

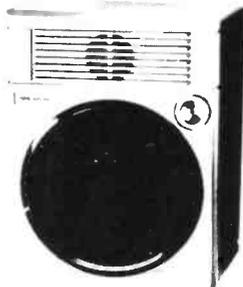
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Now for the first time, a new ingenious compact sound system allows you to hear weak signals like never before, sort out the rare ones and listen to quality like you have never heard from your receiver, handle talkie or scanner. Usually, accessory speakers are no more than 50 pence speakers in fifty pound boxes. Their efficiency, frequency response and distortion levels are minimal and since most of all of the new transceivers have less than one watt of audio, our ability to understand becomes very difficult.

The new SS-2 Heil Sound System contains two five watt amplifiers, a 3.5" woofer with a half pound magnet a 1.5" tweeter with a 12 dB per octave passive crossover network. The tweeter is crossed over at 1500 hz, right where the response of the human ear starts to fall off and the huge woofer fills out the mid-range and low frequency response. No single cheap speaker can begin to give you this type of response.



The second five watt amplifier can be used to drive a second speaker enclosure and will be used in a dual diversity system using the Heil parametric equalization system which will be introduced very soon.

When most receivers are running at a comfortable listening level, their little one half watt amplifiers are being pushed into extreme distortion levels. The extended response, the added efficiency and additional output power of the SS2 will lower your noise floor, reduce noise and allow you to copy signals that formerly were impossible to hear.



Mobile optional with the new Heil Sound System is unbelievable. The 5 watts of output and the tweeter system really adds to the articulation factor making signals so much easier to copy. The system makes Hand Held receivers come alive!

The SS-2 measures 3 3/4" x 5" x 3 3/4". It weighs 2 lbs. and is housed in a high impact silver beige case. Power requirements are 12-13.8 volts D.C. at 400 M.A. A red L.E.D. is mounted on the front panel for power up indication. All input/output connections to the amplifier is made through a 5 pin DIN plug.

You can own this great new addition to your station for only **£65.00** inclusive of VAT and carriage. We suggest that you hurry as there is probably someone calling you right now that your present speaker isn't truly reproducing. Discover the world of high quality audio today!

SS-2 Sound System

£65.00

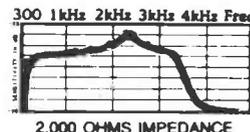
THE MICROPHONE HEIL HM-5

Radio amateurs have historically used microphones designed for something else: industrial paging, public address, tape recording, etc. "Matching" microphones for new equipment usually means it's the same colour as the radio! None of these microphones has the correct response we so desperately need for maximum speech articulation. The engineers at Heil, Ltd., went far beyond traditional mic design. They spent thousands of hours analyzing complex SSB voice patterns... allowing them to determine precisely what was really necessary for your communications microphones. The results are enhanced intelligibility, maximum articulation and clean, natural audio for the signal that will always be "on top".

The HM-5 uses the famous Heil HC-3 "Key Element" mounted in a quality goose neck which is set into a steel die cast base - not plastic like most of the industrial paging mics. A large push-to-talk bar with locking switch allows for smooth P.T.T. operation. The cartridge is connected straight through, so that proper vox operation is possible without the necessity for any external switching.

The HM-5 is a stunning addition to any station and it will be the answer to getting those signals "on top". The HM-5 is the preferred microphone for many leading contest and DX stations.

Sensitivity: -70 DB
Response: 300 HZ - 4,000 HZ.
With a very defined rise at 2100 HZ.



The element works very well into a 600 ohm load, but it may need a matching transformer when using high impedance outputs.
Polar Pattern: Cardioid pattern forward.

HC-3 Key Element £22.95 inc VAT & P&P
HM-5 Microphone £59.95 inc VAT & P&P

LOOK! BEAT THE PILE UP WITH NO HANDS AND THE HEIL BM10

A NEW and UNIQUE NO HANDS Headset/Boom Microphone weighing in at a super light 8oz.

The Heil BM10 is a VERY SPECIAL unit designed to a specification from some of the WORLD'S LEADING contest and OX operators.

The microphone element is the SPECTACULAR Heil HC4 with a specially TAILORED RESPONSE to help you push through the pile up. The headpieces are soft, comfortable and have a high "CLOSE OUT" of external noises. The whole unit is HIGHLY VERSATILE allowing removal or adjustment of the headpieces or microphone to suit the OPERATOR'S NEEDS yet it remains ROBUST enough to meet the RIGOROUS demands of PROLONGED use.

The Heil BM10 CAN DO MUCH FOR YOU, TRY IT, HANDS OFF STYLE, RELAX, SIT RIGHT BACK, CUT THROUGH THE PILE UP AND WATCH YOUR CONTEST SCORE SOAR.



PRICE HEIL BM10 £65:00 inc VAT & Carr.

*Adaptor required for Icom equipment

Goods will be despatched by return



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(GB3SWM)

ISSN: 0037-4261

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Editor: **PAUL ESSERY, G3KFE/G3SWM**

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Articles submitted for Editorial consideration must be typed double-spaced with wide margins on one side only of A4 sheets. Photographs should be lightly identified in pencil on the back with details on a separate sheet. All drawings and diagrams should also be shown separately, and tables of values prepared in accordance with our normal setting convention — see any issue. Payment is made at a competitive rate for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

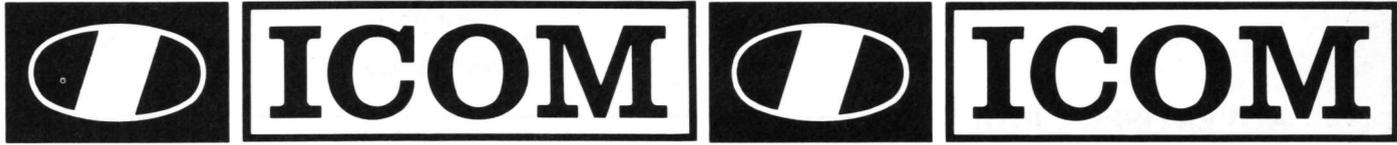
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Thanet EI



IC-735, The Complete HF Radio

This new HF transceiver from ICOM is compact enough to make mobile or portable use a possibility. The IC-735 covers all Amateur frequencies from 1.8MHz to 30MHz including the three new bands 10, 18 and 24MHz. Modes include SSB, CW, AM and FM, all circuits are solid-state and output is approximately 100 watts.

Tuning ranges from 100kHz to 30MHz, made continuous by using a high-side IF and a CPU control system. RTTY operation is also possible. Dynamic range is 105dB with a 70.451 MHz first IF circuit. The direct feed mixer rejects spurious response and gives higher sensitivity and wider dynamic range. Pass-band tuning and a sharp IF notch filter provide clear reception even under duress. Preamp is 10dB and attenuator 20dB.

The new IC-735 from ICOM is easy to operate and versatile, it has various scanning functions, comprehensive LCD and 12 memories. Computer remote control is possible via the RS-232C jack.

Options include: the AT-150 automatic antenna tuner and shown here the PS-55 AC power supply and SM-8 desk mic.

Please contact Thanet Electronics or your local ICOM dealer for even more information on this latest HF transceiver – the IC-735.



IC-290D/290E Mobile



290D is the state of the art 2 meter mobile, it has 5 memories and VFO's to store your favourite repeaters and a priority channel to check your most important frequency automatically. Programmable offsets are included for odd repeater splits, tuning is 5KHz or 1KHz.

The squelch on SSB silently scans for signals, while 2 VFO's with equalising capability mark your signal frequency with the touch of a button. Other features include: RIT, 1 KHz or 100Hz tuning/CW sidetone, AGC slow or fast in SSB and CW, Noise blanker to suppress pulse type noises on SSB/CW.

You can scan the whole band between VFO's/scan memories and VFO's. Adjustable scan rate 144 to 146 MHz, remote tuning with IC-HM10 and HM11 microphones. Digital frequency display, Hi/Low power switch. Optional Nicad battery system allows retention of memory.



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The TS930S from Trio
Price: £1295.00 inc. VAT



TRIO TS430's
£720.00



TW4000A
£522.00



TRIO R600 RECEIVER
£299.00



TRIO R2000 RECEIVER
£479.00
VHF CONVERTER. £128.36
Covers 118-174MHz



TRIO TS830S
HF SSB TRANSCEIVER
£832.75

NEW TRIO MODELS

| | |
|---|----------|
| TH21E 2M FM Micro Transceiver..... | £170.00 |
| TR2600E 2M FM Transceiver..... | £199.00 |
| TS711E 2M Multimode Base Transceiver... | £768.00 |
| TS811E 70cm Multimode Transceiver..... | £850.00 |
| TS940S HF transceiver..... | £1695.00 |



AR2001 scanning receiver. A glance at the brief specification will tell you why the new AR2001 receiver is going to take the listener by storm.

- ★ Continuous coverage 25-550MHz (no gaps).
- ★ Receive modes of AM (for VHF/UHF airband), FM narrow (for amateur radio, CB, business radio) and FM wide (for broadcast and TV FM).
- ★ Digital display of frequency, mode and memory channel.
- ★ Memory channels which store frequency and mode.
- ★ Full range of scan facilities.

The performance of the AR2001 sets new standards. Gone are the complaints of "dead" receivers. The AR2001 has typical sensitivity of 0.2 microvolts for 12dB SINAD on FM (N) across the entire 25-550MHz range. Finally, the AR2001 is small, light weight, and powered from any 12v dc source, so it can be used at home, in the car, boat or aircraft, and whilst out portable.

Now comes complete with 12V PSU £345.00



J.R.C. NRD515D

General coverage receiver 100 KHz to 30 MHz fully synthesised. Digital readout PLL synthesiser with rotary type encoder pass band tuning - modular construction. £965.00

NSD515 TRANSMITTER & AC PSU £1,371.00
NEW 96 CHANNEL MEMORY UNIT.

DATONG PRODUCTS

| | |
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| Low Frequency Converter..... | £29.90 |
| FL1 Frequency Audio Filter..... | £79.35 |
| FL2 Multi-Mode Audio Filter..... | £89.70 |
| Automatic FR Speech Clipper..... | £82.80 |
| D70 Morse Tutor..... | £56.35 |
| AD370 Active Antenna (outdoor)..... | £64.40 |
| AD270 Active Antenna (indoor)..... | £47.15 |
| 2M Converter..... | £39.67 |

ANTENNA ROTATORS

| | |
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| Diawa | |
| MR750E..... | £193.00 |
| DR7500R..... | £153.67 |
| DR7600X..... | £189.37 |
| DR7600R..... | £213.41 |

KENPRO

| | |
|------------------------------|---------|
| Kenpro 250..... | £65.55 |
| KR400C..... | £132.50 |
| KR600RC..... | £189.50 |
| KR500 Elevation Rotator..... | £144.50 |

Station Accessories

| | |
|--|---------|
| SP400..... | £82.00 |
| SP10X..... | £28.75 |
| SP15M..... | £41.00 |
| SP45M..... | £59.75 |
| Wetz AC38 Antenna Tuner..... | £73.95 |
| Global SWL AT 1000 Tuner..... | £52.00 |
| SWR25..... | £15.75 |
| HK 708 Morse Keys..... | £16.30 |
| Diawa 2 way Ant. Switch..... | £15.88 |
| V33 way Ant Switch..... | £10.50 |
| DL50 Dummy Load..... | £7.97 |
| DL600 500hm 600 watt D.Load..... | £39.50 |
| HP41 high pass filter..... | £6.95 |
| Trio LF30A low pass filter..... | £24.68 |
| Diawa CN410M 3.5-150MHz SWR/PWR meter..... | £48.00 |
| Diawa CN460M 140-150MHz SWR/PWR meter..... | £52.00 |
| Diawa CN620A 1.8-150MHz SWR/PWR meter..... | £66.21 |
| Diawa CL680 1.8-30MHz ATU..... | £81.50 |
| Diawa CN419 1.8-30MHz ATU..... | £159.64 |
| Diawa PS300 30 amp power supply..... | £176.80 |
| Diawa PS120M 12amp power supply..... | £87.25 |

YAESU

| | |
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| FRG9600 Scanning Receiver..... | £475.00 |
| FRG880 Gen. Cov. Receiver..... | £550.00 |

Microwave Modules, and other equipment also available, including I.C.S. - Diawa - Telereader - RSGB and ARRL publications - Tau - Yaesu.

ANTENNAS

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| Hy-Gain | |
| 12AVQ 3Band Vertical..... | £78.95 |
| 14AVQ/WB 4 Band Vertical..... | £106.00 |
| 18AVT/WB 5 Band Vertical..... | £172.00 |
| TH2MK3 2El. Tribander Beam..... | £279.00 |
| TH3JNR 3El. Tribander Bea..... | £299.00 |
| 205BA 5 Element 20m Beam..... | £399.00 |

Mini Products

| | |
|---------------------------------|---------|
| HQ1 Minibeam 10 - 15 - 20m..... | £199.00 |
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T.E.T.

| | |
|-----------------------------|---------|
| HB23SP 2EL Tribander..... | £172.50 |
| HB23M Triband Minibeam..... | £169.50 |
| HB33M Triband Minibeam..... | £230.00 |
| HB33SP 3EL Tribander..... | £231.50 |
| HB35C 5EL Tribander..... | £283.95 |
| MV3BH 3Band Vertical..... | £46.95 |
| MV4BH 4Band Vertical..... | £59.95 |
| MV5BH 5Band Vertical..... | £99.00 |
| MV3BH with Radial Kit..... | £69.00 |

TONNA

| | |
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| 4 Element 2m Yagi..... | £14.95 |
| 9 Element 2m Yagi..... | £17.71 |
| 17 Element 2m Yagi..... | £37.66 |
| 19 Element 432MHz Yagi..... | £20.70 |
| 21 Element 432MHz Yagi..... | £29.67 |

| | |
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| G-Whip New all band Base Station Antenna..... | £85.50 |
| Welz Diamond DCP5 10-80 trapped vertical with radial kit..... | £149.00 |

Hokasin

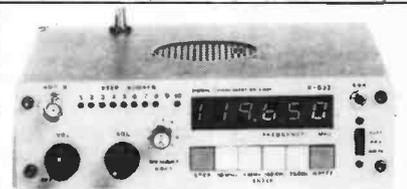
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| 1/4 wave 2m Whip mobile..... | £2.54 |
| 5/8 wave 2m Whip mobile..... | £11.26 |
| 7/8 wave 2m Whip mobile..... | £17.06 |
| 5/8 wave Base Station antenna..... | £42.68 |
| GPV-52m Base Station Co-Linear..... | £35.27 |
| GPV-770cm Base Station Co-Linear..... | £35.35 |
| GPV 720 144/432MHz dual base station..... | £25.00 |
| Revcone Discone..... | £25.00 |

JAYBEAM

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| LW5 5El 2m Yagi..... | £15.33 |
| LW8 8El 2m Yagi..... | £19.55 |
| LW10 10El 2m Yagi..... | £25.30 |
| LW16 16El 2m Yagi..... | £37.95 |
| PBM 10 10El Parabeam..... | £49.95 |
| PBM 14 14El Parabeam..... | £60.95 |
| C5/2m 2m Co-Linear..... | £86.25 |
| D5/2m Double 5Element Slot Yagi..... | £27.60 |
| Q4/2m 4Element 2m Quad..... | £31.63 |
| Q6/2m 6Element 2m Quad..... | £41.40 |
| Q8/2m 8Element 2m Quad..... | £51.75 |
| D8/70cm Double 8Slot Yagi..... | £28.18 |
| PBM 18/70cm 18El Parabeam..... | £34.50 |
| PBM 24/70cm 24El Parabeam..... | £46.00 |
| LW24 24El folded dipole..... | £31.05 |
| MBM 28 28El multibeam..... | £23.00 |
| MBM 48 48El multibeam..... | £37.95 |
| MBM 88 88El multibeam..... | £51.75 |
| 8XY/70 Crossed 8Yagi..... | £44.85 |
| 12XY/70 12El Crossed Yagi..... | £55.20 |
| 5XY/2m Crossed 8El Yagi..... | £29.90 |
| 8XY/2m Crossed 8El Yagi..... | £38.53 |
| 10XY/2m Crossed 10El Yagi..... | £48.30 |
| TB1 Rotary Dipole..... | £77.05 |
| TB2 2 Element Tribander..... | £143.75 |
| TB3 3 Element Tribander..... | £212.75 |

Antenna Tower Range 30ft lattice type and accessories - details on request.

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| Full size G5RV antenna..... | £14.95 |
| Half size G5RV antenna..... | £12.95 |
| 80-10 Dipole Kit..... | £24.95 |
| Pair 7-1 MHz Traps..... | £9.75 |
| HS50B 1-1 balun..... | £18.74 |
| Large dipole centre piece..... | £3.50 |



**THE R532
AIRCRAFT BAND RECEIVER
£185.00 inc. VAT**

SPECIFICATION.

Frequency range: 110 to 136MHz, i.e. all NAV/COM channels.
Number of channels: 1040 (25KHz steps).
Sensitivity: Better than 0.75 microvolts 10dB /SN.
Memory channels: 100 (10 banks of 10). Memories can be scanned automatically or selected manually.
Power required: 12V dc negative earth 300mA typical. (Display can be switched off to reduce consumption when operating portable). Size: 160 x 45 x 130mm.
Weight: approx. 1kg. (including memory backup batteries).

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- ★ NEW CATALOGUE
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- ★ NEW PRICES

Package Prices

| | | Kit |
|-----|---|---------|
| 1. | 500mW TV Transmit (70FM05T4 + TVM1 + BPF433) | £40.00 |
| 2. | 500mW TV Transceiver (As 1 above plus TVUP2 + PS1433) | £65.00 |
| 3. | 10W TV Transmit (As 1 above plus 70FM10 + BD35) | £75.00 |
| 4. | 10W TV Transceiver (As 2 above plus 70FM10 + BD35) | £100.00 |
| 5. | 70cms 500mW FM Transceiver (70T4 + 70R5 + SSR1 + BPF) | £80.00 |
| 6. | 70cms 10W FM Transceiver (As 5 above plus 70FM10) | £115.00 |
| 7. | 2M Linear/Pre-amp 10W (144PA4/S + 144LIN10B) | £45.00 |
| 8. | 2M Linear/Pre-amp 25W (144PA4/S + 144LIN25B) | £48.00 |
| 9. | 2M Linear/Pre-amp 25W (144PA4/S + 144LIN25C) | £51.00 |
| 9. | 70cms Synthesised 10W Transceiver (R5 + SY + AX + MOD + SSR + 70FM10) | £165.00 |
| 10. | 2M Synthesised 10W Transceiver (R5 + SY + SY2T + 144FM10A) | £125.00 |
| 11. | 2M Crystal Controlled 10W Transceiver (R5 + T3 + BPF + 144FM10 + SSR) | £95.00 |
| 12. | 70cms Linear/Pre-amp (70LIN10 + 70PA2/S) | £47.00 |
| 13. | 24cms FMTV Receive, video out (Kit) (VIDIF, 1250DC50 Boxed) | £105.00 |
| 14. | 24cms FMTV Receive, video out (Ass) (VIDIF, 1250DC50 Boxed) | £120.00 |
| 15. | 24cms FMTV Receive, Ch 36 out (Kit) (VIDIF, TVMOD1, 1250DC50 Boxed) | £110.00 |
| 16. | 24cms FMTV Receive, Ch 36 out (Ass) (VIDIF, TVMOD1, 1250DC50 Boxed) | £126.00 |
| 17. | 24cms FMTV Transmit Kit (UFM01, 70LIN3/LT, 70FM10, WDV400/1200 Boxed) | £140.00 |
| 18. | 24cms FMTV Transmit (Ass) (UFM01, 70LIN3/LT, 70FM10, WDV400/1200 Boxed) | £170.00 |

70cms Transceiver Kits and Accessories

| | CODE | ASSEMBLED | KIT |
|-------------------------------|-----------|-----------|--------|
| FM Transmitter (0.5W) | 70FM05T4 | £52.25 | £33.05 |
| FM Receiver (with PIN RF c/o) | 70FM05R5 | £68.75 | £48.10 |
| Transmitter 6 Channel Adaptor | 70MC06T | £21.75 | £14.95 |
| Receiver 6 Channel Adaptor | 70MC06R | £25.95 | £18.80 |
| Synthesiser (2 PCB's) | 70SY25B | £91.60 | £65.35 |
| Synthesiser Transmit Amp | A-X3U-06F | £36.40 | £24.30 |
| Synthesiser Modulator | MOD1 | £9.10 | £5.75 |
| Bandpass Filter | BPF 433 | £6.95 | £3.65 |
| PIN RF Switch | PSI 433 | £7.90 | £5.60 |
| Converter (2M or 10M i.f.) | 70RX2/2 | £28.40 | £21.10 |

70cms Pre-Amplifiers

| | | | |
|--------------------------|---------|--------|--------|
| Bipolar Miniature (13dB) | 70PA2 | £8.95 | £6.85 |
| RF Switched (30W) | 70PA2/S | £26.30 | £16.25 |
| GaAs FET (16dB) | 70PAS | £20.95 | £13.40 |

AM TV Products

| | | | |
|------------------------------------|--------|--------|--------|
| Receiver Converter (Ch 36 Output) | TVUP2 | £28.75 | £23.95 |
| Pattern Generator (Mains PSU) | TVPG1 | £48.50 | £39.40 |
| TV Modulator (For Transmission) | TVM1 | £10.35 | £6.05 |
| Ch 36 Modulator (For TV Injection) | TVM001 | £10.15 | £5.75 |

2M Linears

| | | | |
|--|-----------|--------|--------|
| 1.5W to 10W (SSB/FM) (Auto Changeover) | 144LIN10B | £42.70 | £32.75 |
| 2.5W to 25W (SSB/FM) (Auto Changeover) | 144LIN25B | £44.95 | £34.50 |
| 1.0W to 25W (SSB/FM) (Auto Changeover) | 144LIN25C | £48.20 | £37.90 |
| 1/3W to 30W (SSB/FM) (Auto Changeover) | 144LIN30 | £48.50 | £36.25 |

2M Pre-Amplifiers

| | | | |
|---|----------|--------|--------|
| Low Noise, Miniature | 144PA3 | £9.10 | £7.75 |
| Low Noise, Improved Performance | 144PA4 | £13.45 | £8.95 |
| Low Noise, RF Switched, Full Changeover | 144PA4/S | £25.95 | £16.25 |

GENERAL ACCESSORIES

| | | | |
|-----------------------------------|-------|--------|-------|
| Toneburst | TB2 | £7.10 | £4.70 |
| Piptone | PT3 | £8.05 | £4.90 |
| Kaytone | PTK3 | £9.45 | £6.65 |
| Relayed Kaytone | PTK4R | £13.40 | £9.00 |
| Regulator (12V, low differential) | REG1 | £7.25 | £4.85 |
| Solid State Supply Switch | SSR1 | £6.10 | £3.90 |
| Microphone Pre-Amplifier | MPA2 | £6.00 | £3.85 |
| Reflectometer | SWR1 | £6.95 | £5.60 |
| CW Filter | CWF1 | £8.95 | £6.10 |
| TV Filter (Boxed) | HPF1 | £5.95 | — |
| Audio Amplifier | AF1 | £10.40 | £7.25 |

FM TV MODULES

| | | | |
|--|-------------|----------|--------|
| 50mW 420MHz Source (Video Input) | UFM01 | £30.10 | £22.75 |
| 50MHz i.f. Processor | VIDIF | £58.20 | £40.90 |
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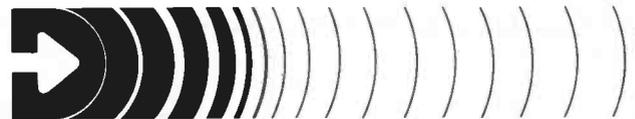
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VHF BANDS

NORMAN FITCH, G3FPK

HIGHLIGHTS covered in this month's feature include the successful transmissions from the *Challenger* spacecraft, another transatlantic 6m. opening and tropo., *Sporadic E* and *Auroral* events.

SSTV from Space

As most readers will now know, the *Challenger Space Shuttle* was launched on July 31 at 2100 and 10s. GMT but did not achieve its planned orbit due to an early shut-down of one main engine. However, the mission was very successful and from an amateur radio viewpoint, it was unique in that SSTV pictures were received from the spacecraft. It seem that the first were seen during orbit 49 at *RSGB* headquarters, and this received coverage on *BBC Breakfast TV* on August 2.

The first European two-way voice contact in orbit 62 was made by *GW6GW*, the *Blackwood and DARS*, with *Dr. Tony England, W00RE*. In orbit 79, the *RSGB* station *GB3RS* had two-way voice and SSTV QSOs with excellent media coverage. The *NASA* reported perfect copy of the *GB3RS* SSTV transmissions. Orbit 93 was quite spectacular with very strong reception in Britain of the TV, even on hand-held 2m. transceivers. This pass featured pictures from outside of *Challenger*, and good signals were again received on the next pass.

It seems there was only unintentional interference on *Challenger's* downlink QRG with none of the stupid antics we suffered, at least in the London area, on the first such mission. Consequently, amateur radio received some excellent and sensible publicity. During the flight, the *RSGB* provided very good, up-to-the-minute news in the 2m., 40m. and 80m. bands, one of the few amateur radio organisations to do so. These bulletins were often being compiled right up to transmission time. Nevertheless, they sounded very professional being read by *John Nelson, G4FRX*, who was a *BBC World Service* announcer prior to joining the *RSGB's* HQ staff.

Awards News

The 55th 144 MHz QTH Squares Century club member is *Arend Janssen, DG1BP (DN37h)* from Norden in West Germany and his certificate was dated July 31. With 162 confirmed, his 125 and 150 stickers were added. Six QSOs were on FM mode, the rest on SSB. 125 were on tropo, 20 *via Ar*, 10 *via Es* and seven on MS.

Arend started in 1978 and began DX chasing in 1980. His first transceiver was an *Icom IC-245E* and a "very bad" 11-ele. *Yagi*. He now uses an old *Heath* line-up - *SB300* and *SB401* - with transverter; the front end stage is a *BF981* and the PA valve a *QQE06-40A*, all that home made. The antenna is now a *DL6WU* 11-ele. *Yagi*. 195 Squares in 39 countries have been worked and he is also QRV on 432 MHz now.

Pete Godfrey, G8ULU, who was awarded his 144 MHz QTHCC and VHFCC certificates last month has now added a 432 MHz VHFCC to his collection; it is no. 39. His station comprises an *Icom IC-202S* with *Microwave Modules* transverter and amplifier running 50w. The antenna is a 21-ele. *Tonna Yagi*. His squares tally is 91 with 70 confirmed. A move from *Whitstable* to *Herne Bay* is pending, but as that is less than 50 kilometres, the squares totals can be carried on under the rules.

For details of the rules for the QTHCC and VHFCC, send an *s.a.e.* to the address at the end of this feature. If you have, or are approaching, 100 squares confirmed, please ask for the application form too.

Space News

Following the success of the AR communications from the recent *STS-51F Shuttle* flight, it is reported that *Flight 61-A*, scheduled for October, will include *Dr. Ernst Medderschmid, DG2KM*, and *Dr. Reinhard Furrer, DD6CF*, in the crew. Their main work will be with the *Spacelab D1* operation but they hope to engage in crossband, OSCAR-type transponder operation, probably of Mode B or J system. This information was gleaned from *UoSAT Bulletin No. 137* dated August 2, and the equipment is reportedly capable of automatic logging of received signals while the astronauts are too busy to communicate directly.

After the pessimistic report about Soviet satellite *RS-8*, this "bird" now seems to have returned to normal operation, according to the afore-mentioned *UoSAT Bulletin*. In the latest issue of *Oscar News*, No. 54, *Dr. Arthur Gee, G2UK*, reports that *RS-5*, *RS-7* and *RS-8* have all been working well now that they are out of their eclipse period. With *O-10* presently unfavourably placed for European use, these *RS* spacecraft should attract more use again. There is no firm

news, though, about the rumoured launch of *RS-9* and *RS-10*, referred to in the March and May issues.

One aspect of satellite operation that appeals to many users is the lack of contest activity which so often ruins the HF and VHF bands for 24 or 48 hours continuously at weekends. The only "official" award of any significance for satellite users is the *ARRL's* Satellite DXCC. This was originally designed for working countries using satellites in orbits less than 1,500 miles altitude. Thus, only contacts through *O-6*, *O-7*, *O-8*, *RS-1* and 2, and *RS-5* to 8 counted.

