The SHORT WAVE Magazine

50p

VOL. XXXIX OCTOBER 1981 NUMBER 8

LOWE SRX30D

a familiar name, but a whole new receiver

A familiar name, but a whole new receiver behind it. Building on all the excellent features of the SRX-30, including the drift cancelling system covering 500 KHz to 30 MHz; the selectable sidebands and AM; the easy to use tuning system; we now introduce the all new SRX30D which incorporates the suggestions made by our customers. Outstanding new features are: —

- Extended coverage 200 KHz - 30 MHz.
- Digital readout in large green display units which give true unambiguous frequency information — even when you switch sidebands or use the clarifier.
- All new frequency sythesis using Plessey SL6 1641 double balanced modular ICs for a new high standard of performance.
- All new audio system which produces outstandingly good quality on the built in speaker, and is capable of driving external hi fi speaker units for even better sound.
- All new IF filters with optimum bandwidth for mode in use. Automatic filter selection from mode switch.

There is so much that is impressive about the SRX30D that you have to see it and handle it to really appreciate the performance.

We predict that the SRX30D will be a landmark in low cost, high performance SWL receivers. Just consider how much you should pay for a receiver covering 200 KHz - 30 MHz with accurate digital readout; high performance USB/LSB/AM with switched filters; drift cancelling frequency systhesis; built in mains supply and built in speaker; high quality construction and advanced design — and so much more.

Then look at our price for the SRX30D and you will be even more impressed.

£195.00 inc VAT, Securicor carriage £4.50.

Accessories for the short wave listener.

		Inc VAT	Carr
HF5	80-10m vertical. No radials required when on ground post	48.50	4.50
EIS	Small egg insulator. Glazed ceramic 40 cm long	.30	.25
EIL	Large egg insulator. Glazed ceramic 50 cm long	.45	.36
SIL	Ribbed strain insulator for dipole end or centre. 70cm long	.35	.36
MIZUHO			
KX2	Top quality 500 Khz-30 mhz aerial tuner. Perfect match for R1000	29.90	1.50
AX1	Aerial switching system. Handles 6 aerials & 6 receivers	27.03	1.00
APM1	Audio peak and notch filter. Variable bandwidth active filters	33.00	1.00
SR1	Mini rack for above the system	14.09	1.50
MP1	Rack mount for APM1	5.20	1.00

TRIO

pacesetter in amateur radio

The **Trio 9500**, a 70cm multimode mobile giving SSB, FM and CW operation in a compact rig. Add the spacious 70cm band to your operating.

TR9500 ***70 cm multimode.***

£482.54 inc. VAT. Securicor carriage £4.50.

TR-9000 The exciting TR-9000 2-metre all-mode transceiver combining the convenience of FM with long distance SSB and CW in a very compact, very affordable package. Because of its compactness the TR-9000 is ideal for mobile installation; add on its fixed station accessories and it becomes the obvious choice for your shack.

TR9000 ***2 metre multimode.***

£371.91 inc. VAT. Securicor carriage £4.50.

TR-7800 Trio's remarkable TR-7800 2-metre FM mobile transceiver provides all the features you could desire for maximum operating enjoyment. Frequency selection is easier than ever, and the rig incorporates new memory developments for repeater shift, priority, and scan. The TR-7800 by Trio, the only FM mobile.

TR7800 ***2 metre FM rig.***

£276.00 inc. VAT. Securicor carriage £4.50.

HEAD OFFICE AND SERVICE CENTRE

Chesterfield Road, Matlock, Derbys. Tel. 0629 2817 or 2430.

Open Tuesday-Friday 9-5.30, Saturday 9-5.00. Closed for lunch 12.30-1.30.

For all that's best in ham radio, contact us at Matlock.

For full catalogues send 70p in stamps with your address. Mark enquiry SWM.

LE

FRG-7 General coverage receiver

The set with the world-wide reputation. YAESU's famous FRG-7 out-performs many a more expensive set. Rugged and reliable, it features high sensitivity and Wadley loop stability - a delight to use for the established amateur and new SWL alike.

