letters from G3MDW! This time, Arthur says that they have a Quiz night on December 6, followed by Ragchewing on the 20th. There is a break till January, when on the 3rd, G3IKS will be showing the How-and-Way of Colour Anodising of Aluminium. January 17 is another ragchew, then on the 24th there is the annual dinner. The year will be terminated by G6LD on the 31st, with his talk on SSB working. The Hq. is at the Peat Pitts Inn, Ogden, Halifax.

The **Hull** group meet weekly, at 592 Hesse Road, Hull HU3-5JA, on Fridays. Thus on December 1 there is a film show; December 8 is for a talk on Modern Filters; a Construction Competition takes up the 15th; and a talk on Regulated Power Supplies by G3AGX, on December 22, which is also a Query Night.

As for so long, the **York** group have their Hq. in the British Legion, 61 Micklegate, York. Apart from their weekly gatherings on Thursday evenings, they are also

making arrangements to run an R.A.E. course in parallel on the same dates.

The **Mansfield** gang have been giving themselves—corporately, of course!—a face-lift, by extra sessions on Fridays at the Westfield Folkhouse, although the time honoured "first Friday in the month" at the New Inn, in Westgate continues.

Membership is still growing at **Warrington**, where the general plan is to meet weekly, but devote alternate sessions to the beginners, by way of a logical series of talks suitable to the syllabus of the R.A.E. Then the remaining meetings can be put over to more advanced items or be good plain old natter nights. There is, at the time of writing, a talk on December 5, by G8BLE, who will discuss his Digital Frequency Meter, but nothing is as yet fixed for the 12th and 19th. As for the 26th date, that, naturally enough, is marked down as "no meeting".

Sign-Off

And there it is once again; perhaps a little disconnected, if only because your conductor was enjoying listening to the MCC battle, as in so many years past.

The deadline for next time, with news and views covering your *February* programme is **Thursday, January 4**, to arrive by first post, addressed as always to "Club Secretary," **SHORT WAVE MAGAZINE, BUCKINGHAM.** (Not, please note, addressed to Victoria Street).

Next month's "Clubs" space will be devoted to our report on MCC, hence no Club reports for January.

For the rest it remains but for your scribe to wish all readers and correspondents a very Merry Christmas, and a Happy New Year. Vy 73.

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.