It was a real challenge and the six amateurs who achieved their SDXCC had to work for five to eight years for it. In spite of an earlier decision by the *ARRL* and the *AMSAT* Board of Directors not to offer this award for Phase 3 satellite QSO's, that has now been reversed. Moreover, *O-10* QSOs made before this contentious decision can be counted which has understandably upset Phase 2 operators nearing their 100 countries. The August/September *Orbital Calendar* published by *AMSAT-UK* includes a letter from *Pat Gowen, G3IOR*, on this topic. He suggests those who oppose this latest decision write to the *ARRL* at 225 Main Street, Newington, CT 06111, U.S.A as part of the campaign to get it reversed.

G3IOR's opposition to the introduction of a competitive element on *O-10* is that it is bound to lead to more abuse with stations running excessive power to make sure they work the rarer stations. *Pat* makes the point that a very QRO station on the transponder causes weaker stations' signals to just disappear so they have no chance of working anyone. By contrast, those running QRO on the HF bands to beat the pile-ups do not destroy the F-layer, and the weaker stations can still use the bands. Perhaps readers who use the satellites would care to comment on the subject of awards for satellite operation.

"VHF Bands" deadlines for the next three months: -

October issue - September 4th
November issue - October 2nd
December issue - November 6th

Please be sure to note these dates

AMSAT-UK Secretary *Ron Broadbent, G3AAJ*, has now retired from his professional employment, so can attend to Society matters during the normal working day. He hopes that telephone inquiries be made before 8.00pm so that he and *Beryl* can lead a more normal life. Full details of *AMSAT-UK* membership and services can be had by sending an

s.a.e. to: AMSAT-UK, London E12 5EQ.

Beacon Note

A new 6m. beacon came on from the Rosemarkie IBA transmitter site in Ross and Cromarty on Aug. 10. The call-sign is GB3RMK and the QRG is 50.060 MHz nominally. Dave Sellars, G3PBV, heard it via MS in Devon and says it sent its locator as IO77UO, but from your scribe's map, IO77XO would be more appropriate - XR40a in real QRA. The RSGB could not give any further details because, "The file was out," and their computer had gone on the blink. In the *E.B.U. List of Television Stations*, the coordinates of this station are given as 4°.04'W and 57°.38'N, which would give yet another locator.

Contest Notes

Sept. 7/8, 1400-1400 sees the RSGB and IARU Region 1 contests on 144 MHz. These are for either Single-op. or All-other stations with radial ring scoring for the RSGB version and one point per kilometre for the IARU one. To enter the RSGB event, you have to be a member, but any licensed amateur can enter the IARU affair.

The International ATV Contest takes place on Sept. 14/15, 1800-1200 in the 70cm., 23cm. and 3cm. bands. A four figure code group must be exchanged on video only, plus call, Maidenhead locator, report and serial number by video or voice. Scoring is 2 Pts./km. for each two-way QSO, half that for one-way QSOs. G8LIR/P will be QRV from AN in this event. The final leg of the Microwave *Cumulatives* is on Sept. 15, 0900-2000 on 10 GHz and 24 GHz.

On Sept. 22, the 70 MHz Trophy Contest is scheduled, 0900-1600, being a Fixed and All-other station event. Usual exchanges, plus the "Ten kilometres southwest of Rhosllanerchrugog" bit. For CW addicts, the last of this year's AGCW-DL clashes takes place on Sept. 28 on 144 MHz, 1900-2300. The rules are as for the 432 MHz event last March and they require the exchange of the proper European QTH locator of the ZM23c variety. However, entries now go to: Herbert Aschhoff, Bergkamener Str. 76, D-4618 Kamen, German Federal Republic, postmarked October 31 at the latest.

The IARU Region 1 UHF/SHF Contest is on Oct. 5/6, 1400-1400, again either Single-op. or All-other station affair with one pt./km. scoring. On 432 MHz the actual points total; on 1,296 MHz multiply them by 5; on 2,230 MHz by 10 and on all other bands by 20.

Six Metres

Since the June 28 announcement in *The House of Commons* about the U.K.

ANNUAL VHF/UHF TABLE

January to December 1985

| Station | FOUR METRES | | TWO METRES | | 70 CENTIMETRES | | 23 CENTIMETRES | | TOTAL Points |
|---------|-------------|-----------|------------|-----------|----------------|-----------|----------------|-----------|--------------|
| | Counties | Countries | Counties | Countries | Counties | Countries | Counties | Countries | |
| GW4TTU | — | — | 87 | 33 | 63 | 11 | 31 | 6 | 231 |
| G6DER | — | — | 69 | 23 | 57 | 14 | 32 | 9 | 204 |
| G4TIF | 37 | 3 | 68 | 15 | 50 | 14 | — | — | 187 |
| G4SEU | 57 | 6 | 60 | 10 | 36 | 10 | — | — | 179 |
| G1KDF | — | — | 90 | 16 | 65 | 7 | — | — | 178 |
| G4MUT | 38 | 4 | 53 | 15 | 28 | 6 | 12 | 2 | 144 |
| G6ZPN | — | — | 73 | 17 | 46 | 7 | — | — | 143 |
| G6HKM | — | — | 58 | 15 | 44 | 13 | — | — | 130 |
| G6WZO | — | — | 47 | 7 | 45 | 7 | 18 | 4 | 128 |
| G1EZF | — | — | 64 | 19 | 38 | 6 | — | — | 127 |
| G4YCD | — | — | 75 | 15 | 32 | 4 | — | — | 126 |
| G6AJE | — | — | 56 | 11 | 46 | 8 | — | — | 121 |
| G6MGL | — | — | 43 | 10 | 35 | 7 | 17 | 4 | 116 |
| G3BW | 34 | 5 | 35 | 22 | — | — | 11 | 4 | 111 |
| G6XVV | — | — | 64 | 12 | 31 | 4 | — | — | 111 |
| G4WXX | — | — | 89 | 20 | — | — | — | — | 109 |
| G4HGT | 2 | 1 | 63 | 20 | 18 | 2 | — | — | 106 |
| GW3CBY | 30 | 4 | 46 | 8 | 12 | 3 | 6 | 2 | 103 |
| G6XLL | — | — | 61 | 13 | 21 | 4 | — | — | 99 |
| G6ECM | — | — | 75 | 22 | — | — | — | — | 97 |
| G6YIN | — | — | 54 | 9 | 25 | 5 | — | — | 93 |
| G3FPK | — | — | 74 | 17 | — | — | — | — | 91 |
| G1INK | — | — | 32 | 9 | 37 | 8 | — | — | 86 |
| G8RWG | — | — | 50 | 10 | 23 | 3 | — | — | 86 |
| G4VXE | — | — | 47 | 5 | 28 | 3 | — | — | 83 |
| G1EGC | — | — | 60 | 17 | — | — | — | — | 77 |
| G6XSU | — | — | 35 | 9 | 21 | 7 | — | — | 72 |
| G8PNN | — | — | — | — | 33 | 9 | 21 | 8 | 71 |
| G4ARI | 16 | 1 | 47 | 7 | — | — | — | — | 71 |
| GW60FI | — | — | 59 | 9 | — | — | 1 | 1 | 70 |
| G8XTJ | — | — | 55 | 12 | — | — | — | — | 67 |
| G4VKE | — | — | 60 | 7 | — | — | — | — | 67 |
| G4YIR | — | — | 53 | 13 | — | — | — | — | 66 |
| GW6VZW | — | — | 51 | 13 | — | — | — | — | 64 |
| GW1JCB | — | — | 53 | 8 | — | — | — | — | 61 |
| G1JOU | — | — | 50 | 10 | — | — | — | — | 60 |
| G0CAS | — | — | 51 | 9 | — | — | — | — | 60 |
| GM4CXP | 5 | 2 | 34 | 10 | 6 | 2 | — | — | 59 |
| GM0BPY | — | — | 31 | 10 | 9 | 9 | — | — | 59 |
| G1LAS | — | — | 49 | 10 | — | — | — | — | 59 |
| G4WHZ | — | — | 38 | 7 | 4 | 1 | — | — | 50 |
| G2DHV | 10 | 1 | 28 | 6 | 1 | 1 | — | — | 47 |
| G6XRK | — | — | 34 | 12 | — | — | — | — | 46 |
| G4WJR | — | — | 39 | 7 | — | — | — | — | 46 |
| G4WND | 25 | 2 | — | — | 14 | 4 | — | — | 45 |
| GW4VVX | — | — | 38 | 7 | — | — | — | — | 45 |
| G1HGD | — | — | 36 | 8 | — | — | — | — | 44 |
| G4CMZ | 26 | 3 | 12 | 1 | — | — | — | — | 42 |
| G4EZA | — | — | 35 | 5 | — | — | — | — | 40 |
| G0BPS | — | — | 30 | 7 | — | — | — | — | 37 |
| GW4HBK | 28 | 2 | — | — | — | — | — | — | 30 |
| G6CSY | — | — | 9 | 4 | 5 | 1 | — | — | 19 |
| G6SIS | — | — | 12 | 4 | 1 | 1 | — | — | 18 |

Three bands only count for points. Non-scoring figures in italics.

6m. amateur allocation, many rumours have been heard about power levels, operating restrictions, etc. However, as of Aug 12 nothing has been decided by the DTI. All that has happened is that the RSGB had a meeting with the DTI on July 4 when many points were raised. With the summer holiday period in full swing, it is unlikely that anything substantive will be forthcoming until September.

It is worth pointing out that the DTI has very much gone out on a limb in granting U.K. amateurs any band at all on 50 MHz, since it is not an ITU Region 1 allocation at all. Several European countries object strongly to the idea as they plan to continue operating TV services in Band 1. Consequently, non-interference to their services will have to be a high priority. Meanwhile the RSGB must be trusted to get the best possible conditions for us.

The main operating news is the fine E-layer opening to the U.S.A. on July 30. At about 2200, Brian Bower, G3COJ, (BKS) telephoned Angus McKenzie,

G3OSS, (LDN) to say that 10m. was open to the U.S.A. and that a 6m. opening might occur. Shortly afterwards, at 2207, W4CKD was copied at RST529 but things were quiet at 2230 "switch on." Then from 2238 for about an hour, Angus had 16 QSOs, all on SSB, with Ws in the 2, 3 and 4 call areas. No W1s were copied but stations in W8 reported hearing very weak Gs.

G3OSS said that the QSOs were made during four or five waves, interspersed with periods of quiet. Signals were subject to deep fading, reminiscent of Es openings on 2m., with peak strengths up to S9. The U.S. stations were in the 100-500w range, using 6-10 ele. Yagis, though some had QRO and one a 10-over-10 array. For the record, G3OSS worked W3JO, K2MUB, AC3T, W3OTC, W3XO, KB3QM, W2HRW, WA3DMF, WB2OTK, W4CKD, WS4F, KA3ECK, K4GOK, WB2IFC, W2BN and KA4DVH.

Other permit holders got across "The Pond" including G3COJ, who had 9

QSOs, G3MCS (12), G3IMW (7) and G4GLP. Ken Ellis, G5KW, (KNT) had a new beam on the lawn so hastily put it on a table in the garden and managed a couple of QSOs. John Lemay, G4ZTR, with friends — see 4m. section — had 6m. equipment on the Gwynedd trip and heard KB3QM (Delaware) and W2HLW. Between 2250 and 2320, other unidentified Ws were heard using a Yaesu FT-620B and a 5-ele. four metre Yagi. As to the propagation mode, G3OSS says that his friend Dick Grubb, WOQM, a research director at a U.S. Government space environmental laboratory in Boulder, Colorado, has been deeply involved with propagation studies. Dick reckons it to have been double and triple hop *Es*, and suggests this phenomenon occurs around 14% of the time, around midnight, on 10m. Therefore it would seem worthwhile monitoring 10m. late at night for weak east coast Ws. If none are to be heard, it would seem very unlikely that 6m. would be open.

Ian Parker, G4YUZ, (HFD) "just cannot wait" till the band is generally released. He has heard very good MS reflexions from LA1K, LA6QBA and LA9DL, also from GM3WOJ. 6m. would seem to be a very good band for MS with long bursts even when only modest *e.r.p.* is used. John Heys, G3BDQ, (SXE) has ordered a transverter in readiness and hopes, "... that common sense will prevail and there will be no FM on the band." He feels that mode would, "... ruin things." John plans a 5-ele. *Tonna Yagi* placed under his 2m. beam.

Four Metres

Using his half watt, Kev Archer, G4CMZ, (DYS) now has 41 counties, the latest all-time new one being GM3WOJ/P (DGL). His antenna is down and he plans to add some more elements to try to get 50 counties on QRP. Jerry Russell, G4SEU, (WKS) is way ahead of everyone in the table, thanks to VHF NFD mostly, which produced 11 new counties. These included G4ZYA/P (IOW), GU4IUW/P (SRK) and GI4ONL/P (LDR). On July 27, Jerry had an *Ar* QSO with GW4HRC/P (GDD).

Martyn Jones, G4TIF, (WKS) added another 20 1985 counties in the SSB leg on NFD, including GM3WOJ/P which was his third country. John Jennings, G4VOZ, (LEC) sent in his usual detailed report. In the run-up to NFD, many operators were heard, "... testing their equipment for the once-a-year excursion on the band ..." He wonders what we have to do to convince them there is activity at other times, too. In a six-hour

ANNUAL CW LADDER

| Station | 4m. | 2m. | 70cm. | μ Wave | Points |
|---------|-----|-----|-------|------------|--------|
| G4TWD | — | 500 | — | — | 500 |
| G3GHY | — | 369 | 11 | — | 380 |
| G4WHZ | — | 330 | 28 | — | 358 |
| G4UKM | 6 | 233 | 20 | — | 259 |
| G4SFY | — | 244 | — | — | 244 |
| GW4TTU | — | — | 147 | 38 | 185 |
| G4WGY | — | 164 | 11 | — | 175 |
| G4NZU | 7 | 162 | 2 | — | 171 |
| G4YIR | — | 169 | — | — | 169 |
| G4ZTR | — | 135 | — | 16 | 151 |
| G4VXE | — | 127 | 7 | — | 134 |
| G4ARI | 7 | 118 | — | — | 125 |
| GW4VVX | — | 109 | — | — | 109 |
| G4CMZ | 39 | 55 | — | — | 94 |
| G4EZA | — | 75 | — | — | 75 |
| G2DHW | 21 | 34 | 1 | — | 56 |
| G6VMQ | — | 47 | — | — | 47 |
| GM4CMP | 3 | 38 | 1 | — | 42 |
| G6ZPN | — | 39 | 3 | — | 42 |
| GW4HBK | 34 | — | — | — | 34 |
| G0CAS | — | 22 | — | — | 22 |
| G4LVE | — | 13 | — | — | 13 |
| G4PSS | — | 10 | 1 | — | 11 |
| G0BPS | — | 11 | — | — | 11 |

No. of different stations worked since Jan. 1

session on July 6, John logged 45 stations on CW and worked 37 in a 2¼ hours stint on SSB the next day. New stations worked outside of NFD included G3s HYH, SHD, SJV, TWG, VNQ, YJX and YYF, and G4s ASR, CVI, HRY and YUZ.

G4YUZ is busy county hunting and Ian has 20 confirmed so far. An MSsked with GM3WOJ at 1830 on July 3 was not completed, but he had other such skeds lined up for the *Perseids*. G4ZTR with G4ZVQ, G4VIX and G8HGN, made a successful expedition to Gwynedd and worked about 35 stations for many of whom it was a new county. Roy Webb, GW3CBY, (GNW) added 10 1985 counties and a couple more countries in NFD, his best DX being GM3WOJ/P and GU4IUW/P.

Two Metres

First *Sporadic E*, and there is very little to report for July. In a brief event on the 13th at 1951, Peter Atkins, G4DOL, (DOR) worked EA7CPW (YX) for a new square. Ken Osborne, G4IGO, (SOM) worked the same station on the 6th in what he describes as, "... a funny opening with little on either Band 1 TV or Band 2 FM." The band opened suddenly at 1922 to 1941 and he also worked EA7DUD (XW). at 1951, Ken caught EA7BHO (YX) and heard two other EA7s.

In the London area on the 13th, from 1922-1935, the band was open to the south and John Hunter, G3IMV, (BKS) worked ZB2BL (XW) and EA7TL. G3PBV (DVN) also worked a couple of EA7s in YZ. G6HKS wrote that Haydn Barker, G6XVV, (YSN) worked ZB2BL at 1930. Colin Morris, G6ZPN, (WMD) heard YU3GO calling "CQ" for one

minute on CW on 144.300 MHz at 0853 on Aug. 2 but he faded into the *melée*.

Kelvin Weaver, GW4TTU, (GWT) listed 52 stations heard/worked on the June 11 easterly *Es* between 1506 and 1757, in D, HG, I3, LZ, OE, OK, SP, UB5, YO and YU. The last contact with UA3LBO on CW was incomplete. He also caught the short July 13 affair from 1933-1936 with three EA7s in YX, a couple of Fs in YI *via* backscatter, and an EA9 heard.

Next, the rather unusual *Aurora* on July 12 when most of the stations were only workable by beaming NW. G4IGO was looking to the south for tropo. when he became aware of the *Ar* at 1913. Ken had a few QSOs at QTE 330° and never heard a thing when beaming east of north. Mark Turner, G4PCS, (BFD) lists 22 QSOs between 1800 and 1955. Several Gs were worked at 300° and, where the QTE of the worked station was known, it seems that the *Ar* was somewhere in the V row of squares, just north of Ireland. This would explain why no GI and EI stations were heard; they were too near and would have needed to use a lot of elevation to stand any chance of "getting in."

Ray Baker, G4SFY, (NOR) did not mention any QTE, only that DL0PR was S4A and that he worked GM4CXM (XP) at 1733 on CW. GW4TTU's list is interesting in that QSOs with XP, YQ and YR squares between 1738 and 1809 required a QTE of 45°, then at 1840, Kelvin worked SM7FJE (GQ) at 15°, but from 1921-1941, stations in EO, YP, ZM, CL, ZL and CK needed a 320° azimuth. The whole event started about 1620, it seems with the more usual N-NE headings, but part way through, that particular "curtain" seemed to disappear leaving only the more westerly one which is often there but usually either undetected or ignored because people are looking for more easterly DX to SM, OH, UA, etc. Richard Mason, G6HKS, (NOR) worked GM4UPL and GM6WQC, both in XR, but did not mention his QTE.

Bill Hodgson, G3BW, (CBA) did not mention QTEs either, or times but did work LA2AB (FT), SM5KWU (IT), PA2VST (CM), SP4DCS (KO), LA/DF7JE (DS), OZ1FGB (EQ) and three Russians in JO, all signing -/R2F. They were RB5GD, UT5DL and RW3CQ.

Now to the MS scene and G3BW, who lists some "choice" squares worked this year. These include LA6HL/TF in QZ, RZ and SZ, EA6FB (AY), SMs in JX, JY and KZ and some EAs in BB, VC, YD and ZZ. Bill finds that the one hour CW skeds with 2½ mins. periods often fail due to missing one letter in a callsign or the final

Rs. G4DOL has been having a try at SSB but heard nil on July 12 from either YU3TS or SP6FUN. The final "Rogers" were missed from SM3BIU (HX) at 0300.

G4SFY added nine new squares between July 8 and Aug. 4, all on CW; HG8CE (KG), LA6QBA/P (GV), EA3LL (BB), SM1BSA (JR), SK3LH (JX), SM2JPC (HZ), EA3BTZ (AB), YU2CCB (IF) and IK6DIN/6 (GD). Most all were completed well inside the total sked time. G4HKS completed with DL3MBG (GI) on July 6, with a 50s. burst at S3. On the 7th, SM5MIX (HS); LA6QBA (GV) on the 8th and IW5AVM (FC) on the 12th.

During July, G4YUZ lists; HG4KYB (JH), F6FHP (CF), EA1OD (XD), SM3BIU (HX), Y27BL (GL), EA3LL (BB), OK1MAC (HJ), SM5BEI (JU) and LA6QBA/P (GV). LA9BM (EU) was worked on Aug. 2. On July 19, GW4TTU completed with EA2LU (ZC) but the sked with GM6TGX/A (XS) was not completed.

Finally the tropo. news starting with a lift towards the southeast on July 3 reported by David Whitaker, (YSN), Bob Nixon, G1KDF, (LNH); Paul Brockett, G1LSB, (KNT); G4DOL, G4SFY, G4TIF, Jack Charnock, G4WXX, (MCH); G6HKS, G6ZPN and GW4TTU. Widely reported, and even worked by your scribe, were HB9CUA/P and HB9SAX/P in DH66f, F6DOW (DI), HB9ACA (DG) and F1CYB (BH).

Most readers operated during NFD, either as club operators or from home. Conditions were rather flat, but the quantity of stations made it seem better. Many boosted their 1985 table totals and there were several rare Irish counties including GI4MFT/P (LDR) in WO, EI2WRC/P (Waterford), EI4ALE/P (Wexford) in WM, EI4DV/P (Sligo) in VO, EI6DD/P (Louth) in WO, EI6FP/P (Donegal), EI7DJ/P (Cork) in VM, and EI9ED/P (Cavan) in WN. GU4XEA/P put Sark on the air. From Dorset, G4DOL worked HB9KK/P, HB9SJV/P, and HB9RDB/P, all in DG, and F6GRB/P in CE. From Norfolk, G6HKS also worked HB9RDP/P on the 7th.

Although there is now a resident amateur in the Scilly Isles who has been worked on 2m., it is a rare county and square, so many were delighted to contact Dave Gray, G8YYB/A, during the first two weeks of July. These included G1KDF, G4TIF, G4WXX, Mike Huggins, G6XRK, (LDN), GW4TTU and Paul Baker, GW6VZW/P (GWT).

On July 12, there was propagation to northern Spain and EA1s ACD, BLA and TA, all in VD, were worked. G4IGO, G4TIF and GW4TTU caught this. At 2346 on the 12th, your scribe worked LA0DT/MM who was in BN26e at that time. The 23rd was another good day to the south. EA1BLA and EA1CYE (YD) were on and Bob Ainge, G4XEK, (SFD),

QTH LOCATOR SQUARES TABLE

| Station | 23cm. | 70cm. | 2m. | Total |
|---------|-------|-------|-----|-------|
| GJ4ICD | 41 | 116 | 238 | 395 |
| G3XDY | 61 | 112 | 161 | 334 |
| G4FRE | 42 | 112 | 68 | 222 |
| G3JXN | 72 | 110 | 172 | 354 |
| G8TFI | 51 | 109 | 126 | 286 |
| G3PBV | 41 | 106 | 198 | 345 |
| G4MAW | 43 | 105 | 52 | 200 |
| G3IMV | — | 100 | 377 | 477 |
| G8KBQ | 34 | 99 | 214 | 347 |
| G3COJ | 42 | 97 | 170 | 309 |
| G4TIF | — | 93 | 167 | 260 |
| G3UVR | 35 | 92 | 202 | 329 |
| G8ULU | 36 | 91 | 127 | 254 |
| G4NQC | 61 | 90 | 211 | 362 |
| G8PNN | 50 | 83 | 126 | 259 |
| G4MCU | 25 | 82 | 201 | 308 |
| GJ8KNV | 18 | 79 | 201 | 298 |
| G8HHI | 22 | 77 | 135 | 234 |
| GW4TTU | 29 | 75 | 224 | 328 |
| G4MUT | 9 | 75 | 119 | 203 |
| GW4LXO | 32 | 74 | 221 | 327 |
| G6DER | 33 | 74 | 149 | 256 |
| G8XVJ | — | 73 | 169 | 242 |
| G8GXP | 5 | 71 | 289 | 365 |
| G6HKM | — | 71 | 127 | 198 |
| GW8UCQ | 1 | 70 | 120 | 191 |
| G8WPL | 16 | 70 | 105 | 191 |
| G4HFO | — | 70 | 120 | 190 |
| G8FMK | 36 | 70 | 80 | 186 |
| G4BWG | — | 68 | 160 | 228 |
| G4DCV | — | 67 | 232 | 299 |
| G4RGK | 20 | 67 | 182 | 269 |
| G4FRX | — | 66 | 92 | 158 |
| G6DZH | — | 63 | 117 | 180 |
| G4ROA | 25 | 61 | 65 | 151 |
| G4TJX | — | 60 | 100 | 160 |
| G4ZTR | 35 | 57 | 82 | 174 |
| G6MGL | 24 | 55 | 128 | 207 |
| G6CMV | 18 | 53 | 144 | 215 |
| G4CQM | — | 52 | 75 | 127 |
| G1EZF | 9 | 50 | 135 | 194 |
| GM0BPP | — | 50 | 110 | 160 |
| G6XSU | — | 50 | 32 | 82 |
| GW3NY | — | 48 | 219 | 267 |
| G6JNS | 1 | 48 | 117 | 166 |
| GJ8SBT | 26 | 47 | 182 | 255 |
| G4OAE | — | 46 | 190 | 236 |
| G1LSB | — | 44 | 55 | 99 |
| G8ROU | 1 | 43 | 88 | 132 |
| GI1NK | — | 42 | 42 | 84 |
| GW8VHI | — | 41 | 83 | 124 |
| G4NRG | 5 | 40 | 121 | 166 |
| G3BW | 15 | 38 | 256 | 309 |
| GW3CBY | 11 | 38 | 106 | 155 |
| G4KUX | — | 36 | 240 | 276 |
| G4HMF | 2 | 35 | 152 | 189 |
| G6YLO | 13 | 34 | 61 | 108 |
| G6HKS | — | 33 | 172 | 205 |
| G6XLL | — | 33 | 95 | 128 |
| EA3LL | 3 | 32 | 300 | 335 |
| G6AJE | — | 32 | 83 | 115 |
| G8ZDS | — | 31 | 104 | 135 |
| G6XVW | 1 | 30 | 52 | 83 |
| GM8BDX | 13 | 29 | 41 | 83 |
| GM4CXP | — | 27 | 175 | 202 |
| GM8MJ | 3 | 26 | 101 | 130 |
| G6CSY | 15 | 25 | 34 | 74 |
| G8VR | 2 | 24 | 251 | 277 |
| G4RSN | 2 | 23 | 88 | 113 |
| G6YIN | — | 20 | 77 | 97 |
| G4ERG | — | 16 | 261 | 277 |
| G6DDK | 3 | 15 | 131 | 149 |
| G4MJC | — | 15 | 140 | 152 |
| G8RWG | — | 12 | 103 | 115 |
| G4WHZ | — | 8 | 49 | 57 |
| G4GHA | — | 6 | 112 | 118 |
| G2DHV | — | 3 | 17 | 20 |
| G3POI | — | — | 433 | 433 |
| G4IJE | — | — | 336 | 336 |
| G4DHF | — | — | 252 | 252 |
| GM4IPK | — | — | 245 | 245 |
| G4DEZ | — | — | 242 | 242 |
| 9H1CG | — | — | 225 | 225 |
| GW4EAI | — | — | 218 | 218 |
| G3FPK | — | — | 209 | 209 |
| G6ECM | — | — | 192 | 192 |
| G8TGM | — | — | 181 | 181 |
| G3BDQ | — | — | 177 | 177 |
| G8LFB | — | — | 177 | 177 |
| G4SFY | — | — | 168 | 168 |
| G4IGO | — | — | 164 | 164 |
| G4MEJ | — | — | 163 | 163 |
| G4YUZ | — | — | 154 | 154 |
| G4DOL | — | — | 138 | 138 |
| G4XEK | — | — | 110 | 110 |
| G6HCV | — | — | 109 | 109 |
| G8VVF | — | — | 108 | 108 |
| G1EGC | — | — | 90 | 90 |
| G6NWF | — | — | 86 | 86 |
| G8XTJ | — | — | 84 | 84 |
| G6XRK | — | — | 84 | 84 |
| G4UYL | — | — | 81 | 81 |
| G4LZD | — | — | 71 | 71 |
| GW6OFI | 1 | — | 52 | 53 |
| G0BPS | — | — | 50 | 50 |
| GW6VZW | — | — | 40 | 40 |
| G1JOU | — | — | 39 | 39 |
| G4WJR | — | — | 37 | 37 |
| G6SIS | — | — | 30 | 30 |

Starting date January 1, 1975. No Satellite or Repeater QSOs. **Band of the month** 70cm.

G4VKE and GW6VZW worked them. GW4TTU mentions QSOs with VD, XC, XD and YD squares and with F/ON4AWD in XH. G6ZPN also got the latter, the aforementioned EAs, plus EB1MS/P at 1408 in XC01b and who was audible in Dudley all day and night.

Some notes to round off this section. G14NRE in rare Co. Fermanagh was worked on July 9 by G4WXX. Dick Pascoe, (ex-G1DGO) is now G0BPS and had entered the CW Ladder. Welcome to Paul Martin, G1JOU, (KNT) who uses a Yaesu FT-101Z, MM transverter and Dressler D200C amplifier, the antennas being two 7-ele. MET Yagis. Mark Brincat, G1LAS, (KNT) was down for his morse test on Aug. 9 and plans to add a muTek "front end" to his Icom IC-271E soon. G4CMZ now has his 8-ele. Yagi outside at 30ft. so hopes his half-watt of CW will go a bit further.