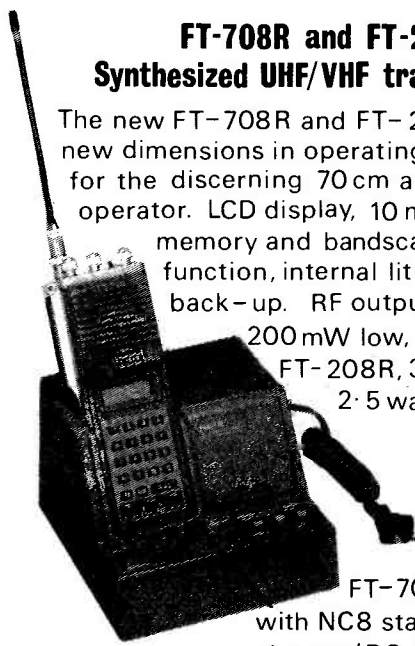
FRG-7700 High performance communications receiver

YAESU's top of the range receiver. All mode capability. USB, LSB, CW, AM *and* FM 12 memory channels with back up. Digital quartz clock feature with timer. Pictured here with matching FRT-7700 Antenna tuner and FRV-7700 VHF converter.

FT-708R and FT-208R Synthesized UHF/VHF transceivers

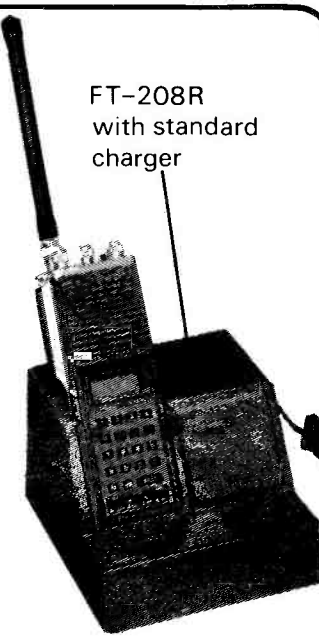
The new FT-708R and FT-208R provide new dimensions in operating flexibility for the discerning 70 cm and 2m operator. LCD display, 10 memories, memory and bandscan, priority function, internal lithium battery back-up. RF output FT-708R, 200 mW low, 1 watt high, FT-208R, 300 mW low, 2·5 watts high.

FT-708R



FT-708R with NC8 standard/quick charger/DC PSU

FT-208R

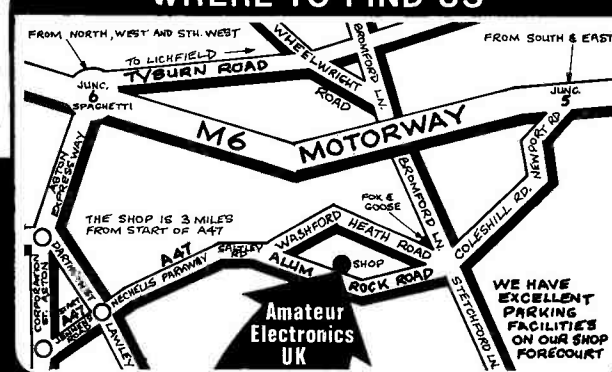


FT-208R with standard charger

AGENTS

NORTH WEST - THANET ELECTRONICS LTD, GORDON, G3LEQ, KNUTSFORD (0565) 4040.
WALES & WEST - ROSS CLARE, GW3NWS, GWENT (0633) 880 146.
EAST ANGLIA - AMATEUR ELECTRONICS UK - EAST ANGLIA, DR T. THIRST (TIM) G4CTT, NORWICH 06925 865
NORTH EAST - NORTH EAST AMATEUR RADIO, DARLINGTON 0325 55969
SOUTH EAST - AMATEUR ELECTRONICS, UK - KENT KEN McINNES, G3FTE, THANET (0843) 291297

WHERE TO FIND US



Amateur Electronics UK
508-516 Alum Rock Road·Birmingham 8
Telephone: 021-327 1497 or 021-327 6313
Telex: 337045
Opening hours: 9.30 to 5.30 Tues. to Sat. continuous - CLOSED all day Monday.