- G2BS**, C. S. Anderson, 34 Burnside, East Boldon, Co. Durham, NE36 OLS. (*Re-issue.*)
- G3AWQ**, D. R. Hill, Ingle Royde, Halstead Drive, Menston, Ilkley, Yorkshire. (*Re-issue.*)
- G4BAY**, Post Office Amateur Radio Club, 200 Marton Road, Middlesbrough, Teesside.
- GW4BCB**, K. Johnston (*ex-GW8FGC*), Cliff Walls, Marine Parade, Penarth, Glam.
- GM4BIP**, B. S. Hardy, 36 Blackness Avenue, Dundee, DD2 1HH. (*Tel. Dundee 68828.*)
- GW4BIQ**, F. C. Rudd, 96 Pennard Road, Pennard, Swansea.
- G4BIZ**, A. D. Paxton, 112 Hiltingbury Road, Chandlers Ford, Hants.
- GW4BJE**, T. A. Simmons, 88 Wyndham Road, Canton, Cardiff, CF1 9EL.
- G4BJZ**, S. G. Sanders, 111 Dovehouse Lane, Solihull, Warks. (*Tel. 021-706 4000.*)
- G4BKE**, D. H. Wright (*ex-G8DZU*), 19 Fordington Avenue, Winchester, Hants. (*Tel. Winchester 61133.*)
- G4BKM**, W. M. Ludkin, 24 Southfield Gardens, Twickenham, Middlesex, TW1 4SZ. (*Tel. 01-892 7641.*)
- G4BKZ**, D. R. McGovern, 1202 Rochdale Road, Manchester, M9 2FR. (*Tel. 061-740 4065.*)
- GW4BLE**, S. Cole, 87 Thornbury Park, Rogerstone, Newport, Mon., NP1 9DR.
- G4BLP**, S. Wootton, La Calanque, Camp Road, Battledown, Cheltenham, Glos.
- G4BLX**, D. E. Austin, 86 Minchenden Crescent, Southgate, London, N14 7EN. (*Tel. 01-886 1418.*)
- G4BMH**, N. Brooks, School House, Naseby, Rugby.
- G4BMS**, A. Redford, 27 Ryecroft Meadow, Mannings Heath, Horsham, Sussex, RH13 6JN.
- G8GJN**, P. J. Eccles, 2 Mountbatten Avenue, Outwood, Wakefield, Yorkshire, WF1 3EW.
- G8GJQ**, D. S. Grant, 125 Magpie Hall Lane, Bromley, Kent.
- G8GKN**, J. C. B. Thackeray, Wodehouse Lodge, Headley, Bordon, Hants.
- G8GKV**, E. H. Downer, White Cottage, 101 Littlehampton Road, Worthing, Sussex, BN13 1QU. (*Tel. Worthing 62204.*)
- G8GKY**, G. Oughtibridge, 73 Derby Road, Thornbury, Bradford, BD3 8QA. (*Tel. Bradford 665977.*)
- G8GLH**, B. J. Waddell, 10 Robin Grove, Wednesfield, Wolverhampton, Staffs., WV11 1LQ. (*Tel. Wolverhampton 733185.*)
- G8GLV**, A. A. Brown, Woodside, Greenlands Lane, Prestwood, Gt. Missenden, Bucks.
- G8GMC**, M. Harbach, 7 Beech Road, Willenhall, Staffs., WV13 3DD.
- G8GME**, R. A. Isaac, Hill House Farm, Needham Market, Ipswich, Suffolk, IP6 8EA.
- G8GMR**, C. R. Baker, 18 Collingtree, Luton, Beds., LU2 8HN. (*Tel. Luton 35806.*)
- G8GMW**, M. E. Weaver, Carlyon, 22 Greenhill Road, Alveston, Bristol, BS12 2LZ.
- G8GNE**, V. Cracknell, 11 Brewin Avenue, March, Cambs., PE15 9SL.
- G8GNG**, J. E. Ball, 8 Buntings Lane, Warmington, Peterborough, PE8 6TT.
- G8GNV**, A. H. Jackson, 57 Peterborough Road, Castor, Peterborough.
- G8GOT**, D. J. Parkin, 27 Hendale Lane, Kettlethorpe, Wakefield, Yorkshire, WF2 7NT.
- G8GPO**, Post Office Amateur Radio Club, 200 Marton Road, Middlesbrough, Teesside.
- G8GPR**, R. M. Crossley, 29 Westover Road, Warton, Carnforth, Lancs.
- G8GPT**, R. G. Taylor, 55 Chichester Drive, Quinton, Birmingham, B32 1BG.
- G8GPV**, N. R. Huntley, 212 St. Stephens Road, Saltash, Cornwall, PL12 4NL.
- G8GQA**, S. D. Ellis, 229 Mersham Road, Thornton Heath, Surrey, CR4 8NW.
- G8GSF**, J. Sleeman, No. 24 11th Row, Ashlington, Northumberland, NE63 8QQ.
- G8GSN**, G. W. Davidson, 40 Aster Road, Ipswich, Suffolk, IP2 0NQ.

CHANGE OF ADDRESS

- GM3CFS**, J. M. Robson, Eday Island, Orkney Islands.
- G3FZG**, A. Treanor, 6 Upton Drive, Penketh, Warrington, Lancs., WA5 2BZ. (*Tel. Penketh 2403.*)
- G3GUV**, T. Griffin, 33 Main Road, Gainford, Darlington, Co. Durham.
- G3KOJ**, R. J. Ezra (*ex-ZBIPP / ZC5FF / VS1FF / 9V1FF*), 2 Howard Close, Treetops, Tavistock, Devon. (*Tel. Tavistock 3292.*)
- G3KXT**, R. I. Richardson, 25 Constance Crescent, Bromley, Kent, BR2 7QH.
- GW3MHW**, J. R. R. Baker (*ex-G3MHW*), Ty-Top, Castle Caereinion, Montgomeryshire.
- G3OHX**, I. Jackson, High Legh, Chalfont Road, Seer Green, Beaconsfield, Bucks. (*Tel. Beaconsfield 6841.*)
- G3PHR**, J. H. Carter, 35 Castlebar Mews, Ealing, London, W.5. (*Tel. 01-997 4258.*)
- GW3RXD**, G. Llewelyn, Bayano, 33 Awelfryn, Anglesey.
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- G3TMQ**, R. J. Harrison (*ex-PA9LY/ON8KA*), The Cottage, Manor Road, Aldershot, Hants.
- G3XKW**, K. R. Hamilton-Wedge-wood, Rosedale, Redmoor, Bodmin, Cornwall.
- G3YDC**, M. E. Brett, 39 Burgage Road, Stogursey, Bridgwater, Somerset.
- G3ZCF**, R. J. Trebilcock, 20 Spinney Brow, Ribbleson, Preston, Lancs., PR2 6YG.
- G4AAZ**, R. G. D. Moreton, 26 Hardes Road, Ramsgate, Kent.
- G8DPN**, B. W. Dunhill, c/o Royce Hall, University of Technology, Loughborough, Leics., LE11 3TY.