Seventy Centimetres

On July 3, David Whitaker heard OZ1s FEF, KLU and HRA in EQ, F1CYB (BH), F6CTW (BI) and PI4THT (DM) and his best DX in NFD was G61SY/P (IOW). On July 23, G1LSB worked HB9CRQ (EH), LX1EC (CJ) and DJ30S (EJ) plus several Fs and OE9UHI (EH). The next day, Paul worked more Fs in BE and ZH and DJs in DK and DL. In NFD, G1KDF got EI9ED/P (Cavan), EI8FP (Offaly) and GI4OUN/P (LDR). Bob found four new counties in the Low Power Contest on the 27th. John Quarmby, G3XDY, (SFK) was one of many who worked FIADT/P (BE) – see DX Notes, later.

G4SEU worked GI4GVS (ATM) on July 2, GU8FBO (GUR) on the 4th, and GW4ZUQ/P (GDD) and GW8SJP/P (PWS) on the 27th, all new. G4TIF added nine more counties including GI4OPH (DWN) on the 3rd and GU3EJL (ALD) on the 13th. EA1BLA (VD) was worked at 0816 on the 12th after a QSY from 2m. G6AJE was busy in July with distant F, ON and PA stations contacted on July 3 and 4. In NFD, Mike's best was HB9/F1FHI/P (DG) at 850 kms. Conditions seemed good again on the 24th and 25th and in the QRP Contest he made over 40 QSOs in 28 counties.

Ela Martyr, G6HKM, (ESX) enjoys the Monday activity nights and operates fortnightly, alternating with her husband as both are after the Award. She remarks that Class A licensees are in short supply, though. G6HKS worked LA1YCA (DS) on July 4 and during NFD, Richard got GM8TSI (YP), HB9/F1FHI/P and assorted, new DL, PA and GW squares. Graham Ratcliffe, G6WZO (MSY) was busy on 70cm. in July adding to his table score. On the 3rd, F1CYB at 900 kms. was an outstanding signal from France, but had the band to himself. G6ZPN mentioned GU4XIT/P (SRK) on the 6th

and FIGXB (XI) on the 13th.

Gordon Emmerson, G8PNN, (NLD) added G4JAR/P (DVN) and G8IGQ/P (LEC) for new counties in NFD. GW4TTU listed G, F and PA QSOs in July and leads the Annual Table which is quite an achievement considering Kelvin's geographical location.

The Microwaves

During the lift on July 23/24, G3XDY added ON600 (CL) for a new country, and DJ6JJ (DL) for a new square on 13cm. G6WZO worked an EI in Cavan on 23cm. in NFD, which must be quite a rarity. All-time "firsts" for G8PNN on 23cm. were CHS, LNH and DWN, and new for 1985 were G3SVW/P (DYS) on the 7th, and GW8FBK (GDD) on the 23rd. On the 23rd, GW4TTU worked up to G3BPJ (LNH) and down to F1FHI (ZH).

Concerning the G6LEU/EA8XS QSO on 23cm. reported last month, your scribe had a chat to Dave Last who said he had about 7w at the antenna which is four 23-ele. Yagis. EA8XS was running 10w to

a dish. The QSO took some time due to Salvador going QRT for a few minutes for food. However, David confirms that all the required information for a valid QSO was exchanged on 23cm., in MS fashion due to the fading, both stations confirming this on 2m. later. There is nothing wrong in that procedure in your scribe's mind; MS operators do it all the time, after all, on the 20m. VHF net.

DX Notes

Pierre Redon, F1ADT, will be in BE18d from Sept. 16 to Oct. 11 at 1,250m. a.s.l., between 0530 and 1000 GMT daily. QRGs 144.280, 432.280 and 1,296.280 MHz with maximum effort in the Oct. 5/6 IARU Contest. He will be especially looking for stations in AN, YN, ZN, ZO, etc. On 2m. Pierre will use 400w to 17-ele., on 70cm., 200w to two 21-ele. and on 23cm., 10w to four 23-ele. antennas.

Final Notes

Several readers have mentioned the death of Harold Turner, G8VN, on July

1. He was a keen 4m. operator and more recently a 6m. permit holder. Midlands amateurs in particular will miss his enthusiasm, experience and help on the bands. We extend our sympathies to his family and friends.

And now for some super Band 2 FM DX. A report in the *IREE Monitor* for March 1985, quoted in the *Wireless Institute of Australia's Amateur Radio*, July 1985, reports reception in Italy of a QRP station in Melbourne on 106.5 MHz in March 1984. If any reader has access to *Monitor*, perhaps more details could be gleaned. Perhaps we may be working string of VKs on 6m. next March?

Overheard on 2m. from a G6. "The antenna here is a five element Yagi. At least I think it's a Yagi, but I'm not sure as I bought it secondhand."

Finale

That's it for another month. Your news, views and claims for October by the deadlines in the box please to: "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. 73 de G3FPK.

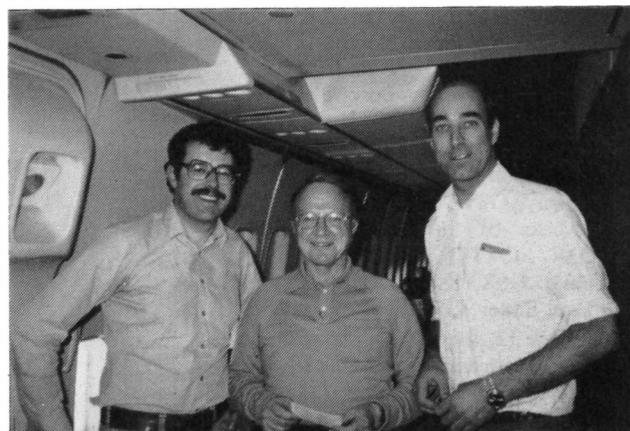
An American Experience Part 1

Three Weeks to Remember

CHRISTOPHER PAGE, G4BUE,
and COLIN TURNER, G3VTT

IT had always been one of our ambitions to visit the big Dayton Hamvention in Ohio, U.S.A. Over the years during QSOs with American amateurs we had been told how it was the biggest event of its kind in the world, so when we heard that the QRP Amateur Radio Club International, (ARCI), were planning to promote a QRP Forum as part of the Hamvention, we decided that 1985 was the year to attend. The ARCI can best be described as the American equivalent of the G-QRP-Club, and like the G-QRP-Club they have a large number of overseas members. We have both been members for several years, and Chris is the overseas member of the Board of Directors.

Once the plans for the QRP Forum had been made we decided to include visits to other events and places whilst in the U.S.A. The first part of this article will describe the journey to the U.S.A., a visit to Bencher Inc. in Chicago (manufacturers of the famous CW paddle) and the Dayton Hamvention. The following parts will feature a visit to the N4AR antenna farm in Kentucky, the FOC (First Class CW Operator's Club) North American Dinner including a description of the club and its history, the ARRL (American Radio Relay League — the 'American RSGB') and their well-known demonstration station W1AW, some



Colin, G3VTT (left), and Chris, G4BUE (right), with Richard Baldwin, W1RU, President of IARU, whom they met by chance on the flight out to U.S.A.



Seen here is Margaret, who has worked for Bencher Inc. on final assembly, adjustment, and packing of all paddles since they were first made by the firm.

experiences of tower construction, and a visit to Ten-Tec, manufacturer of the famous Argonaut QRP transceiver in addition to other amateur transceivers and equipment.

The whole trip was orientated completely around amateur radio, and that may have been the reason our wives allowed us three weeks in the U.S.A. on our own. At least we hope that was the reason!

The first planned part of the trip to feature amateur radio was to meet Bob Locher, W9KNI, in Chicago, but life is full of surprises! As we flew over the American coast on the flight from Heathrow to New York, we moved our position to get a better view. As we did so a male passenger noticed Colin's call sign buckle and suggested we might be radio amateurs. He turned out to be Richard Baldwin, WIRU, past General Manager and currently Vice-President of the ARRL and also President of the International Amateur Radio Union. Dick was on a return journey with his wife from Yugoslavia where he had been attending an IARU conference. After a discussion on the direction in which amateur radio was going and should be going, and bidding our farewells, we regained our seats for the landing.

A short while later we found ourselves in downtown New York. We had decided to travel across the U.S.A. for our first two weeks by using the Greyhound coaches. They are a regular, efficient and cheap method of travelling, and although you remain in your seat for anything up to 26 hours, with a few stops for meals, etc., you soon learn the knack of sleeping in the sitting, lying or sprawling positions, accompanied by the drone of a diesel engine. What a perfect way to prepare for Field Day we thought!

We left New York at 1800 local time and arrived in Chicago at 1100, Central U.S. time, the following day. Our journey had covered the States of New Jersey, Pennsylvania, Ohio and Illinois. We were met at the Greyhound Coach Station in the centre of Chicago by Bob, W9KNI, who walked with us to the premises of Bencher Inc., four blocks away at 333 Lake Street, Chicago, Illinois 60606. Bob is half owner of Bencher and looks after the amateur radio products. He explained that Bencher was also in the business of producing photographic equipment, mainly lighting accessories, and that they had decided to produce a few items of amateur radio equipment to supplement their catalogue of products.

Bencher produce the now world-famous "Bencher" paddle, which Bob explained was the 'grandson' of the famous "FYO" paddle produced some years ago, designed by W8FYO, and now virtually impossible to obtain. This amateur had designed a paddle which was to become famous with CW operators throughout the U.S., whilst living in his native Dayton, Ohio. A subsequent version was made by HAL Communications for a short while around 1976. Bencher have made a superb job of this paddle and have added one or two features to make it more hard-

wearing, solid silver contacts with gold plating, which under normal conditions should require little or no cleaning; they are very easy to adjust.

Because of its novel design, the paddles can be adjusted so they can be closed with the slightest squeeze, thereby allowing CW to be sent at high speed — all you need is dexterity of fingers. Triangular finger pieces are used in each paddle to allow them to be gripped high or low, and the levers of each paddle pivot on a needle bearing. Other products produced by Bencher include the XZ-2 CW/SSB filter, which is an audio filter, and the ZA-1A balun covering 3.5 to 30 MHz.

After lunch Bob took us round the Bencher plant and we saw the finer assembly points of each stage of the paddle construction. As can be seen from the photograph, final assembly, adjustment and packing of all the paddles is carried out by Margaret, who has worked for Bencher since the paddles have been produced. She admits that she sometimes dreams about adjusting paddles in her sleep, but cannot read a letter of Morse!

We stayed that night with Bob and his wife Judy at their home in the suburbs of Chicago, but had to get up at 0500 the following morning for the six hour car drive to Dayton.

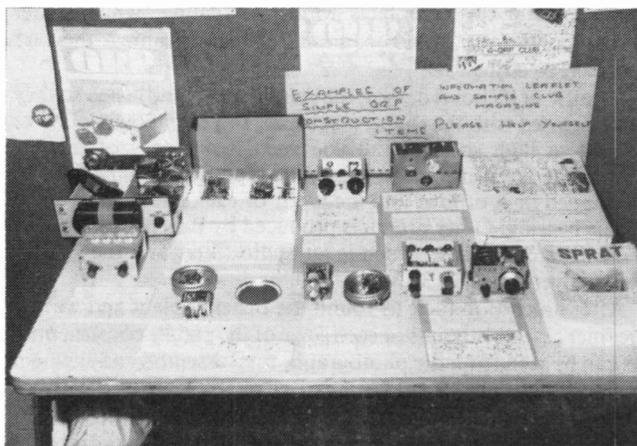
The journey to Dayton along Routes 65 and 70 was made without incident, and Bob was telling us what to expect there. He goes every year, and this time he has several boxes of his book, "The Complete DX-er", which he was taking to some of the trade stands; in addition to writing the book, Bob handles all the distribution of it. He is in a very good position to write about DX: when the CW DXCC programme started on 1st January 1975, he started as well, and now has every country confirmed except four, those being YA, ZA, XZ and 70. He says that part of the knack of working CW DX is to listen to the DX-peditions to announce their CW operating periods when they are working SSB, and then to be there waiting. In this way it is usually possible to make a CW QSO in the first five minutes, before the pile-up gets too bad.

To those amateurs who moan about the current conditions on the HF bands, and that we have another few years until the present cycle bottoms out, let us tell you about the first year of Bob's CW DXCC. The year was 1975, which was one of the sun-spot minimum years of the last cycle, and during that year, he worked 275 countries. Of the sun-spot minimum years, Bob says that although the openings are shorter, and there are less of them, you have to be there when they are open. His 275 countries in 1975 is evidence that the openings are still there during the sun-spot minimum years and it is still possible to work DX. Bob's book is a 'must' for the serious DX-er, containing a great deal of information, hints and tips to amateurs chasing DX.

We arrived in Dayton around lunch time and after checking into our hotels, we arrived at the Hamvention about 3 p.m.; by 3.05 p.m. we both realised that Bob and all the other American amateurs had not been exaggerating about the size of it! Even the booklet describing it is 66 pages long!



About one-fifth of the flea market area at the Dayton Hamvention.



Part of the QRP ARCI stand, showing home-built QRP equipment.

This was the 34th annual Dayton Hamvention, and it now comprises of a large number of trade stands, a very large number of flea market stands, a forum programme, and numerous other activities. The trade stands are located in three very large halls, and the flea market stands (all 1800 of them) are located in the car parks on two sides of the main buildings. I tried to get into a position where I could take a photograph of all the stands, but they were scattered over such a large area it was impossible; the photograph shows about a fifth of the flea market area. The forums are held in six rooms which are located in the main building adjacent to the trade stands.

Registration starts at 12 midday on the Friday, and from then until 8 p.m. the trade and flea market stands are open. The flea market stands re-open at 6 a.m. on Saturday and Sunday and the trade stands at 8 a.m. They close at 5 p.m. on Saturday and 4.30 p.m. on Sunday when the Hamvention ends. The forums commenced at 12 midday on the Friday and continue throughout the week-end until 4.45 p.m. on the Sunday.

For most of the week-end, the six forum rooms are in continual use, and the topics covered included the following: packet radio, DX, the ARRL, ARES (Amateur Radio Emergency Service), frequency synthesis, antennas, amateur radio and the law, SWL-ing, FCC (Federal Communications Commission), AMSAT, 10 metres FM, RTTY, SSTV, QRP, MARS, weather satellites, antique amateur radio, the handicapped and amateur radio, 220 MHz, OSSB (Ohio Single Sideband Net), photovoltaic power, fast scan ATV, recruiting techniques, repeaters, electrical safety, computers, VHF, UHF, the media, CW proficiency runs, 10-10 and antenna gain measurements.

Everybody agrees that the most frustrating thing in having such a wide choice is that you cannot visit all the forums you would like, due to many of them being held at the same time. Having said that, it was wonderful to have such a choice, all with experts in their respective fields. The majority of the forums were well attended, and the facilities provided by the organising committee in the form of overhead and slide projectors, video recorders and other props were first class.

The flea market at Dayton has to be seen to be believed, 1800 stands in the open air, the sun shining and a temperature of almost 80 degrees! Bob had advised us that the best way to tackle them is to make a quick walk round to check each stand for particular items we may want. Afterwards a more leisurely look round can be made for smaller items and component bargains. We took Bob's advice and two hours later we had both found and bought what we had been looking for. We were amazed at the large quantity of good condition second-hand amateur equipment and the very low prices being asked. Chris purchased a chrome Vibroplex bug key in very good condition for 30 dollars (about £25), whereas a similar one was offered for £65 at the RSGB

Convention at NEC two weeks earlier. Colin bought a Triton TCVR.

Later in the week-end we made another trip around the flea market examining the stands for smaller items and component bargains. It was impossible to get round every stand unless you devoted the whole week-end to it, and missed visiting the forums and trade stands.

We were surprised that the flea market stands opened at 6 a.m. but at 7.30 a.m. on the Saturday morning when we arrived there, after negotiating a minor traffic jam due to all the traffic we could see why. The flea market was packed and it is obvious that you have to get up early to get the bargains at Dayton. A far cry from the RSGB Convention where the doors do not open until 10 a.m.

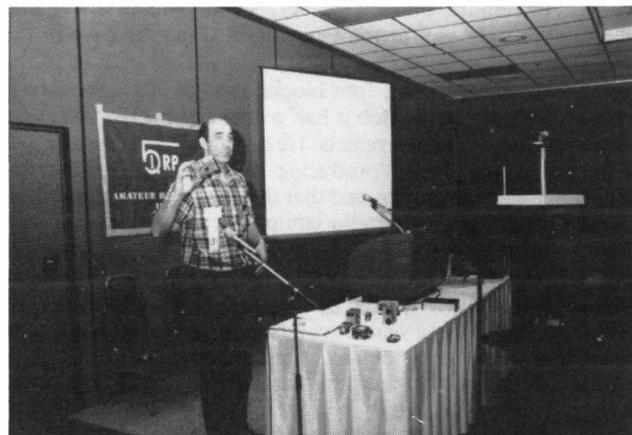
Just about every manufacturer who makes anything to do with amateur radio was amongst the trade stands. Heathkit were displaying their new HW-99 transceiver, Ten-Tec their new full QSK linear amplifier, and Kenwood the TS-940. The accessory firms were also present and we quickly realised that the American amateur has a much larger selection of antennas, towers, accessories, etc., readily available to him than his counterpart in the U.K. The low prices of the American antennas also surprised us when checked against the retail price in the U.K.

In addition many of the national clubs and societies catering for minority interests in amateur radio were represented. We were there to support the QRP ARCI, which had a stand by the entrance to one of the refreshment areas. The stand had a display of home built QRP equipment and an illustration of solar and wind power, and was the subject of a great deal of interest over the week-end. Many new members were recruited, and an even larger number of subscription renewals were made.

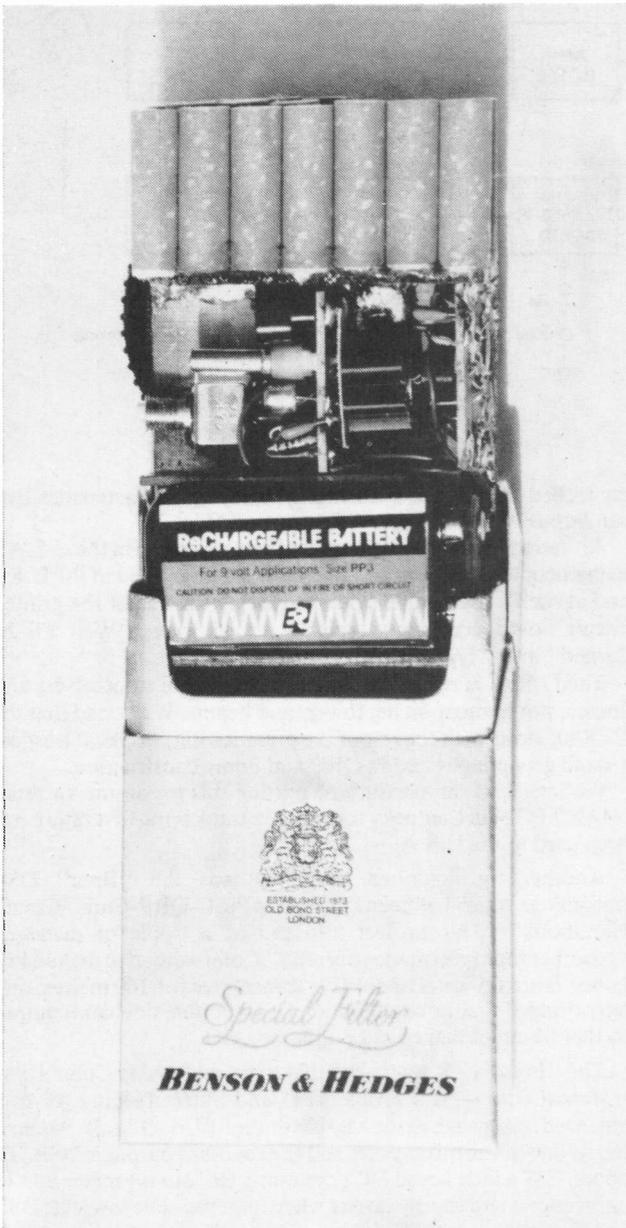
The Hamvention Committee really go out of their way to cater for everyone. In addition to the amateur radio events, they organise a host of other activities for amateur's wives and families, who may not wish to spend the whole three days at the Hamvention. A nearby school, Meadowdale High School, is acquired for these activities, and over the three days the following subjects were covered: cabbage patch clothing, over-eaters anonymous, controlling your weight through hypnosis, mouth-to-mouth resuscitation, soft sculpture, herbal health and beauty, theorem painting, how to listen more effectively, parenting — tough love style, colours for all seasons fashion show, speed reading, aerobic dancing, and how to start your own family genealogy.

As well as the official functions, there were a large number of un-official functions held throughout the week-end. These included the many hospitality suites, and meetings of different amateur radio clubs and minority interests groups.

The official Hamvention Banquet was held on the Saturday evening at the Convention Centre in Dayton. Approximately 1800 persons attended and after the dinner awards were made to W8ACE for Amateur of the Year, KG8P Special Achievement



Chris, G4BUE, showing the audience some of his QRP projects during the QRP Forum.



G4BUE's "FAG BOX(O)" spy transmitter.

Award, and WOTN Technical Excellence Award. The master of ceremonies was Lou Emm, veteran broadcaster associated with WHIO for over 40 years, and host of the highest rated morning show in the Midwest. The banquet speaker was Jean Shepherd, K2ORS, who was appearing for the third time. Jean, basically a humourist, is also a novelist, playwright, Broadway actor and TV producer. He outlined some very funny experiences of his early days in amateur radio which included a very witty imitation of CW signals.

The raffles at Dayton are as big as the rest of the event. The main prize was a complete Icom station comprising IC-751, IC-2KL, and AT-500. Other prizes were a TS-430, FT-757 and a large number of VHF and UHF transceivers. The main banquet prize was a Kenwood station comprising TS-430, SP-430, AT-250, FM-430 and MG-425.

We were giving a presentation as part of the QRP Forum and followed Ade Weiss, WORSP, who gave some useful hints on how to use QRP through the bottom of the sunspot cycle. Although the title of our presentation was "QRP-ing—U.K. Style", we had decided to place the emphasis on homebrewing of QRP equipment.

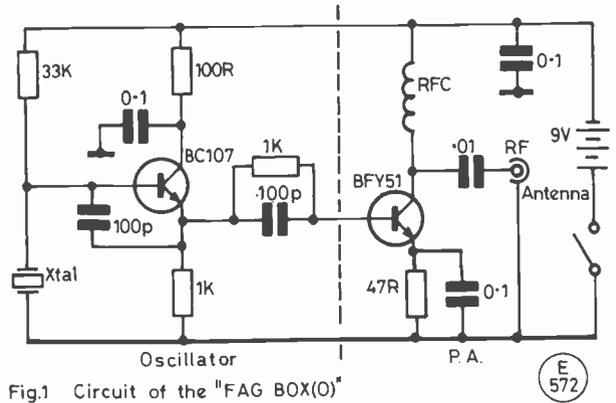


Fig.1 Circuit of the "FAG BOX(O)"

Chris commenced by explaining how he became drawn into home construction through the G-QRP-Club, and went through the rigs he had built, passing them around amongst the audience. The theme of his presentation was to persuade the amateur who had never built anything to try home construction, that it was easier than some amateurs think, and can result in a great deal of fun.

G4BUE concluded by showing his "FAG BOX(O)" transmitter, which was constructed for the recent G-QRP-Club's spy rig construction contest. A rig had to be built into some common object, which had to contain the rig, power supply and all accessories. A log of 10 QSOs had to be submitted to prove the viability of the rig.

Chris had built the transmitter inside a flip-top packet of twenty cigarettes, which also contained the power supply (a 9 volt PP3 battery) and the keyer. The only external connection is for the antenna and the rig is operated by placing it on its side, attaching an antenna, and then placing your fore-finger on the top and your thumb and index finger on each side. By pressing with your fore-finger the transmitter is keyed. It is possible to send very accurate CW at speeds up to 15 wpm in this manner.

The circuit is based on the famous "OXO" transmitter designed by GM3OXX and first featured in *Sprat* (the magazine of the G-QRP-Club) several years ago (Fig. 1); hence the name of "FAG BOX(O)"! It is a crystal controlled transmitter consisting of an oscillator and PA, and is designed to work on all bands. Since the circuit first appeared many hundreds have been constructed throughout the world, and it is still one of the best circuits for the first-time constructor.

Chris had used two small PCBs, one for the oscillator and one for the PA. A PP3 rechargeable battery is used for the power supply, and this results in the transmitter giving about 600mW RF output. The key is made up from a push-to-make switch and a thin piece of metal taped to the bottom of the battery and switch in such a position that it rests against the inside of the cigarette packet. When the side of the packet is depressed it presses against the metal which in turn causes the switch to 'make' and spring

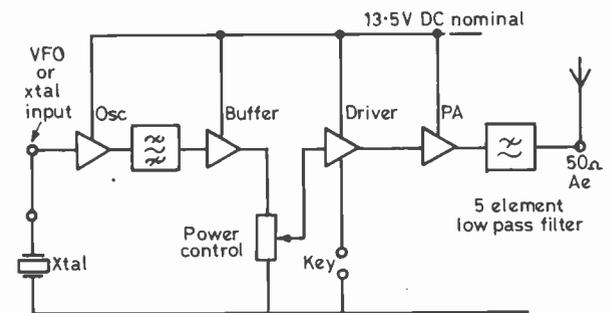


Fig.2 Block diagram of the Howes CTX-80 QRP Transmitter kit.

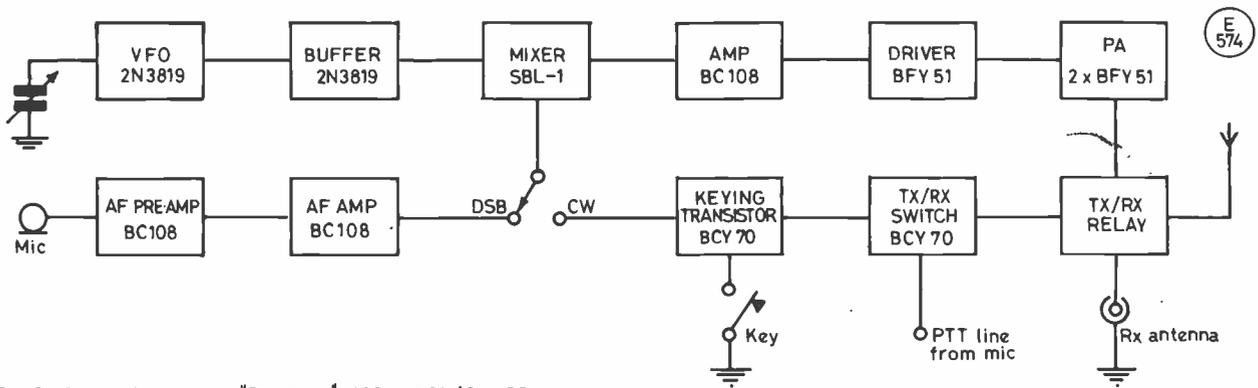


Fig.3 Block diagram of "The Bren" 160m. DSB/CW TTx

back when pressure is released. The whole rig is built into a copper clad board case which fits inside the cigarette packet. The filter tips of the cigarettes have been glued onto one end of the case, which results in it looking like a genuine packet of cigarettes when the case is inserted inside the cigarette packet. G4BUE had used the rig in this manner on 7 MHz with a G5RV at 30 feet and had worked 10 DXCC countries with it, including a YU station in the middle of the afternoon in broad daylight.

The transmitter caused a great deal of interest and bought home the fun side of home construction to the audience, especially when Chris mentioned the absence of the Government health warning on the side of the cigarette packet. The cigarettes had been purchased duty free on a day trip to France, thus carrying on the G-QRP-Club's tradition of home-brewing as cheaply as possible!

Colin then followed by describing more advanced constructional projects, including QRP transmitters and receivers that had appeared in *Sprat*. He then went on to describe some items of test equipment that can be used in home construction and a recommended selection of tools.

G3VTT described the Howes CTX80 QRP transmitter kit, which is almost unknown in the U.S.A. As described in *Short Wave Magazine* for March 1985, this is a simple, cheap and easy way of getting started in QRP. It is a simple four-stage crystal

controlled transmitter with excellent keying characteristics that can be easily assembled as a first project (Fig. 2).