- ★ 144-146MHz (144-148 possible)
- ★ Multimode USB, LSB, FM, CW
- ★ 2.5W PEP, 2.5W RMS/300mW out
- ★ LED's; 'ON AIR', 'BUSY'. MC meter; S.PO
- ★ Integral telescopic antenna
- ★ Bandwidth 2.4KHz and 14KHz @ — 6dB
- ★ Optically coupled main tuning
- ★ 100 Hz backlit LCD Frequency display
- ★ 10 memory channels "5 year" backup
- ★ FM: 25KHz and 12.5KHz steps
- ★ SSB: 1KHz and 100Hz steps
- ★ Any TX & RX split with dual VFO's
- ★ ±600KHz repeater split 1750Hz burst
- ★ Mobile mounting bracket available
- ★ Matching 10W linear Amplifier
- ★ Up/down tuning from microphone
- ★ AF output 1W @ 10% THD
- ★ 58 (H) × 150 (W) × 195 (D) (1.3kg)
- ★ Rx, .70mA, Tx; 800mA (FM maximum)
- ★ 8 'C' Ni cads or Drys. 8.5-15.2V DC External

FT290R

SMC 2.2 A/Hr NiCd £2.70 inc

£229 inc.
VAT @ 15% & POSTAGE

FT208R

- ★ 144-148MHz (144-148 possible)
- ★ 12.5/25kHz synthesiser steps
- ★ 4 bit CPU synthesiser control
- ★ Keyboard entry of frequencies/splits
- ★ LCD digital display with backlight
- ★ Ten channels of memory
- ★ Memory back up '5 year lifetime'
- ★ Up/down manual tuning
- ★ Manual or auto scan for busy/clear
- ★ Priority channel with "check back"
- ★ Memory scanning feature
- ★ Scan between *any* two frequencies
- ★ Scan with auto pause/restart
- ★ Any split + or — programmable
- ★ Quick change NiCad pack
- ★ 1750Hz tone burst
- ★ ±600kHz repeater split
- ★ Built in condenser microphone
- ★ 500 mW AF to int/ext speaker
- ★ External speaker/mic option
- ★ 2.5 or 0.3W RF output
- ★ Rx; 20mA squelch 150mA max AF
- ★ Tx; 800mA at 2.5W RF
- ★ 0.25μV for 12dB SINAD
- ★ Dual conversion 16.9MHz & 455kHz
- ★ Keyboard provides 16 tone DTMF
- ★ 168 (H) x 61 (W) x 49 (D) mm
- ★ C/w NiCad pack and helical

FT208R
£195 inc.
VAT @ 15%
& POSTAGE

FT708R

- ★ 430-440MHz (440-450 option)
- ★ 25KHz synthesizer steps
- ★ 4 bit CPU chip frequency control
- ★ Keyboard entry of freqencies/splits
- ★ LCD digital display with backlight
- ★ Ten channels of memory
- ★ Memory back up 5 year lifetime cell
- ★ Up/down manual tuning
- ★ Manual or auto scan for busy/clear channels
- ★ Priority channel with search back
- ★ Memory scanning feature
- ★ Scan between any two frequencies
- ★ Auto scan restart
- ★ Any split + or — programmable
- ★ Quick change NiCad pack
- ★ 1,750Hz tone burst
- ★ ± 7.6MHz EU split standard
- ★ Built in condenser microphone
- ★ 500 mW AF to int/ext speaker
- ★ External speaker/mic available
- ★ 1W or 100 mW RF output
- ★ RX: 20mA squelch, 150MHz (max AF)
- ★ TX: 500 mA at 1W RF
- ★ 0.4μV for 12dB SINAD
- ★ Dual conversion 46.255MHz & 455KHz
- ★ Keyboard offers 16 tone DTMF
- ★ 168(H) × 61(W) × 49(D) mm.
- ★ C/w NiCad pack, helical