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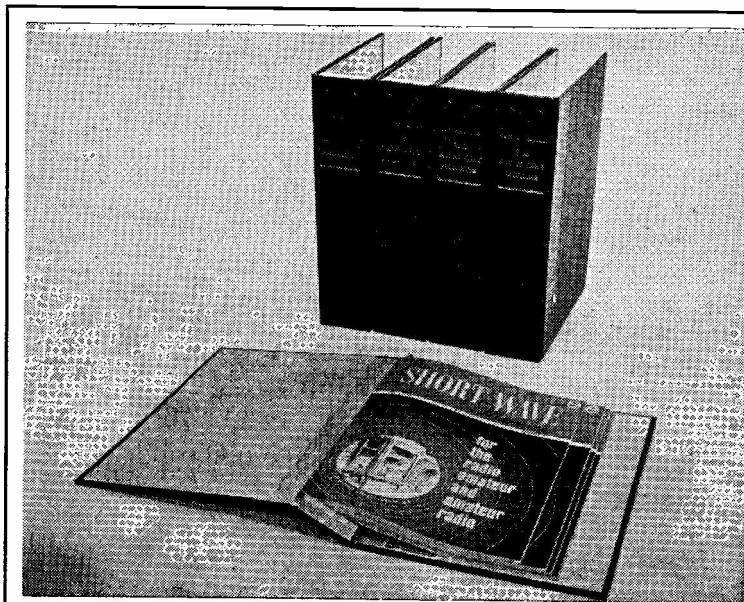
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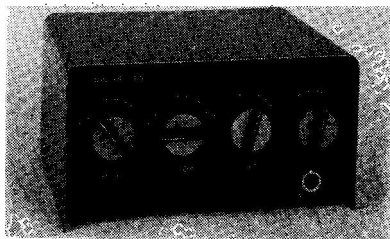
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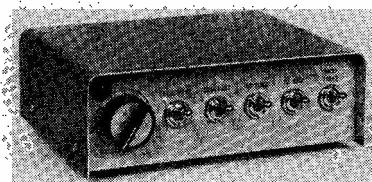
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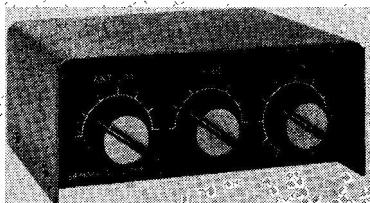
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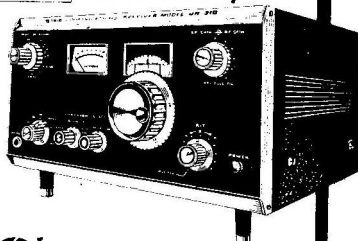
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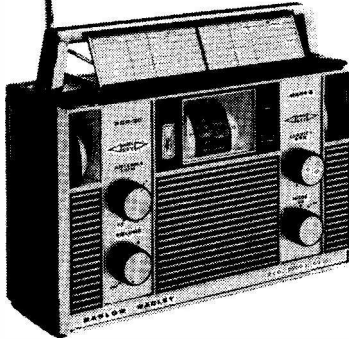
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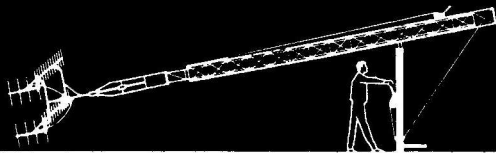
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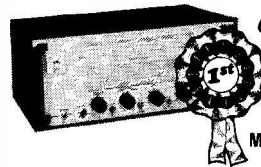
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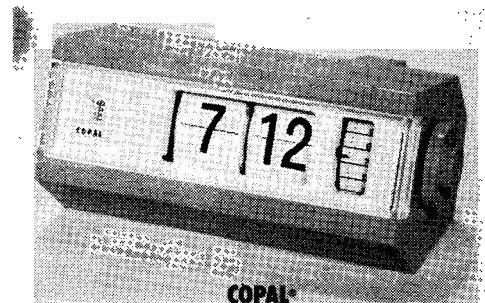
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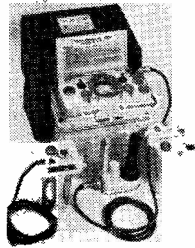
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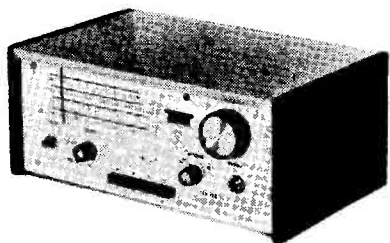
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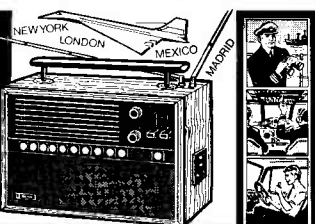
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