Although homebrewing is not entirely unknown in the U.S.A., many people were surprised to see such a kit existed in the U.K., and at such a reasonable price. On seeing the size of the printed circuit board comments typically heard were, "Well I'll be darned" and "That's a pretty neat little radio".

The U.S.A. is really the land of commercial transceivers and linears, not to mention big towers and beams. We hoped that the CTX80, along with the rest of the presentation, would at least get a small group interested in QRP and home construction.

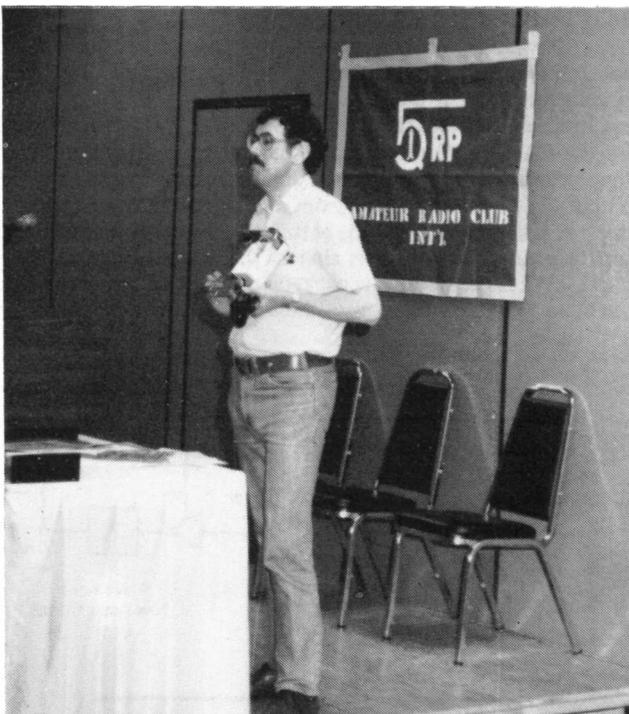
We later had the pleasure of putting this rig on the air from N4AR's QTH in Kentucky for what we think is the first time it has been used in the U.S.A.

Another rig described by Colin was the "Bren" DSB transmitter which has been featured in the G-QRP-Club "Circuit Handbook". This project also caused a ripple of disbelief, "Another radio you made yourself?" Colin wanted to make a low power (about 5 watts or so) CW transmitter for 160 metres, and later decided that he could obtain DSB (double sideband) output so that he could make the odd phone QSO.

The "Bren" — it was called that to try and pacify Colin's long suffering wife — is a simple VFO and buffer feeding RF to a balanced mixer such as the MD108 or the SBL-1, (Fig. 3). Audio is fed to one of the mixer ports and the resultant output is DSB. To obtain CW a little keyed DC potential is fed into the mixer port to unbalance it and supply carrier when required. The low level DSB or CW signal is amplified from a few milliwatts to 5 watts by a two-stage Class-A amplifier using three BFY51s. Other circuitry was included for speech amplification and antenna change over functions. (A little later George Dobbs, G3RJV, saw this project and made a few modifications, calling it the "Dart".) The whole transmitter used a handful of FETs and bi-polar transistors and fitted into a box about the size of a small biscuit tin (well Colin told them a cookie tin, and they seemed to understand!).

Unfortunately the one-and-a-half hours allocated for the QRP Forum was not sufficient, and the presentation had to be rushed to an end with us still trying to answer questions in the corridor outside as the next forum started. The one hundred amateurs who attended appeared to be very interested in what had been presented, and no doubt even more "OXO", "STX", "Bren" and other QRP transmitters will be appearing on the bands from the U.S.A. in the near future.

The week-end went far too quickly, and as we met up with Bill Maxson, N4AR, on Sunday for the journey south to his Kentucky QTH, we left Dayton having decided that if at all possible we will attend the 1986 Hamvention. The event is very well organised, and we subsequently heard that over 32,000 people attended, which is a highest ever total. Anyone who has even the slightest interest in amateur radio who happens to be in the U.S.A. during the last week-end of April should make every effort to attend. He will not be disappointed.



Colin, G3VTT, during his presentation at the QRP Forum.

HF Antennas for Restricted Sites, Part 4

Concluding this Practical Approach to an Everlasting Problem

A. P. ASHTON, G3XAP

Invisible Antennas

THE majority of the previous sections of this series have made the assumption that the antenna can be erected outside the building in which the station is located. However, this may not be possible, and there are large numbers of amateurs who are severely restricted — common reasons being regulations that prohibit the erection of any antenna, objections by family/neighbours to the sight of “ugly wires and bits of tubing”, and the unfortunate amateurs who literally have no access to the outside world, such as some flat dwellers. The word ‘invisible’ must of course be taken with a pinch of salt, and a better description might be ‘unseen antennas’.

It is proposed to discuss these antennas under three separate headings — (a) Indoor Antennas, (b) Disguised Antennas, and (c) Very Thin (almost invisible!) Antennas.

Indoor Antennas

The indoor antenna farmer has two main problems to overcome: firstly that his dwelling may be small compared with the length of a full sized antenna (especially on the lower frequency bands) and, secondly, that wiring, pipework, etc., in the building may have a severe screening effect on his antenna. There is an additional problem in that his radiated signal will be closer to such items as TV antennas, video recorders, house wiring, etc., than the operator who can site his antenna at some distance from domestic equipment. These problems should not deter, but the boxed-in radio amateur must accept that he must plan his antenna carefully, and it is hoped that the following discussion will prove helpful.

When discussing end-fed wire antennas, we stressed the importance of knowing where current antinodes occur in order that we could ensure that they are ‘in the clear’. We also discussed some methods by which these antinodes could be ‘moved’ along the wire in order that the antenna could be effective. The first task to be undertaken when planning indoor antenna erection is to determine the area within the building where we want the current antinode to occur; but, unlike the outdoor antenna, we are not just concerned with getting it into a clear area since we must also consider the proximity of the TV antennas, etc., mentioned above. If the house has a loft, this is probably the best position for siting the antenna since it is unobtrusive and may be left suspended at all times, whereas antennas used in other parts of the house must either be tucked around the walls and, hence, hidden, or be erected and dismantled every time they are used.

Considering loft mounted antennas first, the dipole is a very suitable device, and Fig. 1 shows the obvious method of mounting one inside a conventional loft area. Obviously, in the configuration shown this method is only suitable for short antennas, and this includes inductively loaded devices and those for the higher frequencies. An advantage of the indoor, inductively loaded antenna is that the coils do not require any form of weatherproofing — the same is true of trapped devices, and this makes trap construction far simpler than with outdoor antennas. Where the leg of a dipole (whether inductively loaded, trapped or full-sized) is too long to be accommodated in the manner shown in Fig. 1, the ends can be bent, and there are two

methods of doing this, as shown in Fig. 2. The reason for showing the two methods is to emphasise the need to fully consider the presence of electrical wiring — it is very common practice to lay house wiring across the floor of a loft, and care must be taken not to run the antenna parallel to such wiring. However, when considering the layout in Fig. 2(b), one must ensure that the house does not have metal guttering since the antenna would couple into this very effectively and severe detuning could result. Fortunately, the modern trend is to use plastics for guttering, but care must be taken with older properties. By bending the antenna and by the use of inductive loading, it should be possible to easily accommodate antennas for any band from 28 to 7 MHz and, with a little thought, for 3.5 and 1.8 MHz, although the degree of inductive loading required for these bands (especially 1.8 MHz) will tend to produce devices with rather narrow bandwidths. Again the author would stress that the reader should ‘give it a go’ since such an antenna, properly resonated, is capable of giving very acceptable results when operated at its resonant frequency. If TVI is a problem, the dipole may need to be mounted at one end of the loft away from the TV antenna and, in this case the layout shown in Fig. 2(b) is not recommended since both ends of the dipole will need to be parallel and unwanted directivity may be introduced — the actual effect depending on what percentage of the total antenna length is run along the eaves of the house.

The author normally avoids the use of coaxial cable for feeding a dipole antenna but if the reader finds that he is unable to run a feeder to his indoor dipole without coming into close proximity to other conductors such as house wiring, conduit, water pipes, etc., he would do well to consider coax since the effect that this proximity has on twin feeder could render it ineffective. Again, it is up to the experimenter to determine whether it is acceptable in his case, and trial and error is the only way to find the answer.

Another antenna that can be accommodated in a loft is a vertical and Fig. 3 shows an inductively loaded device suspended from the roof of a loft, with its radials laid out on the floor. Should the operator not wish to incorporate a loading coil, this antenna can be bent into the form of an inverted-L antenna — a suitable layout being shown in Fig. 4. For the HF bands a trapped 14/21/28 MHz vertical has a length of around 12 to 13ft., and if this device is constructed as an inverted-L it will be found to perform well, the amount of the antenna being bent away from the vertical being very small.

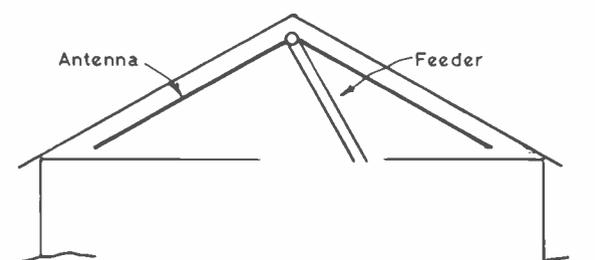


Fig.1 A loft mounted indoor dipole

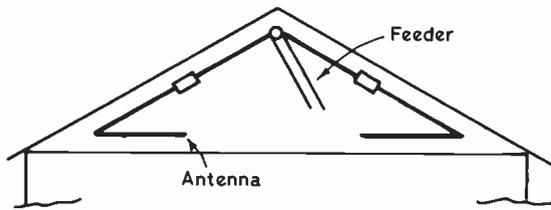


Fig. 2(a) A loft mounted "bent" dipole

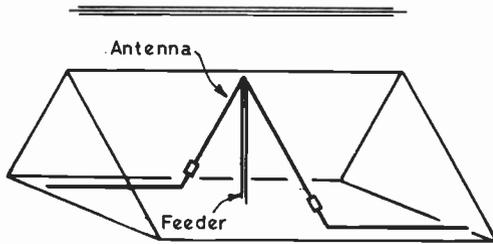


Fig. 2(b) An alternative method of "bending" a loft mounted dipole

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For those amateurs who do not have access to a loft, consideration has to be given to erecting antennas in the living space of the house and this obviously poses problems. The simplest antenna for such locations is perhaps the end-fed wire which, when used in conjunction with a good matching unit and a counterpoise earth system, is capable of giving very good results from the most unlikely location. The author has seen an installation consisting of a 70ft. length of 22 s.w.g. enamelled copper wire which was run up from the antenna matching unit to the ceiling, along the edge of the ceiling and down to a door, into the adjoining room and up to the ceiling again, repeating this through every room in the flat. Separate counterpoises for each band were made from the same material and run under the carpet, the whole installation being completely unobtrusive. Although this set-up was installed in a second floor flat, and there were other flats on three sides of it, 100 countries had been worked on each of the three bands, 14/21/28 MHz with 180 watts p.e.p. on SSB, and performance on 7 and 3.5 MHz was such that many inter-G and continental contacts were continually being made. Some TVI was experienced on some bands, but with careful planning of operating times and frequencies, restrictions on operating were not considered too severe.

There is obviously an infinite number of different forms that an end-fed wire can take, and provided that we are able to effectively couple it to our transmitter, any wire can be made to radiate and good results can be obtained. As mentioned earlier, the only point that does need care is to ensure that the current antinodes do not occur in areas that can cause problems with video recorders, televisions, etc.

Finally, on the subject of any indoor antenna, we must be aware of the fact that wet weather can often have a profound effect on results. For example, the antennas shown in Figs. 1 and 2 are in close proximity to, and parallel to, the roof tiles and when these become wet they will tend to screen the antenna, and RF which is reflected back off the water can have the effect of detuning it. The effect will tend to vary with frequency, but some

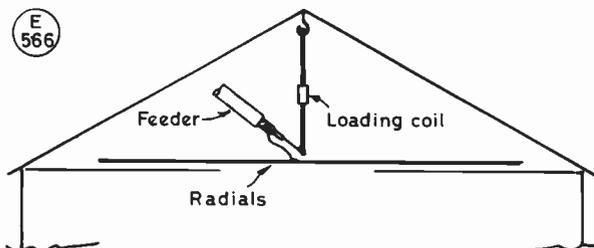


Fig. 3 A loft mounted, inductively loaded vertical antenna

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change will almost certainly be noticed on all bands 1.8 to 30 MHz and the operator should not be alarmed if he finds his VSWR changing during wet weather.

If electrical wires on the floor of a loft cause severe problems with RF pick-up, the operator may consider installing them in lengths of metal conduit and then connecting these pieces of conduit together and to a good earth. This may appear to be a major undertaking, but the author would suggest that if this practice makes the difference between being able to operate and not being able to operate, then the effort must be worthwhile.

Disguised Antennas

In areas where antennas are not permitted at all, many amateurs have used great ingenuity in order to make their antennas look like something else, and although the author has no wish to aid and abet his fellow amateurs to flout regulations, he justifies the following discussion by stating that it is aimed at those whose family/neighbours do not like the look of antennas! It would be impossible to give an exhaustive list of examples of disguised antennas so the author will simply describe those devices with which he has had direct experience in the hope that it will provide the reader with food for thought and enable him to consider the possibilities at his own location.

The Flagpole Antenna: This is the classic disguised antenna, and the author has actually seen a 22ft. tall flagpole, complete with flag and halyards, working on 21 MHz with surprising efficiency! At the particular location concerned, no TV or radio antennas of any kind were permitted, and conventional linen

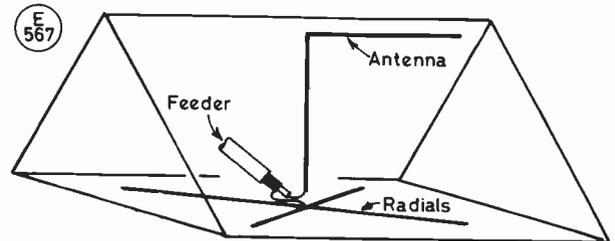


Fig. 4 A loft mounted inverted L antenna

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posts and linen lines were also prohibited. The amateur applied for planning permission to install a flagpole in his front garden and this permission was duly granted with the proviso that it should be safely erected, painted white, and that no flag other than the Union Jack should be flown! The flag pole obtained was wooden, 22ft. in length and was mounted on a sturdy ground post sunk 5ft. into the ground — needless to say a few ground spikes were driven into the ground inside the 5ft. hole before sinking the post and replacing the earth. Also mounted on the ground post was a small wooden box into which the flag was put when not flying — this box also housed a tuner for the antenna, consisting of a coil to bring the electrical length of the antenna up to three-quarters of a wavelength on 21 MHz. The antenna itself consists of 22ft. of 14 s.w.g. copper wire which was stapled to the flag pole and painted over with white paint at the same time as the flag pole. Four quarter-wave radials were buried under the lawn on which the post stands; the coaxial feeder also being buried along its entire length from the post to the house, which it enters *via* an air brick about 9 inches above ground level. An antenna of this type could be made "multi-band" by installing a relay in the tuner box and switching matching components in and out of circuit from the operating position. However, the operator concerned was content to just use 21 MHz and did not respond well to this suggestion!

A Radiating Linen Line: Another example of ingenuity that the author has seen was devised by an Operator who was not permitted to erect any form of external radio or TV antenna, but who was allowed to erect the conventional form of linen post and

linen line. One of his favourite bands was 14 MHz and, although he was having some success with loft mounted antennas, he decided that an outdoor antenna would be a valuable asset. He therefore made an inverted-V linen line, 33ft. long, which is pulled up and down with a halyard/pulley arrangement — his neighbours have never asked why the line has insulators at its ends, or what the piece of wire is that runs from the centre of the line and disappears down the inside of the post! Fig. 5 shows the device and is largely self-explanatory, although it may need explaining that a 'loop' of coaxial cable is necessary between the dipole centre and the top of the centre post in order to allow the wire to be dropped when it is actually *used* for clothes drying! The line itself consists of stainless steel stranded wire and appears to have suffered no adverse effects from having had clothes pegged onto it for drying. The centre mast is 17ft. tall, the outer posts being 8ft., and in spite of this very low height (approximately a quarter wave at the apex), much DX has been worked with this antenna. It should be noted that the inverted-V configuration does give rise to some low angle radiation, whereas had the device been horizontal at 17ft. high DX results would be expected to be somewhat poorer. The only other point to mention is that the coaxial feeder emerges from the centre post *via* a small hole drilled at ground level and is buried in a shallow trench leading to the house in which the equipment is installed.

A Drain Pipe Vertical: Another example of ingenuity was an amateur who lived on a modern, open plan housing estate on which absolutely no external TV or radio antennas were permitted, and the conventional type linen line was also banned. The operator in question was a 7 MHz enthusiast and his loft mounted antenna was giving acceptable results for local and semi-local work, but, because the antenna was substantially a horizontal device and mounted close to and parallel to his house wiring, there appeared to be little or no low angle radiation and DX working was practically impossible. The drain pipes and guttering on his house were made of plastic, as were the clamps which attached these components to the house. The bottom of the drain pipe was about two inches above ground level, water flowing into a small drain located directly underneath it, the drain being covered with a small metal grill. The plastic pipe was replaced with a metal one of the same diameter, and a length of insulated wire was bonded to the top of this and laid inside the guttering to form an inverted-L antenna — the combined length of the down-pipe plus wire being approximately 34ft. which resonated the device as a 7 MHz quarter-wave. Fig. 6 depicts the antenna which was resonated against only two radials which were buried one or two inches below the surface of the ground. The coaxial feeder was also buried along its path from the feed point to a point below the window through which it was routed to the

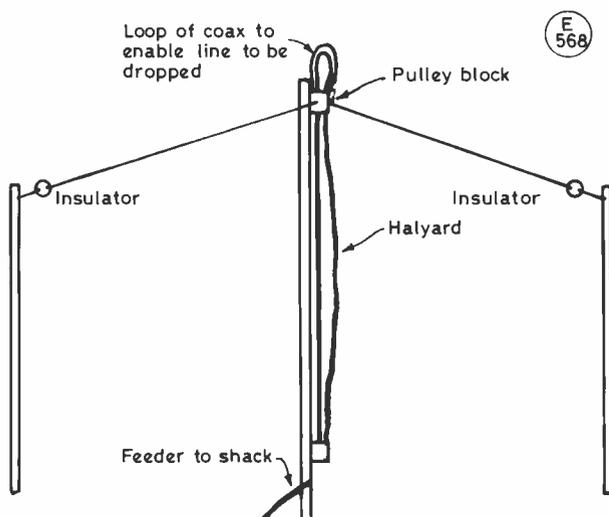


Fig. 5 A "clothes-line" vertical for 14MHz

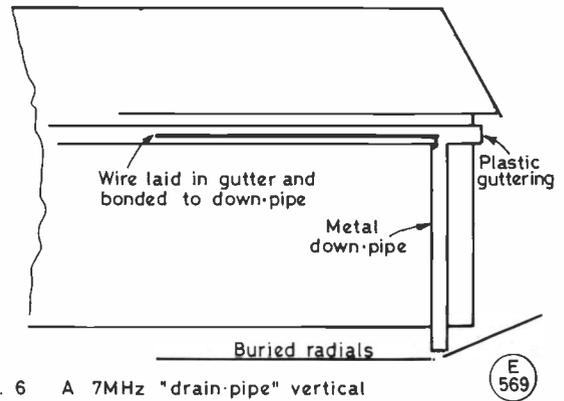


Fig. 6 A 7MHz "drain-pipe" vertical

operating position. The end of the top loading wire, the point at which the loading wire was bonded to the down-pipe, the connections between the feeder and the ends of the antenna/radials and the end of the feeder itself were all waterproofed by encapsulating them in epoxy resin. Much DX was worked with this antenna, but it was detuned during periods of heavy rainfall and was somewhat directional — not performing well in directions in which it had to fire through the walls of the house!

Although by no means providing an exhaustive list of disguised antennas, the author once again hopes that he has given the reader food for thought and has shown that no situation is completely impossible from the antenna point of view.

Very Thin Antennas

A very thin wire such as 22 or 24 s.w.g. enamelled copper is practically invisible when suspended at heights of 20ft. or more from the ground, and many amateurs have used this fact to enable them to erect antennas on 'restricted' sites. When the antenna is of the end-fed type, installation is quite straightforward, but with dipoles we have the problem that although our antenna may be virtually invisible, the feeder will not be, and we need to position the device in such a manner that the feeder will be hidden. The obvious example is to suspend the dipole from a tree with the feeder being routed down the tree and, possibly, buried along its route from the base of the tree to the building in which the station is housed. This is another situation in which the author would suggest that coaxial cable is used to feed a dipole antenna, because the practice of running twin feeder down trees or buildings, etc., will lead to high losses.

When using very thin wires for outdoor antennas, it must be appreciated that breakages will happen fairly frequently and the operator must be prepared to replace the wire equally frequently — this sounds a minor matter but can prove frustrating, especially as gales will almost certainly occur on the day after replacement (Murphy's Law). It is also worth noting that the longer the (unsupported) span of wire used, the higher is the probability of the operator trying to pull it too tight in order to remove 'sag' — long wires will last longer if they are permitted to droop somewhat, although they will tend to break near to the support points due to the flexing that occurs in these areas during windy conditions.

Although an operator should *always* check the VSWR on his feeder prior to transmitting, this becomes even more important when using very thin wire antennas because of the greater likelihood of breakage just discussed. Users of such antennas should develop the habit of observing the reflected reading on their VSWR bridges at frequent intervals during all operating periods.

It could be argued that thin wire antennas are not worth considering because of the frequency of breakage, but the author would once again make the point that if these devices make the difference between getting out and not getting out, any hassle involved must be worth the effort.

Planning and Evaluation

It is always necessary to plan an antenna installation prior to actually making a start, but when contemplating HF antennas on restricted sites we inevitably have to make some compromises and planning assumes an even greater importance in ensuring that those compromises are acceptable.

There are several decisions to be made and the author would suggest that the band(s) which it is desired to cover must be the first consideration, since this will (to a large extent) determine either the size of the antenna if it is to be self-resonant, or the degree of compromise if it is to be bent, loaded, etc. The choice of band coverage may also dictate to some extent whether we are to choose a vertical or a horizontal antenna — especially if DX working is to be a high priority. At this point we must also decide whether to construct a single or a multi-band device and it is suggested that on very restricted sites, if multi-band operation is desired, the end-fed type of wire antenna appears to offer most in terms of flexibility.

Having decided on the bands and the antenna type, it is *very important* to draw a diagram of the proposed layout to determine where the antennas current antinodes will occur because (as we discussed earlier) it is the position of these antinodes which will determine whether our antenna will be successful or not. Remember that the current antinodes need to be in the clear, but we do not want them to occur in areas that will give problems with RFI — *i.e.* we must keep them away from TV antennas, video recorders, etc. Remember also that we can 'move' current antinodes to desirable positions on our antenna by introducing some form of loading — this was discussed in detail in Part 3 of this series.

Prior to actually constructing the antenna, spend a little time thinking about alternative types and locations — as we are all biased to some extent in our choice of antenna, the choice may

have been made with some degree of sub-conscious pre-judgement. Consider as many alternatives as possible, taking into account such matters as feeding, routing of feeders, the likely direction(s) of radiation, ease of resonating, etc., etc.

Evaluation of an antenna may be considered as two separate exercises; firstly a check that such items as the length required for resonance, the feed impedance, the VSWR, etc., are as we would expect them to be and, secondly, that the antenna actually performs as it should — *i.e.* that we are getting out. The first exercise is fairly straightforward and needs no further comment, but the evaluation of the antenna's performance may not be quite as simple. If first impressions of a new antenna's performance are either exceptionally good or exceptionally poor, check with nearby amateurs to determine whether propagation conditions on the relevant band(s) have either improved or deteriorated significantly at about the time that the antenna was put into use. Such changes in conditions can give an entirely false impression of an antenna's worth! Also, compare results with a local operator and, if possible, get a third station to compare your signal with that of the local station — this is a good guide as to whether your new antenna is working as it should.

Summary

The author has not intended this series to be an exhaustive discussion on every technique available to the amateur who has space restrictions — rather, the intention was to discuss some of the available techniques and, above all, provide food for thought. It is hoped that the reader will accept that HF communication is possible from just about any site and although compromise antennas can never perform as well as their full sized counterparts, surprisingly good results are possible — provided that the antenna is given a chance!

● ● ● “Practically Yours” ● ● ●

with GLEN ROSS, G8MWR

50 MHz

THERE has been for some considerable time a growing interest in the 50 MHz band. This portion of the spectrum is in such a position as to enable most of the normal HF propagation modes to be used, but as an added bonus many of the mechanisms of interest to the VHF man are also supported. Sporadic-E, for instance, comes in much earlier and lasts longer than it does on two metres, whilst meteor propagation is far more pronounced with bursts lasting up to a minute being not uncommon.

The long awaited announcement that the band is now an official allocation has fired even more enthusiasm, and as it may be some time before we can actually use the band fully a receive converter with which to explore the band makes a very useful project.

Design

The usual, and often mistaken, idea of chasing the last 0.1dB of noise figure is not a requirement on this band due to the amount of solar and local noise which exists. Any system which will show an overall noise figure of around 3dB will be external noise limited. This is a performance which can be obtained even with the humble 40673 which is used as the RF stage in the present design. Alternative types which could be used are the 3N204 and the

BF981, both of which will “drop in” without any change of circuit values. The aerial input circuit is of fairly high ‘Q’ design so as to have a fairly sharp cut off outside the amateur band; the aerial is not tapped into this coil but is inductively coupled to help reduce strong signal breakthrough which tends to occur with direct or capacitive coupling.

Filtering

The interstage coupling between the RF and mixer is through two tuned circuits arranged as a bandpass filter with inductive coupling between the two sections, again avoiding direct feed through. The coupling is fairly loose and it will be found that tuning these circuits is fairly critical. The use of a single RF stage and a certain amount of loss through the filter ensures that there is only sufficient gain ahead of the mixer to make second stage noise contribution of no consequence.

Mixer

The mixer uses a 2N3819, both the signal and the local oscillator being coupled to the gate. The use of an FET and minimum front-end gain ensures that strong signal handling and cross-modulation characteristics are excellent. This is an essential parameter on this band where signal strengths can be very high.

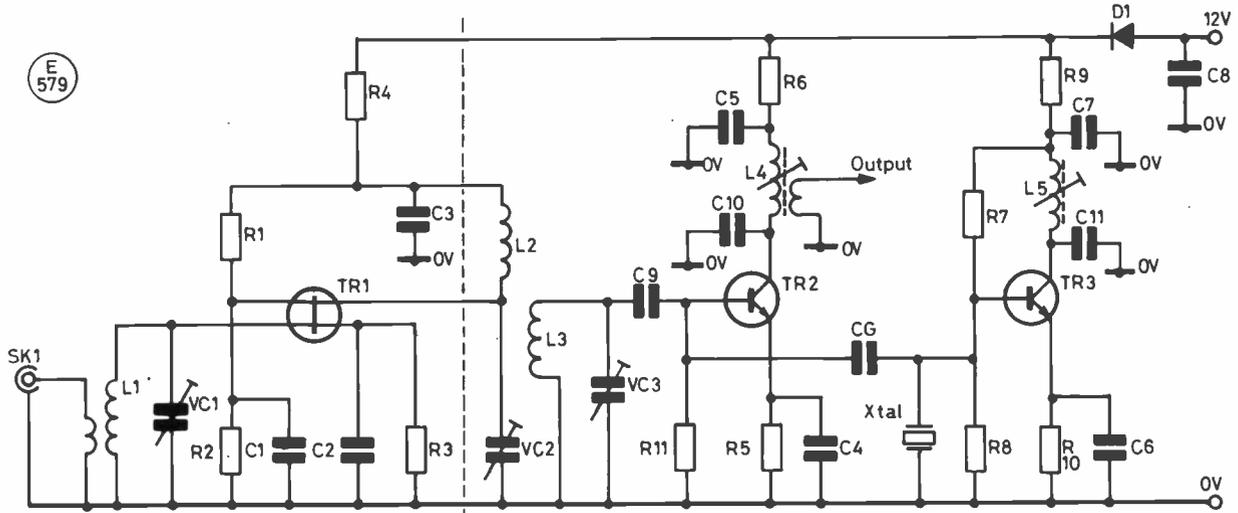


Fig. 1 50MHz RECEIVE CONVERTER

Table of Values

Fig. 1.

- | | |
|---------------------------|---|
| R1, R2 = 100K | CG = see text |
| R3, R4, R6, R9 = 270R | VC1, VC2, VC3 = 25 pF trimmer |
| R5 = 2K2 | TR1 = 40673, BF981 or 3N204 |
| R7 = 47K | TR2 = 2N3819 |
| R8 = 33K | TR3 = BC108 |
| R10 = 470R | D1 = 1N4001 |
| R11 = 1M | L1, L2, L3 = 11t, 20 swg, 1/4" dia., 3/4" long (L1 has 2t insulated coupling winding) |
| C1 to C7 = 1nF feed thru' | L4, L5 = 15t, 26 swg enam., on 1/4" former with slug (L4 has 3t coupling winding) |
| C8 = 100 nF | |
| C9, C11 = 15pF | |
| C10 = 22 pF | |

Note: all resistors are 1/4-watt types

Construction

The unit is built into a small die-cast box with the input and output sockets at either end. The unit could be built on a PCB but the author built his on a piece of PCB material with the small components wired between soldered-in feed-through capacitors and trimmer connections. The layout used is shown in the drawing and should be self-explanatory. An essential point is the screen between the RF and mixer stages. This is made from a piece of PCB material arranged to be the full width of the box and to come to the lid when this is placed in position.

Alignment

The unit should be connected to a twelve volt supply via a meter set to read about 30mA, when a standing current of 10 to 12mA should be found. Adjust L5 for an increase in current, probably to

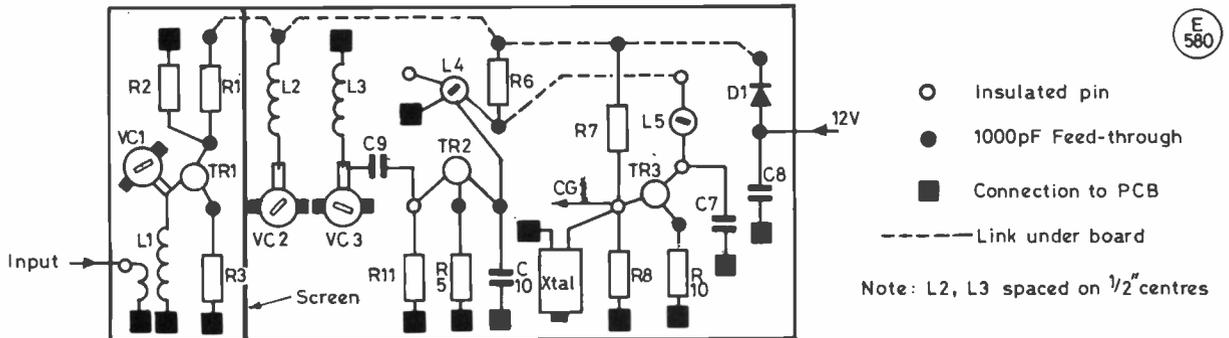


Fig. 2 COMPONENT LAYOUT (Not to scale)

The drain of the mixer is tuned to the IF frequency of 28 MHz by L4 and the signal is then inductively coupled to the output socket.

Local Oscillator

The local oscillator used the ubiquitous BC108 transistor. (I have even seen one used as an emergency replacement for an RF stage in a 90 MHz receiver!) The circuit of this stage is conventional and is completely "sure fire". The crystal is connected between base and earth and the tuning is by means of L5 in the collector. The coupling to the mixer is by means of a "gimmick" capacitor (CG). This is made by connecting short lengths of insulated hook-up wire to the crystal and the gate of the 2N3819; the ends of the wire are then twisted together for a distance of about half an inch and the excess length cut off, making sure that there is no DC connection between the wires. The oscillator injection can be set for best results by adjusting the twisted length of the wires.

around 18mA; this shows that the oscillator is running. Now switch the supply on and off a few times to ensure that the oscillator starts reliably. If it does not restart then slightly adjust the tuning until it does. Disconnect the meter. Connect an aerial and a receiver tuned to 28.25 MHz and adjust L4 for maximum noise. Now tune to a signal and peak L2 and L3 for maximum and L1 for best signal-to-noise ratio; this should be very close to the setting for maximum gain. If no signals are available setting the tuned circuits for maximum noise will be a close approximation to the correct settings. Disconnecting the aerial and connecting a 50-ohm resistor to the input should show a marked decrease in noise if the system is working well.

We always like to give you something for nothing if we can, and the good news is that this unit can also be used on 70 MHz by using the correct crystal and taking a couple of turns off L1 to L3 inclusive.

The KW Ten-Tec 'Corsair' Transceiver, a Description and Use

E. H. TROWELL, G2HKU

THE writer has always been mainly a CW operator with only the occasional phone contact to keep old established schedules. It was therefore of considerable interest after owning earlier Ten-Tec models such as the PM2B and Argonaut 515, that the opportunity to use the Model 560 Corsair arose.

KW Ten-Tec perhaps better known to the older generation (including the writer) as KW Electronics whose products, the KW-2000 or earlier Viceroy, did so much to encourage SSB in this country several decades ago, are now retailing Ten-Tec products. The Ten-Tec company headed by Al Khan, K4FW, produced the first all solid-state HF transceiver some fifteen years ago and has been in the forefront of design in this field ever since. The Argonaut, Triton and Omni are especially favoured by CW operators for their full QSK facilities and are seldom seen for sale on the second-hand market (always a good sign). The factory which is situated in the foothills of the Great Smoky Mountain range in Tennessee, manufactures not only all its own equipment, but also its own circuit boards, injection mouldings, coils, transformers, sheet metal work, stampings, turnings and even their own tools and moulds.

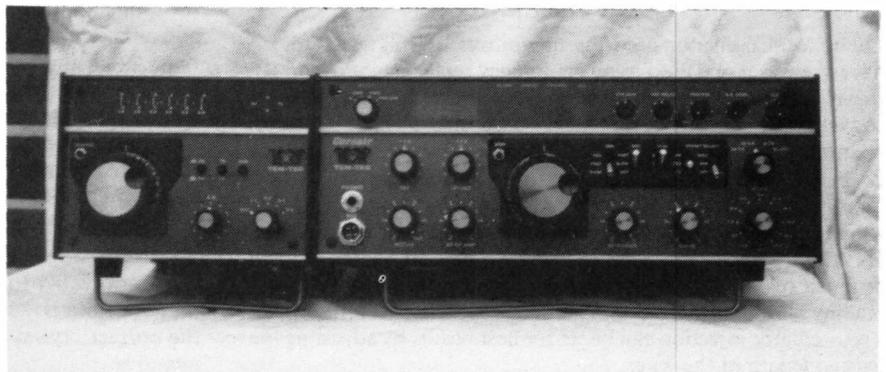
The Corsair is their latest product, the outcome of some two years intensive development and is all solid state, broadband and covers all nine HF bands, with an overrun of approximately 40 kHz on band edges. The final amplifier is quite capable of operating at *full* output on all bands with a 100% duty cycle in any mode even into a relatively high SWR of 2 or 3:1 and will not automatically fold back in power.

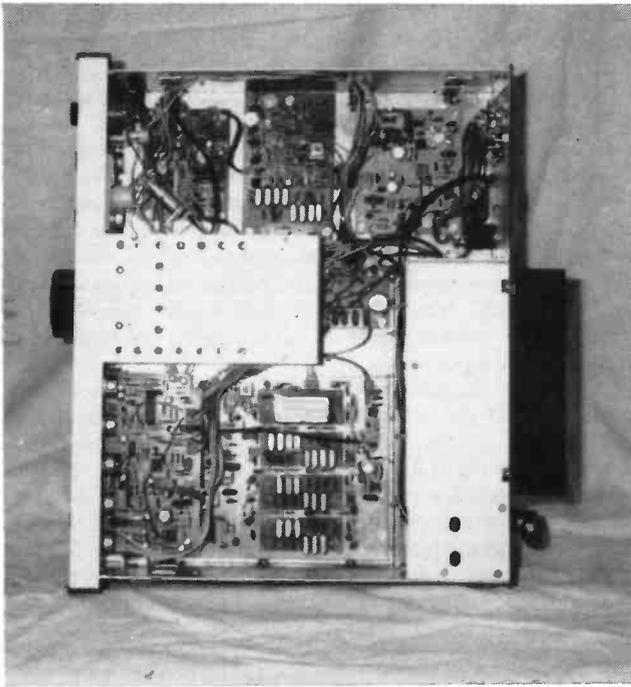
The transceiver itself measures 5¼" high, 15" wide and 14" deep with a stainless steel bail which snaps into position to tilt the equipment if desired. Front panel controls are: PBT; OFFSET; AF-RF AMP; RF-POWER; NOTCH; DRIVE; Bandswitch; Main tuning knob; MODE; METER switch; VOX GAIN; VOX DELAY; PROCESS level; N.B. LEVEL; ALC threshold; QSK/VOX switch; XTAL switch; OFFSET SELECT switches (2); SPOT push-button; PHONES; MIC. Rear panel controls and connections are EXT T/R jack; AUDIO IN jack; AUDIO OUT jack; ACCESSORIES socket; LINEAR socket; GND terminal; EXT. SPKR. jack; POWER socket; 50-OHM ANTENNA connector (SO-239); RX ANTENNA jack; RX-TRX switch. The chassis is rigid steel with a pleasing black/bronze finish to the aluminium front and rear panels.

The speaker is mounted within the cabinet bottom for compression loading, and another interesting point is that when the headphones (high or low impedance) are plugged in, the internal or external speaker (if used) will be silenced and an attenuator network activated to reduce the audio output to the headphones and enable the audio amplifier to operate at its optimum signal-to-noise setting. Underneath also is a hole where, by inserting a finger, the sidetone volume and pitch may be adjusted. Unlike some transceivers, once set the level is constant, irrespective of the band in use. An easily removed two part case completes the enclosure. Mounted on the rear panel is the very effective heat sink for the PA transistors which under normal operating conditions gets barely warm. However, operation on high duty-cycle modes, *i.e.* RTTY or SSTV, will of course raise the temperature of the heat sink. This can rise to as much as 200 degrees Fahrenheit, but will still be within the rating of the output transistors. Anyone favouring these modes should arrange for a cooling fan to be directed onto the heat sink. Bias for the output stage is temperature compensated to assist maintenance of a constant operating point by mounting the bias diodes on this sink. The DC power input is 200W CW and SSB on all bands, the 100W output being remarkably constant.

The panel controls are well placed and fall naturally to hand. This point is often overlooked in other designs, or indeed made impossible by the multiplicity of seldom used functions together with the resultant need for concentric controls. The VFO permeability tuned oscillator covers 5.0 to 5.5 MHz. The output is mixed with separate crystal oscillators for each band except 14 MHz where the output from the PTO is used directly. The VFO tuning knob is calibrated in 1 kHz divisions the resultant frequency being displayed by six LED numerals, megahertz and kilohertz in red and hundreds of Hertz in green, from the crystal controlled counter. Adjacent to the tuning knob is the SPOT button which when pressed produces a 750 Hertz audio tone. This can beat against the desired CW signal by adjusting the tuning for the same tone, thus obtaining zero beat; a useful addition, in practice. Five three-position lever switches with a nice solid feel operate, respectively, VOX/QSK fast/slow recovery for the outstanding break-in facility, AGC Fast/Slow/OFF, Xtal filters standard SSB/optional 1.8 kHz SSB/500 Hertz CW filter or 250 Hertz CW filter; the remaining two switches operate the OFFSET

KW Ten-Tec Corsair with
external VFO.





Top view of the Corsair with all optional filters fitted. The box in the centre contains the shielded LS1 frequency counter; output stage and heatsink are to the right.

— one selecting RX/TRX/TX, the other for selecting either the MAX position with a movement of up to 4 kHz up or down, or the MIN position for a finer movement of 500 Hertz and an OFF position. The PBT control with centre indent provides variable bandwidth on SSB, and optional 1.8 kHz and 500 Hertz filters may be added and moved within the 2.4 kHz bandwidth. Using this control, and the optional filters including the 250 Hertz model, permits moving any passband width to drop out interference. Clockwise rotation of the control reduces the bandwidth on the high side and counter clockwise rotation of the control reduces the bandwidth towards the low side.

The processor increases the average speech power, allowing a greater range of voice levels to obtain peak ALC level and is switched and variable with a range of up to 10dB. It is an audio clipper as well as compressor thus enabling a greater processing level than either method alone. When switched in the PROCESS LED will light and the process level can be read on the meter, the manufacturers suggest a half-scale setting and this appears to be about right in practice from reports received. It should be noted that when further adjusting the control the DRIVE control must be reduced in order to keep the ALC action constant; the ALC LED should just light on voice peaks and if the DRIVE control is too far advanced severe problems with distortion and splatter will result. In operation no problems were encountered, the setting being easily adjusted and checks with ZL friends proved the usefulness of the processor.

The effectiveness of the NOISE BLANKER has been the subject of some criticism and enquiries were made of Joe Redwine, N4AVF, who is Ten-Tec's Communications Sales Manager. In part, his reply states, 'extensive engineering time has been devoted to the problem . . . Ten Tec transceivers are designed so that the IF section operates at extremely low power levels. This results in minimum mixer products and a remarkably low noise level. Consequently, there is insufficient gain in the noise detector path to blank noise below 10 μ V . . . The extremely low noise floor which makes the Corsair a standout among transceivers is the cause of a less than perfect blanker and as the blanker is quite effective on certain types of noise, the great majority of users are

quite happy . . .' In practice the transceiver really has a quite remarkably low noise background with signals sounding clean even on 7 MHz after dark. This coupled with a quality of audio not often found in transceivers nowadays reduces operator fatigue in long sessions. The writer, having undergone several head operations, is perhaps more qualified than some to arrive at the above opinion as good readability is essential to him.

The AF-RF AMP control varies the audio output and when pushed in brings into operation the RF stage. Pulling the control out switches off the RF amplifier and LED indicator and inserts a 10dB attenuator in its place. The resultant effect is a 20dB reduction in signal to the RF mixer with increased dynamic range and more sensitivity than would result with a simple 20dB RF attenuator.

In the receive mode the illuminated meter will display 'S' units with the METER switch in any position other than IC. In this latter mode the current drawn by the PA module is shown. The SWR position shows the SWR when the forward power is 100 watts. Forward power to the aerial is measured in the FWD position and a peak reading circuit is automatically selected so that p.e.p. output can be measured when in the SSB mode. The PROCESS position shows the level of compression applied to the microphone input, when the PROCESS control is in the ON position.

The AGC system is two speed, in the FAST position recovery time is 0.2 seconds and in the SLOW 2 seconds. If switched to the OFF position AGC is defeated, the S-meter inoperative and the IF gain is controlled by the RF gain control.

Using the QSK switch in the VOX position on SSB is fast, GAIN and DELAY being adjustable to the operators requirements by the two controls adjacent to the digital readout. The other two positions FAST and SLOW are manual or PTT (push-to-talk) recovery positions.

The FAST position of the QSK control in CW operation brings the receiver back to immediate full sensitivity even between dots. This position makes one realise what a joy full CW break-in can be enabling a virtual normal conversation to be carried on. The SLOW position may be preferred for contest work on a crowded noisy band. An offset of 750 Hz is automatically selected when in the CW mode, thus placing the radiated signal exactly on top of the required station. Over the years Ten-Tec have specialised in the field of full CW break-in and the Corsair is undoubtedly superb in this mode.

The KW Ten-Tec remote VFO Model 263 is a most useful accessory styled to match the Corsair and providing the rather



Model 263 remote VFO for the Corsair.

unusual ability, apart from the normal remote functions, for the operator to receive two signals at once and to vary the level of either or remove a selected one.

The permeability tuned VFO is identical to that fitted in the Corsair including the tuning knob. The readout is by a ten position bargraph in conjunction with the calibration of the tuning knob. This is for quick reference only as the Corsair's own digital readout is in operation at all times. Adjacent to the tuning knob, in a similar position to the SPOT button on the Corsair, is the REVERSE button. This enables the operator to have a quick check of the transmit frequency by restoring normal receive function without operating one of the mode switches, thereby preventing the operator transmitting in the wrong spot.

To the right of the bargraph is the LED display which indicates the mode chosen "A" being the Corsair, "B" the Model 263. The mode is chosen by selection of the three push-button switches lower down the panel. If, for instance, the RAB button is activated both Rx LED's will light and both Corsair received signal and remote VFO received signal will be heard, the relative gain of either being adjusted by the A-B balance control, the Corsair digital readout then displaying the stronger of the two. This feature enables the operator to keep watch on one frequency while, at the same time, operating on another.

Crystal control is available via the five-position switch next to the AB control which when selected crystals are fitted, provides four channels from the internal crystal oscillator.

No difficulty was encountered in use on the air once the operation of the A-B balance control was mastered. The ability to conduct a QSO while, if required, listening to another station on another frequency at the same time and be able to adjust the relative strength of either proved an asset. There are in fact six modes of dual-frequency operation available, all indicated by LEDs: Corsair transmit-remote receive; Corsair transmit and receive; remote transmit and receive; remote transmit-Corsair receive; Corsair transmit-both receive; remote transmit-both receive. Full break-in is available in all modes.

The remote VFO is powered from the Corsair accessory socket via a nine pin plug and the two phono sockets marked VFO IN and VFO OUT. The cabinet is fitted with a tilt bail to match the

Corsair and the Instruction Manual contains detailed photographs, circuit diagrams and operating voltages even to the extent of instructing where *not* to measure!

The power supply Model 260 is capable of supplying some 20 amps and contains a forward facing speaker, over voltage protection and an electronic latching trip (factory set). The transceiver can of course be operated from a 12 volt battery supply in which case the use of the Model 1140 circuit breaker is strongly recommended to protect the final amplifier from excess current conditions; this also provides an external on-off switch. A microphone is not supplied, but KW Ten-Tec can supply suitable Ten-Tec models. The transceiver will accept high or low impedance or electret varieties, a polarizing voltage being available at the input socket.

As supplied, the transceiver had a 12-pole crystal filter fitted but an optional 8-pole filter, which gives a 16-pole performance, is available and strongly recommended. Other optional filters referred to previously are 1.8 kHz SSB, 500 cycle CW and 250 cycle CW. These filters are not similar to the Japanese enclosed boxes, but are of open construction, using standard cased crystals and components mounted on plug-in boards easily accessible. In all there are some 22 printed circuit boards with plug-in cables. These cable connectors are numbered as also is its corresponding connector on the board.

No trace of TVI was found on any band using full input CW or SSB. A normal domestic TV colour receiver with no TVI filters fitted was used for tests standing next to the Corsair.

A very well produced Instruction Manual is provided, with photographs, descriptions and suggestions together with voltage readings throughout the transceiver, and KW Ten-Tec provide an individual test report with every Corsair purchased.

To sum up, a transceiver which is outstanding in both CW and SSB modes and is wholeheartedly recommended for the discerning and experienced operator.

KW Ten-Tec Ltd., Vanguard Works, Jenkins Dale, Chatham, Kent ME4 5RT (tel: 0634-815173).

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

WHAT a month this has been! Immediately last month's piece was composed your conductor roared off for a quick holiday. That was tolerably dry if not sunny, but since then . . . the Clerk of the Weather appears to be suffering alternate bouts of incontinence and severe flatulence from the south-west. There were times when I veritably trembled at the sight presented by my aerial wires up aloft and threatening to blow down. Through it all, there was enough thunder and lightning — the metaphor can be left to the imagination! — to make disconnection of rig from aerial mandatory. To add insult

to injury, when I could get on there wasn't a lot doing.

The Bands

One opening on Ten — on the evening of July 30 — came just 28 days after the last one, and in this case extended up to cover the 50 MHz band. As to the mechanism, at this stage in the sunspot cycle, one wouldn't like to guess; let us just take what gifts the gods have to offer, and be thankful!

Down at the low end, Top Band has been dismally flat most of the time, with the static helping to keep people off the

bands. That being said, by the time you get to read this we should be beginning to see the signs of the equinoctial lift creeping up on us, and that, plus (we hope) less static should make life easier on all the bands — even though we are in the sunspot-minimum doldrums and going to stay there for a couple of years or so!

But let's have a look.

Ten Metres

G4EZA (Streatham) writes to note that he heard Sporadic-E signals on most days, and openings to South America on at least three days. As he wrote the band was full

of European signals in the middle of which was WA7ZTC. . . "oh, he's put /OH5 on the end!" On a different tack, G4EZA would like to know what the blue-blazes is the real and true reason for the thing around 28.195 (others have noted it on 28.193) which sometimes comes up and signs "IY4M Robot". Tim totted up the month's tally of countries heard on Ten, in July, as 39 — and he can only listen in the evenings and weekends.

Next we have G4ZZG (Warrington) who also wants the straight dope on this IY4M Robot QRV — which various people have called and got no reaction from. Charles says, as did G4EZA, that it is amazing how much activity there has been to note. The G4ZZG log shows activity of some sort on all but five of the July days — and it is interesting to note that on all the days when a beacon was heard there were also hearings of other amateur signals — implying that people generally are getting more into the knack of trying a call if they hear a beacon. Compared with last cycle, 28 MHz activity at minimum is up by an enormous factor. Although G4ZZG heard the PY beacon once, he didn't actually work out of Europe either on SSB or CW, but he did entrap T77C. Others to be heard calling U.K. included I4IDW, and YU2E and IK2DZN — both of whom are working for WAB awards.

G3JFS has been transmuted into DA1PE by way of a spell as DL/G3JFS; Peter is now in Hanover with the Signals. The new QTH is hemmed in with assorted TV and video problems, and restrictions on aeriads add a further spice to the problem of getting back on the air. So far, a loft-mounted dipole about 24 feet long has provided the contacts on 14/21/28 MHz. On 28 MHz all that's been managed are short-skip ones during early evening, once in a while. However, definitely a band to keep an eye on.

G4OBK (Chorley) was writing his letter in great haste, thanks to various commitments. Phil says he has been greatly interested in the RSGB 28 MHz Counties Award, despite his having a very poor QTH for line-of-sight contacts. As Phil says, this one was started back in 1983, and deserves more interest. What about it, folks? Still with this one, G4OBK has worked 41 and confirmed 39; Phil guesses that the propagation modes involved included 17 by back-scatter, 12 by Sporadic-E, 8 on ground-wave, and four by tropo. For the last month, apart from shifting intruders, there were CW QSOs with EI7FH, GD0AVF, G4UAZ, HG5A, OH0BH, CX4GL, CE3DNP, PP7IE, HB9, DL, OZ, I and PYs. On the Phone front, SSB managed G4XDZ, G4ZEH, G0AGP, DL5KL/ST2, HV2VO, LU2FEP, ZP5JAL, EL8M, EA8YV, DLs, and an OE.

Now to G3NOF (Yeovil) who noted openings to Europe and the U.K. often as

late as 2100z; in the first week of August several openings to South America were noted. SSB contacts were made with C30AAU, IS0CPU/IM0 and PY5IW.

G4HZW (Knutsford) now, and still with his TS-820 and two-element Quad. Up to July 30, Tony only found E-layer propagation, such as UB5, YO, DJ, UB4, DL, F, UC2, SM, OZ, LA, UQ2, EA, EA6: plus more interestingly. GJ4WRR. HV2VO, EI2FJ and RZ3AC in Moscow. Then, on the evening of July 30 from 2130z to 2300z the band opened to the East Coast of U.S.A., and WA2JQK, KA3IOL, W2FCR, KS3L, WB2MAN, WB3LSY, and K3LYW were all worked. It would seem the extent of the opening was from the Florida area northward, and the writer believes there was at least one VE worked from this country. Tony has been combing back through the log and says that in each year since he was licensed there have been openings to Ws sometime in July and around 2200 to midnight zulu time, without exception. On another point Tony has a comment on that IY4M Robot thing; it seems that if you talk to it nicely you can get it to store your call and spit a report back at you! G4HZW can't confirm this, as all he could persuade it to do was make it ask for a repeat of his call!

Fifteen

One could almost say this is the neglected one now! G4OBK used SSB to work PY7ZZ, NP4Z, CE3DPD, FG5OL/FS, and TI1W, while the key accounted for UD6DKW, UM8MY, OH0BH, TU4BR, WP4G, LU8DQ, YV5JUX, HH2VP, FG5DL/FS. QSL's for the latter go *via* F6ARI.

G3NOF noted a few openings to South America early in the period, but then conditions turned poor, with only one opening noted to North America. His SSB scalps included CE3DPD, CE5BYU, IJ7ET, JY9MG, KP4BZ, OE3HGB/YK, TI1W, TU4BR, YV5AGM, ZS1SL, and ZS5US.

G2HKU (Sheppey) had a CW contact with JM1RWF/MM, who was in *MV Rose*, out of Ghent towards Singapore *via* Suez, when the ship was off La Corunna in Spain.

DA1PE found this band behaving rather like Ten, with long periods of inactivity and then an opening; Peter made lots of EU contacts, plus PYs, LUs, and JY6ZZ. A 'nearly' was with VU2BK at 1100 on July 10 when the VU came back to DA1PE's call but was then swamped by the others calling DA1PE! That, as a first contact with the new call, would have been really something.

Now to G6QQ (Hoveton) who indicates that he did a bit on 28 MHz "to show willing" but had some fun on 21 MHz in the contests — and, as he says, it is surprising how the 'sunspots' perk up when there is some activity due to a contest! SSB accounted for PY7ZZ and WP4G in the

IARU contest, plus YC0DUA, while CW managed WP4F, 4Z4NUT, LU1EWL, LU8DQ, LU1DZ, VP2VCW, YV7QP, N4UM, 4X6IF, 4X6NM, KA9OKH, and K4VX.

Crystal Ball

It's going to be a wet month! Seriously, let's have a look at what the future holds. The long-running question of DXCC status for the Pribilof Is looks as though it may receive the thumbs-up, since we hear that the DXAC voted in favour 9-7. However, we must wait and see.

As we have said for so long, there seems little chance of any ZA activity in the foreseeable future; a letter from OH2BH to *TDXB* made no mention of the subject — and he, if anyone, is the front-runner for such an operation.

Pitcairn, VR6, is much more easily worked of late; it appears in almost every issue of *DXNS*, by way of the operations of VR6JR. We also note that you could now *telephone* for a sked. . . Pitcairn is now served by A.T. and T. Presumably you telephone U.S.A. first. We gather there is just one telephone for the whole island, but as VR6TC is Postmaster, presumably he has got it!

"CDXN" deadlines for the next three months:

October issue — September 5th
November issue — October 3rd
December issue — November 7th

Be sure to note these dates

There has been a station signing 6W1HB/70, and asking for QSLs *via* ON8HB. That one is about as likely as a 45p coin being genuine!

If you are looking for a ZK1 contact, no panic. ZK1WL, who is ex-ZL8AFH, will be there to December, returning to ZL for four months and then to retire to N. Cook Is. As for S. Cook Is. there is ZK1XK.

JY9CL is at the time of writing understood to be on leave; he returns in September for a couple of weeks before moving to a new posting. JY9WR is now back in U.K., and won't return to Jordan. His QSLs were done up to date before leaving JY, and there is little likelihood of the stragglers reaching him now. Hence, if you lack a card, try sending one to G4ATS.

There will be a big DX-pedition to Wake Is. between October 22 and November 4, using the calls KB6DAW/KH9 on SSB and NY6M/AH9 on CW; KB6DAW/KH9 will appear on CW only during the CW CQ WW contest. They hope to knock up 15000-plus contacts, DXCC, WAS, and maybe WAZ. So — even if you already have Wake Is. confirmed, give

them a call — *you* may be the one *they* want!

After all the reported hullabaloo over Mount Athos and the monks saying “no more”, the very next thing we hear is SV0BV/A working all and sundry, and calling for QSLs *via* G5VS. The operator, G4VGO, seems to have upset the locals, as the SVs are all questioning the legality, but the story we are hearing is that all incoming IRCs are being donated to the Holy Community . . . and it has ever been the case that money talks, even to the holiest! All we can say about this one is that we must wait and see whether it gets past the DXCC desk.

That GJ3ZAY expedition to Les Minquiers was put off by heavy seas, so it will be run through again between September 14-18. Keep an eye open for this one, as we think it might turn out a little hairy. G3ZAY was a regular to this column when he first got his ticket.

Now to Lundy Is, where the Newport club is putting on a station between September 21-28, to operate all bands 1.8-432 MHz, with some 13 operators. They say that as the helicopter service has been discontinued as from the end of September this may be the last DX-pedition to the island. After that, the means of communications will be, as it always used to be, boats. Details and skeds, either by letter to Box 33, Newport, Gwent, or by phone to (02912) 6867. Special QSLs, of course, either *via* the RSGB Bureau, or direct to the address already mentioned. It sounds as though this will give a welcome lift to the custom at the Marisco Tavern!

October 13 is the date for the Yeovil QRP Convention; the venue is the Preston Centre, Monks Dale, Yeovil, *via* Preston Road and Larkhill Road. Talk-in starts at 0900, and the Convention closes at 1700. Details from the Hon. Sec. of the club, Eric Godfrey, G3GC, on (0935) 75533. A pity that this clashes with the Fall QRP Party on the air, and that Yeovil is so poorly served by public transport on Sundays.

Finally in this section we have the results of the 1985 Spring RTTY contest from BARTG. The winner was ON4UN with 915530 points from 517 QSOs, while 9H1EL was runner-up with 773916 points from 522 QSOs. First G in the list was G3HJC with 160 QSOs in 14th place, followed by G4SKA at No. 19, who made 177 contacts. Several logs were late arriving and were used as check logs. This year there were 118 entries in total but *none from Africa!*

New Bands

Firstly G4OBK, who has a couple of watts of output on the band; this was enough to let him work PA3CAW, DL1VJ, OK1KAX, TR8DR on CW, plus hearing a VK and a G3 + 2 enjoying a

regular SSB sked at 0600 onwards on Sunday mornings. These last two should be ashamed of themselves; but then, it does seem *fashionable* to break the rules nowadays and fashion was ever a substitute for thought!

Of course, G2HKU stuck to the key, and so managed DJ6EA and EA8ABR.

DA1PE says that he hasn't been able to spend a lot of time on the band, but when he has, it has been pretty poor and he has only worked a couple of Gs, and heard the offensive VK SSB QSOs already mentioned.

How nice to hear again from G2ADZ (Chessington); Bill has been QRT for a long while, but eventually succumbed to the urge again. The old FT-200 found life was a bit tough and ‘turned up its toes’ so G2ADZ and a friend of 50 years standing got together and revived it. It was still a bit dicey so G2ADZ went out and bought a TS-830S with all the new bands to have a look at. The old 21/28 MHz beam was still up, but there was the problem of an aerial for the other bands. This was solved by a *visit to the dentist* when the waiting-room yielded a gardening magazine carrying an advert for war-surplus army twin wire. Each consisted of one copper and six steel strands covered by waxed fabric/rubber — sounds a bit like the old D8 to me. Anyway, Bill got a great coil of it, and proceeded to thread some 500-plus feet through the neighbouring trees at about 20-25 feet without insulators, and with the end just wrapped round a branch and tied. The ‘earth’ is about 150 feet long, lying on the ground for most of the way, but as high as 5 feet in one place. This is fed to an ATU and loads up on *all nine bands*. On 14/21/28 MHz and on 24 MHz the old beam is preferred despite the mismatch, but lower down the Big Antenna comes into its own. CW on 10 MHz included ZL3IS, ZL4QO, VK4RF, VK2BKH, VK3MR several times, VK4ACU, VK2AAX, ZS6CEV, LU5DG, J28EI, V2A and various Ws. 18 MHz and the 28 MHz beam as aerial gave ZS6AVM, OA4ZV, OA4SS, J28EI, EH9IA, TK5EL, 9J2BO, LU6EF/D; and on 24 MHz using the same arrangement G2ADZ gave J28EI his first QSO on the band, plus OA4ZV, W3GG, W2GDV, N4SU, KP2J (St. Thomas, U.S. Virgin Is.), W1BVL, LU9HGW, LU5DJO, LU1DOW, and WA1UPB.

Another errant returned is G2HLU (Reading); Harold has been meaning to try the first weekend of each month on the new bands as we suggested months back, but the garden and the memory cells between them let him down until August, when 3rd/4th were hardly spectacular. However G2HLU found, on 10.1 MHz, DL5MCK, EA3BPQ, FD1JGA, G4SBU, HB9BX, OK1KAX, PA0AUV, and SM6LUX. On 18 MHz, Harold found IK2EYP, SM4NSS, and ZD8KM, but on 24 MHz nothing. The previous weekend,

though, Harold managed a QSO with T77C for whom he would like the QSL address. A look back through our old bulletins and papers hasn't revealed anything useful — anyone any offers?

G4FLK (Corfe Mullen) notes the presence of a sweep scanner 24 hours daily, and wonders who this is. His own operating on 10 MHz is 0500-0700, at which time he worked DL4BA, F3NB, LA0EH, DL6NB, VK3YT, W2WSN, W5HNS, N4LBJ, K0MT, K6HKC, SM4ESA, DL8MX, DL6ZZ, HB9AVW, PA3DKX, G5LP, F6BWO, DK0WCY (beacon), OZ1KYL, SM5BMB, DL6RAU, plus G3HEJ and G3GQ working VK2NN on SSB.

At GW4RHW (Deeside) the main pre-occupation has been firstly the ground system and secondly the security of the homebrew mast at a windy hilltop site. Main operating is in the early morning to avoid the VCR interference, and on 10 MHz he notes the SSB activities of such as VK2JU, VK2DLG, VK2NN, G3KLF, G3EQF and G6XN with some disgust, and then goes on to mention his CW contacts to W2AQT, W3GG, W8CZK, KA8CXQ, KZ4H, N4NO, KB4EYR, WA7BSK (for a new State), VK3NC, VK3MJ and OX3CS — this last for a new one on the band.

G4VDX (Leyland) sends in a first report; Joe has yet another acid comment to add to the file on the SSB nets on the band, but is himself sensible enough to stick to CW. Since the beginning of the year, he has worked some 30 countries according to the DXCC list, and in July the best included KP4DJ, FG5XC and J28EI, though VK and ZS managed to slip through his fingers — as indeed did TR8DR, under a tremendous pile-up.

Top Band

Not very much doing at all, seems to be the general feeling. G2HKU reckons everyone has been on holiday, but he did manage to work SM6CTQ and F8IH/EA — which rather seems to underline his point!

The only other reporter this time is G3BDQ (Guestling) who offers CW contacts with 4U1TU, UA9FKW, UA9FNR, UA2FFO, various other UA/UB stuff, K1ZM, AA1K, PY1BVB and J28EI for a new one. All this at 2100-2200z plus the occasional late night at weekend, or early rise. However, often the band has been so full of static that it wasn't worth even a tune round — and yet the only pre-dawn session showed very good signals but little activity. On a different tack, John feels the split-frequency way of doing things on Top Band is on the way out — largely because of the way the band allocations in other countries have fallen out.

Finally, on this band, G2HKU mentions that his old pal and long time Top Band man, PA0PN, is not very well at the

moment and so is off the air — we all hope to hear Piet up and about on the bands again.

Eighty

Since G3ZPF found that he was drowning in a sea of washing-up and hadn't time to report, the band seems to have been about as popular as an infectious disease; so our only reporter is G2HKU who offers CW to UA9CBM and SSB with GW3MWH while using the QRP rig.

Which isn't quite true as we nearly forgot G2NJ's contribution from Peterborough. Nick notes that he has just received his Pax Award from the Ypres Club, for his QRP contact with the ON4PAX/P station, located 2 km. from where the first gas attack was made in 1915. Other contacts on the band included GM6RI (Forfar), first worked back in 1935, and G2IZ in Gravesend who appears in G2NJ's 1934 logbook. G3DOV from Watton was beating the static with his one watt from Norfolk, G8PG likewise, and G6NB was on with a home-brew solid-state rig from Aylesbury, all at the one-watt level.

Straight Keys!

By way of TOPS and G2NJ, we hear about AGCW-DL's Straight Key Party on October 5, 1985, on 7 MHz, between 1300 and 1600 GMT. Use 7010-7040 kHz, and exchange RST, class number, name and age (Ys may quote XX for age!). Class A is up to 3 watts output, B up to 10 watts, and C up to 150 watts, while class D is for SWLs to take part. All competitors to use straight keys. For the full rules send an *s.a.e.* to GW6AQ, G4GBG or G2NJ (all QTHR).

Forty

Sadly neglected as a band, but full of good stuff for those who would search, and probably easier to work than on Twenty.

Let G4OBK have first go this time; Phil stuck to CW, and worked GD3OQR, VP2VCW, UA9s, Ws, N5EA, HZ1AB, OH0BH, UL7QBQ, PT8CW, XJ1ASJ, ZS6QU, CE3IAP, YV4DDT, and R2PV.

Turning to G3BDQ, John comments that his activity is almost entirely between 1830 and 2030 GMT with the odd few minutes occasionally in the afternoons. This was how G3BDQ keyed with UL7BX, UZ9AWZ, UA9OCM, UZ9CWA, UA9WFM, UA9FAR, UA9MHA, JR2RUL, VK3EA, ZS5CL, ZS6QU, LU9CV, KP2J, and PY6HL.

G3NOF spent a few hours on the band,

and made SSB contacts with CO7GC, CT2GE, FM5CD, LU8DYV, PY5EG, TU4BR, UA2FZ, UA9YX, UM8MO, UV9FM, VO1RW, and XJ1XG.

7 MHz for DA1PE meant the usual crop of European QSOs, and what little DX heard was hardly to be worked with his indoor wire and so many others in the chase.

Forty for GW4RHW meant early morning sessions, netting WA3EUL, N2US, N3DLJ, K4IKM, W8GOC, K2HWY, WA1ABI, NIHN, W9FR, W3OG, W1ISV, KA1XN, KV1B, WD8WNL, N4WW, N4UM, W2DTW, K0FW, KN0V (Minn.) for state number 38 on the band, plus PY2OO, PZ2AC, CO2JY, CO2PY, FG4CP, FM5WD, XE3AAF, CE1MBI, LU6AHK, LU1NBY, HK1BAU, HK1DBO, HK1BY, ZL1AIZ, ZL1BLR, ZL2UW, and a character answering to BY3AK/MM. SSB got over to FM5WD, FM5CD, XE1J, LU7CAT, LU8DYV, LU6VTB, LU2A, TI2KD, VE3LWL, VE3UP, VE3BTH, VE2RP, VR6JR, VK0GC, and SV0BA/A on Mount Athos.

14 MHz

The persistent types are mostly to be found hereabouts, whether on CW or Phone. G2HKU used SSB to work YU1FS/SV5, and IS0CFU/IM0 on Sepantara Is. On the key, W8VSK/M, N3JT, N4UB/3, DL4BBO/SV9, KC8KO, N4TO, ZL1AH, J28E, 12DMK/ID9 (Eolie Is.), X01AA, PJ9AR, IS0LYN/IM0 (Soffi Is.), and C30LBS. Turning to the QRP rig, the five watts of SSB saw off YU1FW/SV5 and the CW DL4BBO/SV9.

G6QQ found things pretty poor all round, but he did use his CW skills to work UA0BCS, C56/G3DQL, UZ9CWY, JA2EU, W3VT, W8NBK, K1BR, VE2DOH, UJ8JLY, XJ2CP, VA1NG, and WC6M.

Not by any means the easiest band to work with an indoor aerial concludes G3JFS/DA1PE. There was plenty of European activity, most of the time, but little was worked in the way of DX outside of Asian Russians and PY/LU.

G3NOF notes lots of true short-skip, with G stations audible. In the mornings there wasn't much save for KH6 followed by KL7; W6s have been few and far between, but have been heard at odd times (like 0800, 1300 and 2300). KL7s were also noted about 1830z. North Americans were strong between 1030 and 1230, and again from 2200z; the best time for DX seems to have been for once in a way the late afternoon and evening! G3NOF stuck as ever to his SSB and worked A4XRS, A71AD, A71BJ, A92EM, AL7BL/P (Prudhoe Bay), C30BBW, C6ANU, CT2CQ, DU7EXV, EI0STV/MM, F6AXP/P (Isle de Ré), FM4DP, G4ILM/HK5, GD3FLH, GJ4ZFM, GW4VBN/P,

HB9TL/TK, HH2CL, HH7PV, HS0IYY, I0SNY/ZB2, IM0ONU, IY4FGM, J28EM, J5UGI, J5WAD, JG1FVZ/5N0, JY5CI, KA5BPE/C6A, KB6SX, KL7LF, OH0MA, OZ4CHR (Christians Is.), PA3BZV/HBO, RH8AD, SV8RX, SV0BV/A (Mt. Athos), TA1C, TA1E, UA9WEE, UF6FEH, UG7GWB, U18AZC, UM8MK, UM9QWC, UZ9CWB, V44KAM, VE5IF, VE3KFE/4U/YK, VE8RCS, VP9CP, VP9LE, VU2NP, YU1FW/5B4, Z21AO, ZB2CF, ZD7CW, ZS1SL, 4U1ITU, 4U1VIC, 4X6KT, 4Z4UW, 5B4LT, 5T5SL, 5Z4EG, 5Z4MR, 6W1NQ, 8P6BX, 8Q7AV, 9J2BO, 9J2YM, 9M2DF, and 9Q5MA.

Now we come to the list from G3BDQ, who notes CW into the ears of UA0WCL, IM0ONU, IS0LYN/IM0, 5B4GA, I0SNY/ZB2, DL4BBO/SV9, HB0/PA3CWL, C30LBS, T77C, OX3UD, SO4PG (this is the prefix for visitors to Poland), PP2ZI, PY6HA, YV1AD, VP9DR, LU8DQ, CX4GL, ZD8KM, 9J2YM, a character signing 3Y3W and claiming to be Joe on Bouvet(!), 7X2MB, N7DF/TT8, HB9DBY/ST3, VU2IN, VU2RMM, VU2KI, VU2TTC, HL1EJ, 4S7LH, JA4DZ, JA3YBF, OD5PL, A4XZG, HS0IYY, KL7MF, VA1NG, FM5BH, FM5WD, FY6DA1 (yes, *one!*); plus SSB to SW2WT, SW2UA, YU1FW/5B4, UZ0QWE, SV8YM, UH8EWW, HV2VO, 4U1VIC, UJ8XC, VE3KFE/4U on Golan Heights, VU2VIM and A4XYX.

Late afternoon and early evening was the preferred time for operating at G4OBK; Phil used CW to work UA0LCZ, UH8HCB (a couple of all-time new oblasts), UG7WCB, UA0SLE, VK75A (75th anniversary station for WIA), TI2CCC, LU7DXT, HK3HY, YN1CC, VP2VCW, EJ2B, HZ1AB, OH0BH, HH2VP, J28EI, JAs, YB4FNN, 9V1TL, 9V1VZ, and 8J6IYY.

Finally, GW4BLE (Newport, Gwent) who says he has been waiting for a new rig, and Steve should be the proud possessor of a TS-930 by the time you read this. Meantime he stuck to Twenty SSB to work AP2MC, AH9AC, FO0FB, 5X5GK, 9M2AP, XT2BR, 4S7EA, SV0BV/A, ZK1XK, and V44KAM, the AH9 was an all-time new country, and to celebrate he was also worked on CW!

Finale

That's it for another month. While I've been writing the column there's been sunshine, rain, and high winds — and the barometer needle seems to have a severe touch of DT's. However, that won't affect the deadline dates which are in the 'box' and are for the *arrival* of your letters, addressed as always to your scribe, "CDXN", SHORT WAVE MAGAZINE 34 High Street, Welwyn, Herts. AL69EQ. See you next time.

CONTEMPORARY BRIEFS . . .

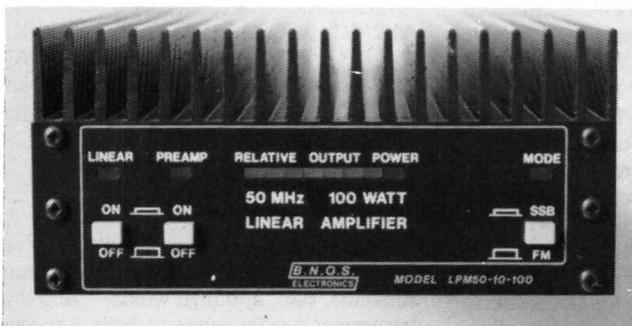
JUST received is the sixth issue of **MS Components Limited's Electronics Catalogue**, which has been increased to 292 pages, and comprises twenty sections, plus indexes, in alphabetical order. These are: Batteries and power supplies, Cable, Capacitors, Connectors, Fuses/circuit breakers, Hardware, Indicators, Meters and instruments, Opto electronics, Relays, Resistors, Security, Semiconductors, Service aids, Soldering, Suppressors, Switches, Tools, Transformers and the one new section, Books.

The connectors, hardware, meters and switches sections include many new lines and one which caught the reviewer's eye was the *Complete PCB Production System*. This is a kit enabling you to produce one-off PCBs in a transparent sealed sleeve, thus avoiding the mess associated with normal *D-I-Y* PCB production. The etchant chemical is in pellet form and there is enough for twelve *euroboards*. A neutraliser chemical is supplied which is mixed with the exhausted etchant and which solidifies in a couple of hours for dustbin disposal. This kit costs £6.90 plus VAT.

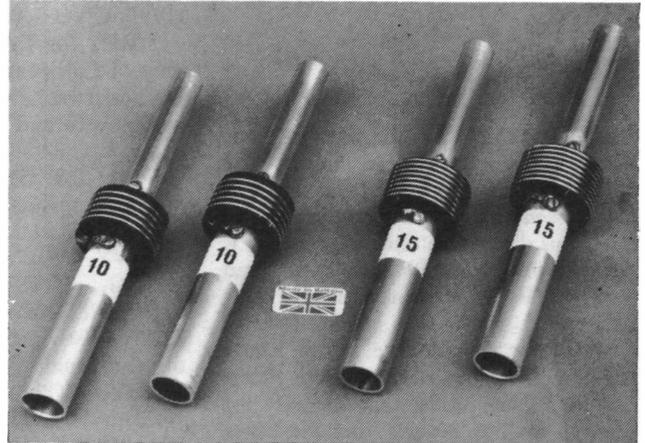
Most prices have not changed since Issue No. 5 and some are the same as they were two or more years ago, in spite of the wide fluctuation in raw material prices and the Sterling exchange rate. In any case, all the prices, which are quoted below every item, remain current until the next catalogue is published. The **MS Components Limited's** service is primarily aimed at development engineers and buyers in industry, but it is available to hobbyists. There remains no minimum order charge for account customers, but non-account folk now face a £10 minimum order charge including VAT. There are no postage and packing charges; all products are held in stock and the company offers a 24-hour despatch time for any size of order.

This new catalogue is free to readers from **MS Components Limited**, Zephyr House, Waring Street, London, SE27 9LH. The telephone no. is 01-670 4466 and the Telex no. is 892425. The trade counter facility has been closed but customers can still collect orders from 0900-1600 by prior arrangement.

FULCRUM (EUROPE) LIMITED offer a product called *Tweek*, which is a contact enhancer designed to improve the performance of all metal-to-metal connections, such as relays, switches, interconnections, plug-in components, etc. *Tweek* is described as a, ". . . colourless, non-conducting, long chain organic molecule which, when applied sparingly, is compressed into the microscopic imperfections in the surface of two mating contacts where it becomes conductive across the polymer



B.N.O.S. Electronics Ltd. announces the introduction of 100-watt Linear Amplifiers for the amateur 4 and 6-metre bands: Model LPM70-10-100 covers 70 to 72 MHz and Model LPM50-10-100 covers 50 to 54 MHz. Each amplifier costs £172.50 inc. VAT, and comes complete with mobile mount. Full information is available from the Company, at Bigods Hall, Great Dunmow, Essex CM6 3BE (0371-4677).



From *G2DYM*, Uplowman, Tiverton, Devon, new models of their 10 and 15-metre aerial traps are available, now with 6 inches of aluminium tube at each end to facilitate antenna construction. The price of each trap is £11.00 inc. post/packing. photo: GAHFO

molecule and effectively increases the apparent contact surfaces." Thus it would seem ideal for treating relay and switch contacts which have become a little unreliable. *Tweek* is available in 7cc quantities, with applicator, to bulk amounts. For more information, contact the Sales Department, **Fulcrum (Europe) Ltd.**, Valley House, Purleigh, Essex, CM3 6QH. The telephone no. is Maldon (0621) 828763, and Telex no. is 946240.

Ant Products

Messrs. *Ant Products*, manufacturer of the well-established 'Silver 70' and 'Tiger' range of amateur radio antennas, has recently appointed three major product distributors in the Lincolnshire and Midlands areas. These are *J. Birkett*, 13 The Strait, Lincoln; *Castle Electronics*, 40 Burnside Road, West Bridgeford, Nottingham; and *Ward Electronics*, Bromford Lane, Ward End, Birmingham. All three dealers carry substantial stocks of the 'Tiger' antenna and the new two-metre colinear antenna.

A catalogue containing detailed information of all *Ant Products'* antennas can be obtained by sending 50p to cover postage to their address at All Saints Industrial Estate, Baghill Lane, Pontefract, West Yorkshire WF8 2HA (0977-85274); the envelope should be marked "SW".

I.C.S. Electronics

I.C.S. Electronics Ltd. announce a new program, the ASCOM-1, for the BBC 'B' computer which allows data or Teletext compatible colour graphics images to be sent over the air to other similarly equipped computers. The transceiver can either be interfaced directly to the cassette port of the BBC computer or (for improved performance) via the *I.C.S. Electronics'* RM-1 Radio Modem.

Available on E-PROM with comprehensive documentation, the ASCOM-1 software costs £39.00 inc. VAT, plus £1.00 post/packing. For further information contact *I.C.S. Electronics Ltd.*, P.O. Box 2, Arundel, West Sussex BN18 0NX (tel: 024365-590).



SHORT WAVE LISTENER FEATURE

By Justin Cooper

IN these times of low sunspot activity and poor band conditions, it is maybe the right moment to consider the question of the relative usefulness of some of the many modes available to us — in the main SSB, AM, FM Phone, SSB, RTTY, AMTOR, SS/TV, and CW. We should consider these under two conditions, namely those of a clear channel and a channel cluttered by a given amount and type of interference, if the results are to have any meaning. By the same token we should define a level of operator competence, and specify a given receiver and aerial. Ideally we should also say that 'conditions' are the same in each case. Clearly, the thing becomes a job for a laboratory set up, or a fairly well-equipped shack.

This is how it was done. Three signal generators were available, and a combiner unit to enable them to be fed individually or in combination to the feedline. The receiver was a TS-830S, with a small modification to enable it to take FM. The 'QRM' was a recording of a typical Phone pile-up, followed by a bit recorded on Eighty one evening, then a couple of bits from the CW end — again a pile-up and something from the normal band activity level. This tape was used to modulate one of the generators. Another was keyed to simulate the incoming CW; and of course the 'wanted signal' was also achieved by modulating one of the signal generators. These comprised the shack standard generator and a couple of QRP home-brew rigs which were fed through attenuators so that the levels of all three could be balanced as desired.

The results were quite interesting. AM Phone was just nowhere, except on a clear channel. FM Phone was also nowhere except on a clear channel. However both these modes, in the form of big signals were easier on the ear, the FM being marginally the best.

Under QRM conditions, it was SSB telephony all the way as far as any form of Phone went, but it was noted that while speech processing made some signals sound louder, they didn't seem to become all that more intelligible.

Turning to the 'pulse' modes such as CW and RTTY, we had to make a further small reservation, which was in the matter of the amount of lost copy that was acceptable — it is easy to say "as much as would be tolerable on SSB" but that only results in the question of how much loss of words is tolerable on SSB! Suffice it to say we did make a definition of a sort, and pressed on. CW could be copied on a clear channel when it was *below* the noise level, and indeed it could be spotted on an oscilloscope. It follows therefore that RTTY and AMTOR should also be decoded at below the noise level, but although we could tell when RTTY or AMTOR was 'on channel but below the noise level' we couldn't be certain visually or aurally what it was, nor could our decoding equipment cope. At about 6dB above the noise level, both RTTY and AMTOR were giving acceptable copy. (This last level will, obviously, be a function of the receiving gear hung on the receiver back-end to decode the stuff.) Under the QRM conditions we found that, in the absence of receiver overload, the CW was considerably better than RTTY or AMTOR, but that AMTOR was better than RTTY by a considerable margin.

What about SS/TV? On a clear channel, quite level with SSB, but under QRM conditions it fell away quite badly. However, we must say that we couldn't really define what level of QRM was 'acceptable' for SS/TV, if only because your J. C. doesn't listen and look at this stuff very much, and is therefore less skilled.

Reservations: firstly, with RTTY one can receive a false 'fig shift' through QRM, but the resulting garble can be decoded

almost by inspection on the print, once one has rumbled the cause. Secondly, we set up the case of the average CW operator; clearly full break-in operation gives error feedback as with AMTOR and would therefore give a further improvement, for those contacts where both ends have full break-in and can use it. Many CW operators are distracted by the incoming signals under their own outgoing one and so cannot work break-in. Thirdly, one really needs to define accurately what constitutes a 'copiable' signal on telephony — every reader of this column will be aware that today they happily log signals which they couldn't have dealt with when they first got a receiver.

The results, though, are pretty clear. The CW wins hands down. AMTOR is a runner-up, then SSB and RTTY, with AM and FM not really in the hunt; SS/TV probably not fairly assessed but placed as tail-end Charlie.

Finally, 'mechanical CW' out of a decoder. This is obviously dependent to some degree on the quality of the decoder, but none of them cope well with hand-sent Morse (which doesn't say much for the 'fists' of the sending operators even though they were easily copied by ear!) and none of them likes the QRM; also they seem to be difficult to tune. Results, on a par with AM but a little better. Easier to learn Morse!

The Letters

Top of the pile is a very interesting one from *P. Lincoln (Aldershot)*. Firstly, Peter brings up a very valid point when he says he doesn't listen much to SSB as he "finds RTTY and SS/TV so much more interesting" . . . of course, interest is the prime quality involved, and all the rest is purely academic. On a different tack, Peter has some thoughts on lightning, having seen a fat spark jump a coaxial connector when lightning was quite distant. This was due to a static build-up, and is the most serious danger if only because you don't know it is happening. With low-impedance fed aerials it is good practice to stop the static build-up by providing a 'leak' resistance to earth. This may in fact happen anyway if an ATU is in use, the leak being through the coil. As for a near strike, all we can say is, "How near?" — anything nearer than 100 yards or so will put all your equipment very seriously at risk if it is solid-state. Changing tack yet again, Peter notes that he has no line timebase trouble with the sets in the house. all of which are fed from aerials fitted with mast-head pre-amps, but there is a lot of timebase noise from neighbouring sets not so equipped. The implication here is that the TV timebase QRM is to a large extent being radiated from the TV aerial itself.

Next *I. Thompson (Rye)*, who is wishing for the quick return of winter and a cosy shack — his wife gets him out into the garden

ANNUAL HPX LADDER

Starting date, January 1, 1985

| SWL | PREFIXES | | |
|---------------------------|----------|--------------------------|-----|
| S. Wilson (St. Andrews) | 450 | L. Marquardt (Hereford) | 286 |
| J. Singleton (Withernsea) | 447 | A. Vest (Durham) | 256 |
| D. Pye (London W2) | 309 | T. Ross (Edinburgh) | 232 |
| M. Probert (Basingstoke) | 288 | W. J. Prior (Lochcarron) | 200 |

Minimum of 200 Prefixes to have been heard from January 1, 1985 for an entry to be made. At score 500, transfer to the All-Time list is automatic. In accordance with HPX Rules, see p. 302, this issue.

whenever the weather permits — but she has promised to let him play with his wireless agains next winter! Ian has passed RAE, and so has his son Andrew, so his wife has a problem! On a different tack, Ian has reached the magic 500 this time, so the next move is to go back through his logs from 1966 to find his All-Time score and enter it.

Mrs. R. Smith (Nuneaton) reckons her time in the shack has gone up thanks to the poor weather, but on the other hand conditions haven't been any too good — and indeed her list for this month is longer and mainly from Europe. We have to delete one of them — the YA7APA which we think was a YU with a Gloucestershire accent!

The short note from N. Jennings (Rye) seems to indicate he is pretty well mended now — certainly there is a noticeable improvement in the enthusiasm, which tells it's own tale! Norman is still bugged by that /X sometimes to be heard on the end of the YU callsign — can anyone clarify in more detail, please?

Another RTTY addict is J. Routledge (Hartlepool) who says his lists are a bit shorter than usual because of gardening, home-brewing of beer and wine, and listening on other parts of the spectrum — shame on you!

D. Pye (London W2) has a pretty point when he says that, "as a beginner I am never sure when things are difficult whether it's me, conditions, or the equipment that are to blame!" That could be

HPX RULES

- (1) The object is to hear and log as many *prefixes* as possible; a prefix can only count once for any list, whatever band it is heard on.
- (2) The /M and /MM suffixes create a new series: thus G3SWM, G3SWM/M and G3SWM/MM all count as prefixes, and where it is known to be legal, /AM also.
- (3) Where a suffix determines a *location* the suffix shall be the deciding factor, thus W1ZZZ/W4 counts as W4. Where the suffix has no number attached, e.g. VE1AED/P/SU, VE3UJ/P/SU, they are arbitrarily counted as SU1 and SU2 respectively, and the same holds good for similar callsigns.
- (4) When the prefix is changed both the old and the new may be counted; thus VQ4 and 5Z4 both count.
- (5) The object is to hear *prefixes* not countries, thus there is no discrimination between say MP4B and MP4K which count as one prefix.
- (6) Only calls issued for Amateur Radio operation may be included. Undercover and pirate callsigns will not be credited, nor any MARS stations be claimed.
- (7) G2, G3, G4, etc., all count separately, as do GW2, GW3, GW4, etc., and in the same way K2, W2, WA2, all count separately even though they may be in the same street.
- (8) Send your HPX list, in alphabetical and numerical order showing the total claimed score. With subsequent lists, it is sufficient to quote the last claimed score, the new list of prefixes, and the new total. Give your name and address on each sheet, and send to "SWL", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts., AL6 9EQ, if possible to arrive before SWL deadline for that particular month.
- (9) Failure to report for two consecutive listings, *i.e.* four months, will result in deletion from the Table, although there is no objection to a "Nil" report to hold your place.
- (10) Starting score 200. Phone Table is mixed AM/SSB, with a separate CW Table. No mixed Phone/CW Table, nor will AM-only or SSB-only entries be accepted.
- (11) List will be based on those shown in the current "Radio Amateur Prefix-Country-Zone List", published by Geoff. Watts (*see* Advertisers' Index in any issue of SHORT WAVE MAGAZINE).

applied to many more advanced SWL's too, come to think of it. About all one can do is to eliminate the equipment, as it were. In essence we are talking about the sensitivity of the receiver, and a quite severe check is to terminate the aerial terminals with a resistor of 50-75 ohms, wind on all the gains, and then tune the RF stage — this may be labelled 'Pre-selector' or 'Aerial Trim' or even on a transceiver 'Driver Tune' until the noise is heard to peak up. It is usually easy on the low bands and quite difficult on the ten-metre band. The receiver can be left in this condition, as far as the tuning controls go, and reconnected normally to the ATU. Tuning up the ATU will normally produce a peak in the noise of the receiver as it goes through resonance. On the aerial side it isn't quite so easy. The rough check your J. C. uses is to have an indoor aerial which can be substituted for the main one; without knowing in detail either aerial's polar diagram or gain, one can establish fairly simply that *for a given path*, the signal will be different by so-many dB on a quick change-over test, if the test is repeatedly done over a period of a few minutes to allow for polarisation changes. Now if, say, on the path to Italy from London, signals on the indoor aerial are usually 20dB down on the signals from Italy on the main aerial then you have some sort of a check. If you're main aerial suddenly becomes only 10dB better than the indoor one on the Italy path, then there is a strong suspicion that the main aerial needs to come down and be thoroughly inspected and renewed as necessary. If there is *any* doubt about coaxial cable outdoors, replace it. Incidentally, the Italian path is chosen mainly because it is fairly full of big signals, is in 'one-hop' range, and lies along, rather than across, a line of direction from this country. Thus one can do a check on several different Italian stations in this manner and compare results, to eliminate 'conditions'. Finally, what about conditions? In the main, simply this — if the operator skill hasn't gone down, the rig is O.K. and the aeriels check out as normal, then it must be conditions! The only cross-check is to listen to the chat at the club.

J. J. Sales (Lancaster) says he would like to see construction projects in *Short Wave Magazine* for an iambic keyer, and for a digital frequency meter — no doubt the gov'nor will take due notice! As far as the first-mentioned goes, one would have thought the answer would have been to get hold of a Curtis chip which is a complete iambic-mode keyer in itself, and just build the peripherals around it. Making a decent paddle to go with a keyer would seem to be a bigger challenge!

M. Hudson (Folkestone) seemed to be worried that he hadn't done his first table entry right . . . about all we found wrong was in one line where he had left the number out of the callsign, and since we knew just who he was talking about we let that go as a mere slip of the pen!

A. Vest (Durham) has added to his CW list a Phone offering as well; we were amused to note he only included about half of these as he "didn't expect me to wade through such a long list — and anyway, it's boring typing them out!" Apart from the boring task mentioned, the Vest plans include some work on his aeriels. Were he in *this* area, that would mean submarine aeriels. Seriously, one cannot recall so poor a summer for many years.

L. Marquardt (Hereford) sent us in a list for the Table, to add to a previous one towards the magic 200-for-a-start. What a pity he didn't add 'em up, or indicate how many had been brought forward from a previous claim. Now, your old J. C. is thoroughly confused, so please Luciano (and others) do stick to the rule about mentioning your previous claim total — preferably the one actually shown in the Ladder. It makes life so much easier at this end for very little effort at yours. In addition, the fact that you add up your own totals each time gives you a good check when the Table appears, in case we have made a mistake! Changing tack a little, Luciano has some queries, two of which are /MM for maritime mobile. All the rest are 'reciprocal licences' of which it should be noted that while some countries give separate calls, the European trend is to use the country prefix and then your own home call — for example F/K2MJN. Although the 'standard' puts the country prefix first, it can be the other way round, either in the licence or because the operator is a bit cack-handed — thus

HPX LADDER (All Time Post War)

| SWL | PREFIXES | | |
|------------------------------|----------|------------------------------|------|
| PHONE ONLY | | | |
| B. Hughes (Harvington) | 3003 | R. Wooden (Staines) | 761 |
| Mrs. R. Smith (Nuneaton) | 2498 | G. Caselton (Orpington) | 672 |
| E. M. Gauci (Sliema, Malta) | 2454 | M. Hudson (Folkestone) | 590 |
| E. W. Robinson (Felixstowe) | 2412 | N. Fox (Wakefield) | 561 |
| H. M. Graham (Chesham) | 1807 | A. J. Chapman (Newark) | 554 |
| M. Rodgers (Harwood) | 1552 | J. J. Sales (Lancaster) | 531 |
| P. Oliver (Paisley) | 1405 | I. Thompson (Rye) | 519 |
| N. E. Jennings (Rye) | 1395 | C. Burrells (Stevenage) | 506 |
| S. Baker (Cwmbran) | 1388 | Mrs. T. Carmichael (Lincoln) | 502 |
| N. Askew (Coventry) | 1362 | | |
| N. Henbrey (Northiam) | 1327 | CW ONLY | |
| R. Fox (Northampton) | 1305 | J. Goodrick (I.o.W.) | 1763 |
| F. Dunn (Chester) | 1275 | F. Dunn (Chester) | 1660 |
| P. A. Cardwell (Sheffield 8) | 1238 | R. Fox (Northampton) | 463 |
| G. A. Carmichael | 1077 | A. Vest (Durham) | 286 |
| G. Shipton (Rye) | 1056 | | |
| M. Ribton (Gillingham) | 985 | RTTY ONLY | |
| J. Routledge (Hartlepool) | 950 | N. E. Jennings (Rye) | 652 |
| P. Lincoln (Aldershot) | 886 | P. Lincoln (Aldershot) | 505 |
| J. Heath (St. Ives, Hunts.) | 788 | J. Routledge (Hartlepool) | 337 |
| B. Patchett (Sheffield 9) | 782 | N. Henbrey (Northiam) | 293 |
| | | R. Fox (Northampton) | 233 |

Minimum score for an entry to be made is 500 for Phone, 200 for CW or RTTY. Listings to be in accordance with HPX Rules — see p. 302.

one gets the like of PA3AXN/F. And of course where a country is divided into call areas, one can get such as I8UDB/P/IB0 when the I8 is out /P but in the offshore Ponziane Is. IB0 area.

R. Wooden (Staines) is suffering quite badly from TV timebase interference. The present aerial set-up is an end-fed with a counterpoise of an insulated quarter-wave for each band 7-28 MHz, and two for 3.5 MHz. Roy reckons to try out a centre-fed arrangement with open-wire 'tuned' feeders, so as to remove the requirement for an earth.

W. J. Prior (Lochcarron) has lots of questions. Firstly, repeaters. From Bill's place the question is whether or not his aerial can 'see' any of the repeaters, which is debatable. However, on 145 MHz we see Inverness, GB3BI on R5; Mull, GB3HI on R4; maybe Aberdeen, GB3GN. All seem to be within range by normal standards. Above all there is Benbecula, GB3NU on RB10 (432 MHz band). However, all these, as indicated, depend on getting a sight at the repeater aeriels, and this must depend on their sites and Bill's, not to mention the 'umps and ollers in between! And, of course, one needs to know that the repeater aeriels are vertically polarised, and to make sure one's own skywire is also vertical, lest one finds a big loss by this too. In the other part of his letter, SWL Prior wants details on the VK2 ABQ beam. We will see what we can dig up for him, and 'write it up' anyway as soon as we can for everyone's benefit.

N. Rodgers (Harwood) sends just a list this time — as he always does, and has done for years!

Worst?

That's the opinion of H. M. Graham (Chesham) who says the last couple of months are the worst he has ever known since he first became an SWL many years ago. Maurice found just two new prefixes, and one of those was a GD0 heard on Forty!

Turning to the letter from E. M. Gauci (Malta) we find Eddie with a problem. He heard GD3FLH/Calf Is. and F6AXP/Ray Is. and wonders how to claim them. Look at an atlas, seems to be the quick answer! Seriously, the Calf of Man is a small offshore island a bit west of Spanish Head, to which the GD club mounted an expedition, mentioned in the *Clubs Roundup* piece some months ago. As for Ile de Re, that again is just off-shore, this time sheltering La Rochelle from the weather in the Bay of Biscay. In both cases the operators were simply giving an indication of their location to attract callers and so both are just plain portables. On a different front, Eddie mentions the use of SO, for visiting amateurs in Poland.

Another one with a low score this time is G. Shipton (Rye) who has a holiday place at Bexhill where he has been spending as much spare time as possible while the weather has been decent. Not that there's been much decent weather that your scribe has noticed!

B. F. Hughes (Harvington) has been hard put to find time to comb the log for new ones at the end of each month, although he has managed to find a little time for the actual listening! Much time has been spent on gardening and decorating, and it was an interesting exercise to leave the receiver running on a likely DX frequency and just log whatever came up on that spot — quite surprising how much there is around to be booked in by just sitting on one spot.

N. Fox (Wakefield) says he has had to give priority to house, garden, warm weather, holidays and family . . . but the nights are drawing in and it will soon be the DX season again!

J. Heath (St. Ives, Huntingdon) notes an error in his last entry, due to him not being able to read his own writing! John has been much away from home of late, and hence only has a couple of /M prefixes to add, both heard on 145 MHz.

Next we have P. Oliver (Paisley) who has been listening on Eighty with some slight gain. Conditions have been pretty poor anyway, and maybe a change of listening times is indicated.

The CW HPX List from F. Dunn (Chester) has gone up quite a bit, largely as a result of re-calculating the East German prefixes. Frank prefers CW although he notes the increase in the number of poor operators even there. True enough, but they usually learn — or fail to get contacts!

SWL Contest

We have a letter from Owen Cross, G4DFI, enclosing the rules for the 15th Cray Valley SWL Contest, which is to run on the 7th and 8th of September — 1800z to 1800z making a 24-hour contest. It is a world-wide affair, and you can either enter Phone or CW, single-op or multi-op sections — the latter is open to clubs or impromptu groups and allows the use of more than one receiver. Single-op stations to only use 18 of the 24 hours and to show the continuous period of rest in the log. Use 160-80-40-20-15-10 metre bands, and don't listen to long strings of contacts with one station — up to five in a row only are acceptable. No CQ or QRZ call can count for points. Score one point for each station heard and multiply by the number of countries heard, on each band. Separate logs for each band and a countries-heard list are called for, and illegible entries won't be accepted. Each call area of U.S.A. and Canada counts as a country, and for the rest the standard is the RSGB/ARRL Countries list. Logs and full rules from Owen Cross, G4DFI, 28 Garden Avenue, Bexleyheath, Kent DA7 4LF; Owen can also supply log sheets. Deadline for logs to arrive is not later than October 28. All we can say is that this is one of the best known and most popular SWL contests in the world, with 15 years of success behind it — so why not 'have a go'?

J-O-T-A

Finally, we have to mention a letter from GW4OXB, Trevor Morgan, who operates on behalf of the 'White Fang Fellowship' during the JOTA weekend, which takes place this year 19/20th October. Trevor has recently started to promote and Award for SWLs for logging JOTA stations. Logs to show date, time, frequency, name of Scout Troop; score one point for stations in the home country and two for those in other countries. A penalty of five points for a duplicate on the same band. Top two entries win plaques, everyone gets a certificate. Send entry to GB2WFF, 1 Jersey Street, Hafod, Swansea, SA1 2HF. Entry fee 2 IRCs from the U.K., four IRCs elsewhere. This will mean that for every entry at least one IRC will go to the 'Feed the World Campaign' (or BAND AID). More details from GW4OXB at the address for GB2WFF.

Finale

The deadline for your letters for next time is **September 19**, to arrive, addressed to your J. C., "SWL", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. *Cheerio for now.*

Echoes from The Past

The Second of Two Parts of a Recollection of Amateur Radio Activities over the Last Half-Century

**N. G. HYDE, C.Eng., MRAeS,
MIERE, G2AIH**

The War Years

AFTER that terrible winter of 1939-40 which I spent working at various outstations in the Telephone Area I enlisted in the Royal Corps of Signals, and took-up residence at Catterick Camp in Yorkshire. I spent about six months at Catterick in the 1st Depot and 3rd General Trades Training Battalions, after which I was posted as an Instrument Mechanic (later re-mustered as a Radio Mechanic) to a Special Wireless Group that was forming at Trowbridge in Wiltshire. At this time, and probably during the whole of the war years, there was a shortage of civilian radio repairers and my colleagues and I did some business repairing people's radios in our off-duty hours while waiting for the boat.

We went overseas early in 1941 and duly set up a base camp near Cairo. When the technical stores were unpacked a serious deficiency became apparent; we had been supplied with only one transmitter. This was a C set, designed for trench use and dated 1917. I was therefore tasked with building a second transmitter using components salvaged from some captured Italian equipment. I took one look at this and decided that the Italian army was worse off than even the British as regards radio equipment as most of it appeared to be of late 1920's vintage.

However I managed to salvage enough parts to build a master-oscillator-power-amplifier transmitter on a board 3ft. long. The note was never exactly T9, but the Sergeant-operator of the mobile unit which was to proceed into the desert elected to take my offering rather than the C set. A short time afterwards when I happened to be in the Set Room one of the operators said to me, "We like that transmitter of yours, we can always tell when it comes up by the note". So of course could Jerry.

Some time later I left the base unit and spent the next few years in mobile units swanning about in the Western Desert (up the Blue), in Sicily and in Italy. Lack of transmitters was still a problem and we made use of two captured German 80W tank sets. These were very well made, as one would expect. Construction was in modular form on cast magnesium alloy chassis, all mounted in a chassis frame of the same material. It was not until we were in Sicily in 1943 that these transmitters were replaced by British No. 12 sets.

One of the problems in the desert was of course sand. The wretched stuff got everywhere (like the flies) particularly during a khamsin (sand-storm) which could last for a day or longer. To link up the various trucks in the Section when in leaguer (for example Section Office, radio and MT workshops, gin palaces, etc.) we had a telephone system, the extensions of which were connected to a small exchange. This was known as a 'Switchboard Universal Call 10-line' and was located in the W/T truck. The line relays in this exchange were of the miniature polarised type and were very sensitive indeed. Consequently they used to get jammed up with sand very quickly and required frequent cleaning and adjustment. The solution to this problem was simple: a 'rubber article' unrolled over each of the vertically-mounted relays and wired round at the base reduced the maintenance effort considerably!

We had a lot of amateur equipment in the mobile units, e.g. HRO receivers and Hallicrafters transmitters. The HRO's stood up very well to rough travelling conditions in the desert, probably because they were comparatively light in weight. The Hallicrafters HT-9 transmitters however did not fare so well, as nearly every time we moved up the fixing feet of the heavy components such as HT transformers and smoothing chokes would fracture, leaving the components held in place by their connecting wires only. After a time all the original feet had been replaced by some that were more substantial.

My last posting in the army, in 1944, was as Foreman of Signals to No. 2 Wireless Company located at Sarafand in Palestine (now Israel). No. 2 Wireless was a Regular Army unit formed in 1924 and could only be described as a radio amateur's paradise. My main responsibilities were maintenance of the radio and telegraph equipment, modification of the whole station to bring it up-to-date and — yes, you've guessed it — construction of HF transmitters to supplement the BC-610 and No. 53 sets that we already had. The transmitters made in this unit were a far cry from the breadboard MOPA of 1941. They were designed in accordance with immediate pre-war amateur practice and consisted of a Tritet crystal oscillator, FD/BA stage and push-pull 807's in the PA. There was no shortage of components; the CQMS in the stores seemed to have an inexhaustible supply, mainly of American origin. Where he got them from I don't know, I didn't enquire, but I think there must have been some radio amateurs in the Unit before the war.

I was also able to experiment considerably with aerials for the various W/T links; these ranged from dipoles through inverted Vee's to a Sterba and a Koomans array. Fortunately there was no shortage of the standard army 72ft. steel masts to support these aerial operations.

There was another bonus in that the Unit was situated in the middle of the Jaffa orange-growing district. During the two fruiting seasons that occurred every year I used to walk out of the rear gate with a kitbag and help myself to as many oranges and grapefruit as I wanted.

TEL. NO. 4723
 YOUR REF. AMATEUR
 P.O. REF. 120/5-PA/1028/75B
 W. R. BULLOCK, Esq., P.O. Box 1028, 75B
 Engineer-in-Chief
 George W. Bottom Esq.
 7-11-53.

PORTABLE OPERATION OF AMATEUR TRANSMITTING STATION
 In reply to your letter of 17.11.53 I have to inform you that a portable station licence can be granted authorising operation under the following conditions:-

- 1. Area of Operation** The station may be set up at any place on land in the open air within 5 miles of a point to be specified in the licence. Operation within the 5 mile radius will be permitted on a vessel on narrow inland waters or a lake, provided that the vessel is secured alongside land or moored or anchored within 100 yards of land. The portable station may be operated for up to 48 hours within 5 miles of another point or, on frequencies above 30 Mc/s, within 5 miles of a route not more than 40 miles in length provided that this office is notified by registered letter or prepaid telegram, not more than 14 days previously.

Use of a portable station will not be permitted:-

- (a) From any vehicle or vessel whilst it is in motion.
- (b) Within 1 mile of any Government Wireless Station.
- (c) Within 200 yards of any premises in which a receiver may be in use.

2. Call Sign The call sign to be used when using the portable station, will be that of the main station followed by /P and must be sent out at least once every 15 minutes.

Re: 127M/53 /3. Power

Fig. 5. G.P.O. permit for portable operation.

I was reluctant to leave No. 2 Wireless Company but by mid-1945 my time for repatriation had come up. I was offered the chance of retaining my appointment on a Regular engagement, but as I had been overseas for almost four and a half years I thought it was about time I returned to the U.K.

To the Present Day

While waiting for my demob from the army I negotiated with the Post Office for a transfer to the Radio Branch, and early in 1946 commenced work at Rugby Radio Station, where I was employed in the Short-Wave Transmitter building.

Shortly afterwards amateur licences began to be re-issued. The bands were made available on a progressive basis, starting with 1.8 MHz, and by September 1946 all amateur bands had been allocated. Pre-war two-letter callsigns were the first to be issued. Holders of pre-war artificial aerial callsigns like myself were required to take a Morse test consequent upon which they were issued with their three-letter callsign with the prefix 'G' added. Thus I became G2AIH.

The Radio Amateurs Examination was introduced, the first exam. being held in May 1946, at which there were 182 candidates of which 145 passed. After passing the RAE applicants then had to take the Morse test after which they were granted one of the now familiar G3-plus-3 callsigns. These stations were limited to a power of 25W and CW only for the first 12 months after which they could apply for full facilities, *i.e.* 150W power and the use of telephony.

My first actual excursions on the air were made on the 5-metre band which was now 58.5 to 60 MHz and had a power limit of 25W. My original equipment was, believe it or not, a self-excited Hartley oscillator using a 6V6 AF pentode strapped as a triode, anode modulated by a 6J5 and 6V6 with a carbon microphone. The receiver used initially was the pre-war super-regenerator mentioned in a previous section. All this rubbish was eventually superseded by a 25W crystal-controlled transmitter with push-pull TT11's in the final (the TT11 is a tetrode similar in appearance to the 807 but very much smaller). The companion receiver was a single-conversion superhet with Acorn valves in the RF stages. I also built a 40m. crystal-controlled transmitter at this time but was not very active on the band.

As one would imagine there were quite a number of amateurs at the Radio Station. One of them, G3ABA was a fellow 5m. enthusiast and we formed a friendship that has lasted to the present day, although we have both moved about the country a bit since our Rugby days. Later on, after we had lost the 5m. band Les, G3ABA, was very active on 2m. and was the winner of the first and second 2m. field days of 1955. Les was inactive for about 20 years but has recently made a welcome re-appearance on the band.

After the war there was of course a great deal of Government equipment surplus to requirements. The Admiralty had a scheme in 1946 whereby their surplus items were sold to *bona fide* radio amateurs for £2-10-0 (£2.50) per hundredweight. A number of us at the Radio Station clubbed together and bought several hundredweight. Later on most of the equipment was sold at Government auction sales to scrap merchants and in their heyday the surplus dealers in Lisle Street, Tottenham Court Road and Edgware Road did a lucrative business. One could walk down Lisle Street during the lunch hour and see scores of radio amateurs assessing the value of the goods on display (the radio goods, I mean). The source began to dry up during the late 1960's and today there is very little surplus equipment to be had.

Great events took place in November 1947. In that month 6-metre permits were granted to a limited number of U.K. amateurs. One of these was G6DH who had already made a cross-band contact on 28 MHz with W1HDQ about a year previously. On the same day that the permits were issued G6DH made the first ever transatlantic contact on 6m., again with W1HDQ in Connecticut. A few days later G6DH had a QSO with MD5KW (who holds the callsign G5KW) in Egypt. All these QSO's were on telephony. The first contact with VE-land was made by G5BD.



Fig. 6. The author at the present-day G2AIH HF operating position.

With the recent release of 50 MHz to certain selected amateurs history may well be repeated, and it is hoped that before too long the 6-metre band will be made generally available to U.K. amateurs (and indeed this has just happened, *see* last month's "VHF Bands" — *Ed.*)

The first amateur radio exhibition also took place in November 1947 (admission 1/-), the venue being the Royal Hotel in Woburn Place W.C.1., where it was held for the next several years. I remember these early exhibitions very well indeed. Subsequently they were held at various other locations such as the Royal Agricultural Society's New Hall and the Seymour Hall. With ever increasing attendances these places were much too small and in later years a move was made to Alexandra Palace and finally to the present location at the NEC Birmingham.

In September 1948 the new VHF band of two metres was made available with an initial power limitation of 25W. This band has been extremely popular right from the start and many amateurs who cut their teeth on the band have moved on to do great things at much higher frequencies. The issue of Class-B licences increased the band occupancy even more, and it has been increasing right up to the present time. I was not operational on two metres until 1950 as I was working away from home, although I had in fact built some RF test gear as soon as the possibility of having the band was known. All equipment in those days was home-brew of course. Crystal-controlled transmitters were the order of the day, with tunable-oscillator convertors, later to be superseded by crystal-controlled convertors with a tunable IF. Although we gained 2m., with the goggle-box taking over in the entertainments field we had lost 5m. by 1950.

The 70cm. band was released a month later, in October 1948. To me this band has never been as popular as it deserves to be, although again the advent of Class-B licences and more recently the introduction of repeaters have given it a boost. But even now, with the ready availability of Japanese black boxes activity still seems to be increasing very slowly. I didn't make a start on this band until 1952, and it was not until 1954 that I was operational, my first QSO being with G3FSD who was quite local to me at the time. George is an ex-colleague of mine — we were both working on VHF communication systems for some time. He is another amateur with whom I have formed a lasting friendship and we still have regular QSO's on 2m. SSB. In the 1950's my 70cm. equipment was a double-conversion superhet receiver and a crystal-controlled transmitter, initially with a QQV03/20A in the output stage and later with the tripler driving a similar valve as a 24W PA feeding into a 6-element Yagi aerial.

In May 1955 an event took place which was to be the start of an important feature in the lives of future VHF and UHF operators. This was the first VHF Convention, organised by the London UHF Group and held at the Bedford Corner Hotel. The attendance was approximately 125. The second Convention in the following year was organised by RSGB and was held at the

Bonington Hotel in Bloomsbury. This set the pattern for several years to come with the event being held annually at various hotels in the West Central area. With steadily increasing attendances larger meeting-places were necessary and the Convention moved firstly to the Winning Post Hotel in Whitton and subsequently to its present venue at Sandown Park racecourse.

It was at one of the VHF Conventions held at the Whitehall Hotel in Bloomsbury, I think possibly in 1957 or 1958, that I first met G5DT. Clem was one of the real pioneers in the early days of 70cm. and 23cm. and he used to exhibit his cavity triplers and power amplifiers which were masterpieces of engineering at these early Conventions. I lost touch with G5DT shortly afterwards but we renewed our acquaintance about three years ago. He is still operational on 2m. FM and in addition to visiting him we have regular natters on the band.

Until the late 1950's it was necessary to apply for a special permit if one wanted to operate portable. This cost an additional 10/- (50p) a year, and required the portable station to be set up within a 5-mile radius of a specified point. To make the renewal date of the permit coincide with that of the licence a reduction of 2/6 per complete quarter was allowed. The /P permit issued to G3FSD in 1953 is shown in Fig. 5.

Mobile operation became legal on 1 June 1954 with the introduction of a supplementary Amateur (Sound Mobile) licence for an additional fee of £1. Mobile activity on various frequencies built up fairly rapidly during subsequent years although I did not participate in the action until 1977, after channelised FM took over on the 2m. band.

There was also at least one maritime mobile station, G8AO/MM who was master of the *MV Mitcham*, a collier on a regular run between Newcastle and London, and back. My log shows that on 23 April 1954 I had a QSO with G8AO/MA while the vessel was lying off Limehouse immediately before leaving for Newcastle. On one momentous occasion G8AO/MM made a ship-to-shore phone call to G3FSD asking George to supply two Type 5763 valves, which he duly delivered when the *Mitchum* tied up at Wandsworth wharf.

At the end of 1956 U.K. amateurs were given a new VHF band viz. 4m. (70.1 to 70.3 MHz). This band has never been very popular possibly because after the first few months a 4m. allocation has been confined to the U.K. and its now very few

possessions. This is to be regretted as 4m. is a marvellous DX band. Until 1957 French amateurs including those in North Africa had an allocation of 72 to 72.8 MHz and these stations used to put RS59 phone signals into the U.K. I built a converter having switched oscillator-multiplier circuits so that I could tune both the British and French bands over the same IF on the RME69 receiver. I operated on the 4m. band from March 1957 until the middle of 1983 from the home QTH on AM and SSB. From 1962 I also operated /P using a solid-state receiver and a valve transmitter powered from the car battery with a rotary generator (battery flattener) for the 250V Tx supply.

By the year 1960 transistors were beginning to have an impact on amateur radio. It was about this time that I built my first solid-state amateur equipment. This was a 4m. double-conversion superhet, followed by a crystal-controlled transmitter for the same band having a power output of about 100mW. Using this transmitter and operating from the home QTH my log shows that on 3 June 1962 I received an RS59 report from G3KEU/P near Swindon. On 13 June I had a QSO with G3NDF at Great Bookham using all transistorised equipment; RS59 reports were exchanged.

During the following years up to the present, with the exception of a 50W 4m. transmitter and a QQVO6/40A linear for 2m., all my home-constructed equipment has been solid-state, using a progressively increasing number of integrated circuits. In 1975 I changed over to printed-circuit boards and have been using this method of construction ever since.

I retired in 1976 and was thus able to spend more time on amateur radio. Major projects have been a low-power 4m. transmitter in 1976, then a 6-channel 2m. FM transceiver in 1977 followed by a 40-channel synthesised rig in 1979. Since then I regret to say that I have started on the slippery downward slope and at the present time a lot of my equipment is of Oriental origin (Fig. 6). I have also recently made an appearance on the HF bands, operation being mainly on 10m.

Well, I guess that just about wraps up my 50 years of amateur radio. The history is of course incomplete. I hope that my fellow-amateurs have had the patience to read this far, and that nobody died of boredom on the way.

Finally, acknowledgements are due to G3FSD and G6QN for joggling my memory on a couple of occasions.

CLUBS ROUNDUP

By "Club Secretary"

The Mail

FIRSTLY **Abergavenny & Nevill Hall** for the weekly meetings in the room above Male Ward 2 at Pen-y-Fal Hospital, Abergavenny, on Thursdays from 7.30 p.m.

Thursday, September 17 is the next date for the **Acton, Brentford & Chiswick** group, and the topic — interesting, this — "Members' pre-1939 Equipment". Chiswick Town Hall, High Road, Chiswick, is the venue.

Alyn & Deeside have their base at Shotton Social Club, Shotton Lane, Shotton, Deeside, Clwyd — the Chester area. September 2 is an evening of contest arrangements, and on 16th they have Mr. Honeyman to give a professional view of computers in data communications. September 30 is a talk and demonstration by

G8RXB on Raynet. Between these meetings they have informals at a local pub — for details, contact the Hon. Sec., see Panel.

New One

Yet another one for the computer dabs; **AMRAC**, based on "The Crown" in Bishops Waltham, Hampshire, is for all those interested in the use of the microcomputer in amateur radio with, it is admitted, a bias to the BBC model. More details from the Hon. Sec. — see Panel.

The **Basingstoke** crowd will be running a course for the RAE again this year. Details on this from G4WIZ, who will also give the details of the club itself.

St. Marks Church Hall, Biggin Hill, is the home of the **Biggin Hill** club; meet them there on September 17 when they will see the RSGB video of the Shuttle.

Another New One

This one is at **Binstead** on the Isle of Wight; every Wednesday at the Hq of the 1st Ryde (1st Binstead) Scout Group, Binstead. More details from the Hon. Sec. — see Panel.

At **Bishops Stortford** there is a junk sale on the third Monday in September (September 16th) at the British Legion Club in Windhill. In addition there is an informal every Thursday evening

in the "Nag's Head" pub on the Dunmow Road, near the hospital and the golf club.

Every Wednesday evening you can find the **Bolton** club at Horwich Leisure Centre; the general scheme is to alternate between informals and talks, week by week, and it seems to please as the attendance at meetings is quite high.

Back now to **Braintree** in Essex, where the locals have their place at St. Peters Church Hall, which is in St. Peters Road, off Bocking End, Braintree, on the first and third Wednesday of each month. Doors open at 7.30 and the formal activity starts at 8 p.m. sharp.

Southward again, to **Brighton**, and this means the Seven Furlong Bar at Brighton Racecourse on the first and third Wednesday of the month.

Bristol City RSGB are to be found in the small lecture Theatre, Queens Building, University Walk, Clifton, Bristol. On September 30 they have G8MWR of the Microwave Society as the speaker.

Turning to **Bury** we find them every Tuesday evening at the Mosses Youth and Community Centre, Cecil Street, Bury; the second Tuesday of each month being the main meeting.

Cambridge Repeater Group puts out a newsletter each month, and is of course after funds to add to and maintain their existing 'boxes'. If you are into that sort of thing, contact the Hon. Sec. — see Panel.

Cheltenham has its Hq at the Stanton Room, Charlton Kings Library, Cheltenham; for details of the dates we must refer you to the Hon. Sec. — see Panel. Incidentally in their newsletter they have a character called the 'Old Crow' — and we have to admit his cawings are good for a chuckle, even when some of them are aimed at us!

Every Wednesday evening the **Cheshunt** crowd heads for their Hq at Church Rooms, Church Lane, Wormley (this is a bit north of Cheshunt as we know to our cost!); they also have both RAE and Morse classes lined up for the coming winter — details on these from G30JI who is QTHR.

September 10 at **Chester** is down for a visit by *Lowe Electronics* of Matlock, to demonstrate their latest bits; September 17th is an inter-club quiz with Ellesmere Port club, at home, and the September 24 meeting was still being sorted-out at the time of their letter.

For the details of the **Chichester** club meetings at Fernleigh Centre, 40 North Street, Chichester, we must refer you to the Hon. Sec. — see Panel. However, if you try the first Tuesday and the third Thursday you won't be far off the mark, in the Long Room or the Green Room.

September 5 is the date for **Cornish**, at the Church Hall, Treleigh, on the old Redruth bypass; the subject is RTTY.

We head now for **Coventry** where they foregather every Friday evening at Baden-Powell House, 121 St. Nicholas Street, Radford, Coventry. September 6 and 20 are nights-on-the-air; September 13 is down for mini-lectures, and on September 27 they will be constructing the project.

Crawley will entertain G3LHZ for their anniversary lecture, at the United Reformed Church on September 25. He will be talking about ATUs and their use: the quiet, fast and automatic variety — which might be a good thing in view of the sad tale unfolded on another page of the newsletter!

All Saints Parish Rooms is the home of **Crystal Palace**; this venue is opposite the IBA mast and at the junction of Beulah Hill and Church Road, Upper Norwood. September 21 will be a talk by G2MI on the 'Early Days'.

If you want to join the **Dartford Heath D/F** group, you can try "The Horse and Groom" pub on Tuesday, September 10. This is the Tuesday before the Sunday hunt on Dartford Heath — but this doesn't always start from the same spot! The pub is at Leyton Cross, and they get there quite late — usually after 9 p.m.

The venue for the **Derby** meetings every Wednesday is 119 Green Lane, Derby. September 4 is a junk sale, and on 11th they have a talk on ultrasonics by Dr. K. G. Hall. September 18 is an 'open' evening, and on 25th G3IVF will be talking about



Thames Valley A.R.T.S. achieved their best score for years in the 1985 NFD contest, having cracked earlier antenna matching problems with a switched array of five matching units, all of traditional homebrew design. G3JIP (right) and tool kit handled first line maintenance.

homeopathy.

At **Dudley** the locals have a booking at the Allied Centre, Greenman Alley, off Tower Street. September 2 and 9 are both 'open evenings' but on 23rd they have a talk on the applications of radio in aviation by G4AJB.

If you want to find the **Edgware** crowd, then you must look for Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware, on the second and fourth Thursday. September 12 should be interesting when G3GC talks about his pre-war transmitters, while on 26th they are in for G3PSP's quiz.

If you are interested in the visit **Exeter** are having to Devonair Radio studios on September 9, then get in touch with the Hon. Sec. quickly as numbers are limited. He will also give you all the other club data — see Panel.

September at **Fareham** includes a couple of natter evenings, on September 4 and 18. September 11 is down for a talk on a 1kW linear for 432 MHz, by G6HXR, and on 25th G6MVL will talk about rhombic aerials for 144 MHz. All meetings at Portchester Community Centre, Westlands Grove, in Room 12.

Having the Hq at the Kite Club at Blackpool Airport has done **Fylde** a world of good. They are there on the first and third Tuesday of each month. September 3 is a visit to the control tower of the airport, and on 17th they will be listening to G3RJV proclaiming 'QRP is Fun!'

September 15 is the AGM of the **Glenrothes** crowd; this is at Provosts Land, Leslie, Fife. This is a Sunday meeting, but they also have weekly sessions, for details of which we must refer you to the acting Hon. Sec. — see Panel.

The **G-QRP Club** hardly needs mentioning here, it is so well known. It caters for the low power enthusiast as its name implies, but it also is the one to join if you are into home construction. All details from the Hon. Sec.

On the second and fourth Friday of each month the **Grafton** chaps foregather at the "Five Bells", East End Road, East Finchley — the 143 bus of London Transport passes the door. The gang meets in the room behind the pub.

September 26 is the date if you want to attend the **Greater Peterborough** meetings, at Southfields Junior School, Stanground, Peterborough, at 7.30 p.m. We understand that this is an expanding club, which must say something about their activities!

We have a list for **Grimsby** through till the end of the year; find them at Cromwell Social Club, Cromwell Road, Grimsby, on September 5 for a natter, on 12th for a D/F Hunt, on 19th for a talk on propagation, and 26th for another D/F hunt.

The **Harrow** meetings take place every Friday evening at Harrow Arts Centre, High Road, Harrow Weald, which is opposite a pub called "The Alma". September 6 is the construction contest, and on 13th they have an activity night. September 20 is a talk on community radio by A. Lex-Arnold,

Names and Addresses of Club Secretaries reporting in this issue:

for reasons of space, see last month's issue for those names not appearing here

AMRAC: T. J. Tugwell, 50 Mayridge, Fareham, Hants.
 BIGGIN HILL: R. Senft, G0AMP, Mill Hay, Standard Road, Downe, Kent BR6 7HL. (0689 57848).
 BINSTEAD: A. F. Knight, G4RTT, 77 Clarence Road, East Cowes, Isle of Wight.
 GLENROTHES: A. Givens, GM3YOR, 41 Veronica Crescent, Kirkcaldy, Fife KY1 2LH.
 GRIMSBY: G. J. Smith, G4EBK, 6 Fenby Close, Great Grimsby, South Humberside DN37 9QJ.
 IPSWICH: J. Toothill, G4IFF, 76 Fircroft Road, Ipswich, Suffolk IP1 6PX. (0473 44047).
 I.R.T.S.: G. Gervin, EI8CC, 185 Elton Court, Leixlip, Co. Kildare, Eire.

MAXWELLTOWN: C. D. S. Rodgers, GM4NNC, 5 Elder Avenue, Lincluden, Dumfries DG2 0NL.
 SOUTH MANCHESTER: D. Holland, G3WFT, 32 Woodville Road, Sale, Greater Manchester. (061-973 1837).
 THAMES VALLEY: J. Pegler, G3ENI, Brook House, Forest Close, East Horsley, Leatherhead KT24 5BU.
 WACRAL: L. Colley, G3AGX, Micasa, 13 Ferry Road, Wawne, near Hull, Yorks. HU7 5XU.
 WEST of SCOTLAND: I. McGarvie, GM4JDU, 3 Kelso Avenue, Paisley PA2 9JE.

and on 27th there is another activity night.

The main **Hastings** meeting is at West Hill Community Centre on the third Wednesday of the month, and in addition they are to be found on Friday evenings in the club room at Ashdown Farm Community Centre, in Downey Close, off Harrow Lane.

There are two informals on the **Havering** September calendar, on 4th and 18th. September 11 is a D/F hunt, weather permitting, and on 25th there is a surplus equipment and junk sale.

The **Hereford** meetings are on the first and third Friday each month, at the County Control, Civil Defence Hq, Gaol Street, Hereford. For more details, contact the Hon. Sec. — see Panel.

For all the details on the **Hilderstone** club and the RAE class they are running contact the Hon. Sec. — see Panel. This one covers the Thanet area.

The **Ipswich** club room is at the "Rose and Crown" at the junction of the Norwich Road and Bramford Road, Ipswich, the room being detached from the bars, on the second and last Wednesday evening of the month, and indeed there is often something doing on other Wednesdays, unless there is a clash with the Martlesham meeting.

Over to EI now, and I.R.T.S. — they are the ones to be consulted about any facet of amateur radio activity in Eire. More details from the Hon. Sec. — see Panel.

September 18 is the date for **Maxwelltown**, for a discussion on the aerials to be used in the WPX contest. Prior to this, September 9 is an inter-club meeting with Carlisle. Meetings are in the "Tam o' Shanter Inn", Queensberry Street, Dumfries.

September 17 is the home-brew contest for **Midland**, at 294A Broad Street, Birmingham. However, as we know they are to quit the present place and are thus looking for a new one, we suggest you get in touch with the Hon. Sec. — see Panel for his details.

The **Newbury** meeting on September 10 is a junk sale, at Newbury Technical College — more details from the Hon. Sec.

The **Oswestry** crowd foregathers in the Bell Hotel, opposite the parish church on the first Tuesday of each month.

Carleton Community Centre is the home of **Pontefract** club, every Thursday evening on the top floor. September 12 is a project evening and 19th a talk on microwaves.

September 12 is a talk on atomic structure by G4DBU, for **Preston**, and on September 26 G3SYA is running a 'test-your-rig' night. Both are at Lonsdale Club, Fulwood.

Now to **RAIBC**; this one is almost mandatory for those amateurs and SWLs who are either blind or disabled; it not only has an interesting newsletter, and various on-air activities, but it also helps in such matters as passing the RAE and Morse test, and getting on the air. Clearly the blind and disabled are the full members, but supporters and representatives get a kick out of doing the practical work and raising funds. Details from the Hon. Sec. — see Panel.

If you are an old-timer — at least 25 years in amateur radio — then you should consider joining the **RAOTA**. Get the details from the acting Hon. Sec. — see Panel for his details.

On now to **Reading** where they gather at the "White Horse" at Emmer Green on Tuesdays. September 3 is a talk on packet radio

by **G6CCA**, and on September 17 they have an exhibition of the latest from *Wood and Douglas*.

The **Reigate** crowd has its main meeting at the Constitutional and Conservative Club, Redhill, on September 17 for a talk and demonstration by *C. M. Howes Communications*. In addition they have an informal on the first Tuesday of the month at "The Castle" in Reigate.

Next we have the **Royal Navy**, membership of which is also open to retired personnel, and current or retired members of the Merchant Navy or of foreign navies. Details from the Hon. Sec. — see Panel.

SARUG is the shortened version of the full name of the group whose members use Sinclair computers in their station; details from the Hon. Sec. — see Panel.

Every Thursday the **Shefford Church Hall** fills up with the local radio-amateur population. September 5 is an evening of technical topics, and on 12th they have a talk on 'Repeaters Past and Present'. September 19 is a junk sale, and on 26th there is a talk on weather satellites by G8LOK.

September 4 is the AGM for **South Bristol** at the Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol; they meet in Room 3 or 4 every Wednesday evening.

The prime meeting of the **Southdown** group is at the Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, on the first Monday of the month. In addition they have weekly gatherings at the Clubroom, Wealden District Council offices, Hailsham, on Tuesdays and Fridays.

Every Wednesday evening the **South Essex** crowd get together at the Paddocks Community Centre, Canvey Island, Essex — latest details from the Hon. Sec. — see Panel.

The **South Manchester** gang foregathers at Sale Moor Community Centre, Norris Road, Sale, every Friday evening. September 6 is preparation for SSB FD and the 144 MHz event, while on 13th they have an activity night. There is a junk sale on 20th, and then on September 27 they will be entertaining RSGB's John Nelson, G4FRX.

The **Surrey** crew meets on the Mess Deck on the first floor of *Terra Nova*, 34 The Waldrons, South Croydon, on the first and third Monday. This seems a very good club, and manages to maintain a high standard year after year. Current programme details are available from the Hon. Sec. at the address in the Panel.

Sutton & Cheam are based these days at the Downs Tennis Club, Holland Avenue, Cheam — their roving days are, it seems, over. September 2 is an informal in the Downs club bar, and on 20th G3GVV will be talking about IARU. An extra 'do' is the Fox Hunt on 22nd — details from the Hon. Sec.

The **Swale** Hq is at the Ivy Leaf Club, Sittingbourne, where they are to be found on September 9, for a slide presentation covering the Kent Repeaters.

Turning to **Telford** you can find them every Wednesday at Dawley Bank Community Centre, Bank Road, Dawley, Telford. September 4 is the final meeting for the Rally group, and on 11th they have a natter night. September 18 is set aside for G3UKV and

friends to tell about their DX-pedition to GM-land, while on 25th there is a 'Surgery for Failed Projects'.

Nice to hear again from **Thames Valley** who are in session on the first Tuesday of each month at Thames Ditton Library, Watts Road. More details from the Hon. Sec. — see Panel.

At **Thornton Cleveleys** they have G3AOW to talk about antennas on September 2; on 9th they have an informal, and there is a component sale on September 16. The judging of the Construction Contest is on 23rd, and there is another informal on 30th. Hq is at the Scout Hq, Carr Road, Bispham, Blackpool.

The **Three Counties** group is to be found in the Railway Hotel, Liphook, Hampshire, on Wednesday evenings. September 4 is down for G6VMA to talk about computer decoded morse, and on September 18 G6SNS talks about South West France.

Up in **Todmorden** we find the locals at the Queen Hotel on the first and third Monday; September 2 is G3LLL's talk — subject not mentioned — and on 16th they have an informal chat night.

Torbay members seem to be settled in their new abode, the ECC Social Club, Ringslade Road, Highweek, with a meeting each Friday evening and a main session on the last Saturday in each month.

Now **Verulam**, where the group is based at the R.A.F. Association Hq, New Kent Road, off Marlborough Road, St. Albans, on the second and fourth Tuesday of each month.

Next **WACRAL** the group of radio amateurs and SWLs who are committed Christians; details from the Hon. Sec. at the address in the Panel.

The **West Kent** crowd has an "open evening" on September 6, and their other meeting is on 20th at the Adult Education Centre Annex, Quarry Road, Tunbridge Wells. There are also informals on the intervening Fridays.

It looks like the second Tuesday of the month for the **Westmorland** crowd, at the "Strickland Arms", Sizergh, near Kendal. You can confirm this by contacting the Hon. Sec. — see Panel.

Deadlines for "Clubs" for the next three months—

October issue — August 30th
November issue — September 27th
December issue — October 25th
January issue — November 29th

Please be sure to note these dates!

New QTH

The members of the **West of Scotland** crowd have spent much of the summer converting their new Hq — it was a curtain factory — at 154 Ingram Street, Glasgow, into a nice clubhouse, which will be formally opened on September 20 by the RSGB President, Joan Heathershaw, G4CHH. The club meets every Friday evening and welcomes new members and visitors.

The **Willenhall** gatherings are held nowadays in the "Cross Keys" pub, Prouds Lane, Willenhall, in the external amenities room, every Wednesday.

The two meetings of the **Wirral** club based on Heswall Parish Church Rooms are on September 4 for a quiz, and 18th for a talk on Smith Charts by G3EGX.

The other **Wirral** club is at Irby Cricket Club, and they will be visiting the Heswall Church Hall on September 4 to be the 'opposition' in the quiz; we gather this is just the first round of an inter-club quiz.

Congratulations to the **Wolverhampton** scribe and his RAE pass. The club has its base at Wolverhampton Electricity Sports and Social Club, St. Marks Road, Chapel Ash, Wolverhampton, where they are to be found every Tuesday evening — you should be able to make your approach by watching out for the HF and VHF aerials! Looking a little ahead, October 1 is the AGM.

September 2 is club publicity evening for the **Worcester** group, at the Oddfellows Hall, New Street, Worcester. September 30 is the AGM. There are also informals at the same place, but these are on Wednesday rather than Monday evenings.

March 3 for **Workop** is an evening visit to Scunthorpe club — doubtless more details from the Hon. Sec. at the address in the Panel; on September 17 they have a talk by Ken Walton on lightning protection. The current venue for these events is the British Sub-Aqua Club, The Maltkins, Gateford Road, Workop.

Every Wednesday evening the **Worthing** group gets together at Lancing Parish Hall, South Street, Lancing, West Sussex.

On now to **Yeovil** where the meetings are at the Recreation Centre, Chilton Grove, Yeovil. On September 12 they hear G3MYM on ground reflection of radio waves, and on 19th G3GC takes over to talk about understanding radiation patterns. September 26 is a natter night, and October 1 is down for G3MYM again, this time on the matter of JFET audio amplifiers.

Finally, **York**, which means turning up at the United Services Club in York, 61 Micklegate, every Friday evening.

Next Time

The deadlines for the next few issues are given in the 'box' and your letters should be addressed to "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Please check that you include a name and address for the Hon. Sec., plus if possible a telephone number; and of course the dates and the venues for the month in question.

October Conventions

This year's **Welsh Amateur Radio Convention** will be held at the usual venue, Oakdale Community College, Blackwood, Gwent, on 6th October. As well as trade stands and bring-and-buy, there is an interesting programme of lectures and features plus Morse test facilities. Doors open at 10 a.m., admission £1.50. More details can be obtained from R. B. Davies, GW3KYA, 16 Vancouver Drive, Penmaen, Blackwood, Gwent NP2 0UQ (0495-225825).

The **Yeovil QRP Convention** is to be held on 13th October, at Preston Centre, Monks Dale, Yeovil. Doors open at 9 a.m., with talk-in on S22 by G8YEO/A; programme includes lectures and discussions. More information from G3GC on 0935-75533 or 0935-21246.

Rallies

September 8, Galashiels and District A.R.S. Open Day, trade stands, raffles, bring-and-buy, etc. Venue is the Focus Centre, Livingstone Place, Galashiels. More details from GM3DAR on 0896-56027. **September 14, Wight Wireless Rally**, at the National Wireless Museum, Arretton Manor, Newport, Isle of Wight, from 2 p.m. Talk-in by G3IOW on S22, with GB3WM operational on-site on 3.7 MHz. Family attractions.

Special Event Stations

Exmouth A.R.C. will be operating **GB4HB** from Hayes Barton, East Budleigh, Devon, during the 28 days starting from **September 5**, on HF, 144 MHz, 432 MHz, Oscar-10 and RS. The station forms part of the celebrations marking the 400th anniversary of the founding of a colony in North Carolina in 1585, by Sir Walter Raleigh — who was born in Hayes Barton. The club hopes to contact Raleigh A.R.S. in the City of Raleigh, U.S.A., and the vessel *Sir Walter Raleigh* (GB0SWR/MM) on her round-the-world mission.

The Civil Service A.R.S. will be operating **GB0SR** on **September 7** from The Central Ordnance Depot, 38 Base Workshops REME, Chilwell, Notts., and **September 8** from Civil Service Sports Ground, Wilford Lane, Nottingham, from 9 a.m. both days, on 80-10m. and 2m., for the Annual Open and Sports Day and the Civil Service Regional Annual Sports Day, respectively.

COURSES for the R.A.E., 1985-86

- Borehamwood:** De Havilland College, Elstree Way, Borehamwood, Herts. (01-953 6024), Tuesdays 7-9 p.m., course commences Sept. 17th, enrolment Sept. 9/10th 2-8 p.m., lecturer G.L. Benbow, G3HB. Further details from the College.
- Bradford:** Bradford and Ilkley Community College, Great Horton Road, Bradford BD7 1AY (0274-753111), starting in September, enrolment commences Sept. 10th, also Morse and Construction courses, tutor P.M. Nurse. Contact College for more details.
- Derby:** Derby College of F.E., Wilmorton, Derby DE2 8UG (0332-73012), commencing in September, enrolment Sept. 9/10th, also Advanced radio amateurs course. For further details contact the course tutor, F. Whitehead G4MLL, at the College.
- Fareham:** Adult Education Centre, Wickham Road, Fareham PO16 7DA (0329-280709), Fridays 7-9 p.m., commencing Sept. 27th. More information from the Centre, or the tutor A.S. Chester G3CCB (0329-288139).
- Farnborough (Hants):** Wavell School, Lynchford Road, Farnborough, Hants., course begins Thursday September 26th. For enrolment details ring 0252-518305 or 0252-540084.
- Fleetwood:** The Nautical College, Broadwater, Fleetwood, Lancs. FY7 8JZ (03917-79123), Thursdays 7-9 p.m., commencing Sept. 26th, enrolment Sept. 17th 7-9 p.m. (postal enrolments accepted), also other AR-related courses available. Further information from the course tutor, N. Watston (ext. 28).
- Grantham:** Grantham College of F.E., Stonebridge Road, Grantham, Lincs. NG31 9AP (0476-63141), Wednesdays/Thursdays 6.30 to 9 p.m. Further details from the Principal.
- Hemel Hempstead:** Dacorum College, Marlowes, Hemel Hempstead, Herts. (0442-63771), Wednesdays 6.30 to 9 p.m., starting Sept. 25th, enrolment Sept. 9th.
- Kingston-upon-Thames:** Kingston College of F.E., Kingston Hall Road, Kingston-upon-Thames, Surrey, Mondays 7-9 p.m., starting Sept. 16th, enrolment Sept. 9/10th 6.30 to 8.30 p.m. in Room 303 (fee £24). For more information contact Mr. J. Harris at the College.
- Leamington Spa:** Mid-Warks. College of F.E., Warwick New Road, Leamington Spa CV32 5JE (0926-311711), Thursday evenings starting Sept. 19th, enrolment Sept. 5/6th 9 a.m. to 12 noon, 2-4 p.m., 6-8 p.m.
- Liverpool:** Riversdale College of Technology (Dept. of Elec. and Radio Eng.), Riversdale Road, Aigburth, Liverpool L19 3QR, Mondays/Thursdays 7-9 p.m., starting Sept. 16th, enrolment Sept. 9-11th. More details from Gordon Andrews, G3DVW, on 051-727 1685.
- London (Hackney):** De Beauvoir Evening Institute, Tottenham Road, Dalston, London N.1, Wednesdays 7.30 to 9.30 p.m., starting Sept. 25th, enrolment week commencing Sept. 16th 7-9 p.m. Course tutor T.C. Clark, G4BZW, QTHR (01-249 1843).
- London (Hendon):** Hendon College of F.E., Williams Building, The Burroughs, Hendon, London NW4 4BT, Tuesdays 7.30 to 9.30 p.m., starting Sept. 17th, enrolment Sept. 10th 2-8 p.m. Further information from Mr. C. Holford, 01-202 3811 ext. 224.
- London (Islington):** Islington Institute, Mondays 6.30 to 9.30 p.m., commencing Sept. 16th, enrolment begins one week earlier. Ring 01-485 7065 for more details.
- London (Paddington):** Paddington College, 25 Paddington Green, London W2 1NB, classes twice weekly starting in September, enrolment Sept. 9-11th 1-4 p.m., 6-8 p.m. Course tutors are David Peace G4KKM and David Hunt G6MFR. For more details contact David Peace on 01-402 6221 ext. 54.
- Loughborough:** Loughborough Technical College (Dept. of Elec. Eng.), Radmoor, Loughborough, Leics. LE11 3BT (0509-215831), Tuesdays 6-7 p.m. (Morse) and 7-9 p.m. (Theory), commencing Sept. 10th. Fee £7.30 (Morse), £15.90 (Theory). Tutor, Doug Doughty G3FLS.
- Manchester (Swinton):** Pendlebury High School, Cromwell Road, Swinton, Mondays at 7.30 p.m., commencing end of September, instructor P. Whatmough, G4HYE. Also Morse and Construction classes. Details from G4HYE (061-794 3706), or from Swinton A.E. Centre (061-794 5798).
- Manchester (Stretford):** North Trafford College of F.E., Talbot Road, Stretford, Monday or Thursday evenings, or Wednesday afternoons, starting in September, enrolment Sept. 9-11th. For more details ring the course tutor J.T. Beaumont, G3NGD, at the College, on 061-872 3731 ext. 53.
- Nottingham:** Arnold and Carlton College of F.E., Digby Avenue, Mapperley, Nottingham NG3 6DR (0602-876503), Wednesdays 6.30 to 9 p.m., starting Sept. 18th, enrolment Sept. 9-11th 2-8 p.m., fee £29, tutors G4DVW and G4NZU. Also Morse and Construction courses available. Contact the College for more information.
- Princes Risborough:** Princes Risborough Adult Education Centre, Merton Road, Princes Risborough (08444-4977), Thursdays 7.30 to 9.30 p.m., including Morse, commencing Sept. 26th, tutors G4MQC and G3NCL. Fee about £22. Contact the College for more information.
- Stockport:** Reddish Vale Evening Centre, Reddish Vale Road, Stockport, Cheshire SK5 7HD (061-477 3544), Mondays 7-9 p.m. (Theory), Thursdays 7-9 p.m. (Morse), starting in September, enrolment Sept. 16/17/19th 7-9 p.m. More information available from the Centre.
- Tonbridge:** Tonbridge Adult Education Centre, Avebury Avenue, Tonbridge, Kent (0732-354313), starting mid-September. Phone the Centre for full information.
- Welwyn Garden City:** De Havilland College, Applecroft Centre, Applecroft Road, Welwyn Garden City, Herts., Thursdays 7-9 p.m., starting Sept. 19th, enrolment Sept. 9/10th 2-8 p.m. at De Havilland College Campus, W.G.C. (07073-26318/31344).

London (Bromley): Morse course only, Beckenham A.E. Centre, 28 Beckenham Road, Beckenham, Kent, Tuesdays 7.30 to 9.30 p.m., starting Sept. 17th. Phone 01-464 5745 or 01-650 1383 for details.

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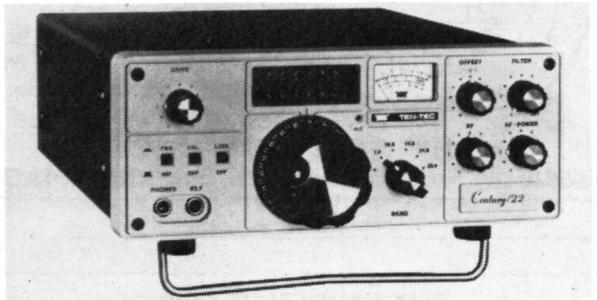
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