FT708R
£199 inc.
VAT @ 15%
& POSTAGE

FT207R

- ★ 144-148MHz (144-148 possible)
- ★ 12.5KHz synthesizer steps
- ★ 4 bit CPU chip for freq. control
- ★ Keyboard entry of frequencies
- ★ Keyboard lockout safety features
- ★ Digital display to hundreds of Hert
- ★ Display auto shutdown timer
- ★ Four Channels of memory
- ★ Memory back up disable
- ★ Up/down manual tuning
- ★ Bandscan for busy or clear channels
- ★ Memory scanning features
- ★ ±600KHz split built in
- ★ Any split + or — programmable
- ★ Easy change Ni Cad packs
- ★ BNC antenna connector
- ★ "On Air" and "Channel Busy" LEDs
- ★ Built in condenser microphone
- ★ 200mW AF to internal/external speaker
- ★ Extenal speaker/mic available
- ★ 2.5/0.2W of RF output
- ★ Rx; 35mA squelch, 150mA full vol.
- ★ Tx; 250mA low, 800mA high
- ★ 0.3μV for 20dB quieting
- ★ Double conversion 10.7MHz and 455KHz
- ★ Two tone encoder built in
- ★ 1.7 (2.2)" D x 2.5 (2.7)" W x 6.7 (7.2)" H
- ★ C/w NiCad pack, helical and case

LOW PRICE

FT207R
£169 inc.
VAT @ 15%
& POSTAGE

FT202R

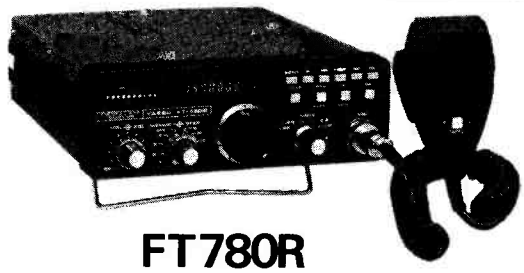
- ★ 144-146MHz (144-148 possible)
- ★ 6 channel capability
- ★ 1 watt of FM RF output minimum
- ★ Rx; 30mA/200mA — squelch/500mW AF
- ★ Tx; 400/500mA — 300mW/1W
- ★ Dual Conversion 10.7MHz and 455kHz
- ★ 67 x 49 x 171mm
- ★ Built in speaker and mic, remote option
- ★ Operates on 'AA' NiCads or drys
- ★ C/w helical, case, xtalled S20, 21, 22

FT404R

- ★ 430-440MHz (Tx 2MHz, Rx 5MHz Spread)
- ★ 6 Channel capability
- ★ 2.5W of FM RF output
- ★ Rx; 7mA/160mA — squelch/400mW AF
- ★ Tx; 4005900mA — 200mW/2.5W
- ★ Dual conversion 21.4MHz and 455KHz
- ★ 68 x 55 x 171mm
- ★ Built in speaker and mic, remote option
- ★ Operates on quick charge NiCad pack
- ★ C/w NiCad pack, helical, case, 1 Channel

FT202R £109 inc.
VAT @ 15% & POSTAGE

FT404R
VAT @ 15% & POSTAGE



FT780R

- ★ 430-434 MHz (440-445 possible)
- ★ USB-LSB-CW-FM (A3J, A1, F3)
- ★ Input; 30W (PEP A3J + A1/F3)
- ★ GaAs Fet RF for incredible sensitivity
- ★ NMOS four bit micro control
- ★ Bandwidth 2.2KHz and 14KHz @ −6dB
- ★ 'Dial set' clears non integral steps
- ★ Very bright blue display to 100Hz
- ★ Display indicates Tx and Rx (inc RIT)
- ★ Manual tone switch on microphone
- ★ String LED displays for S and PO
- ★ Digital receiver independent tune (±10KHz)
- ★ Advanced effective noise blanker
- ★ FM; 100KHz, 25KHz, 1KHz, steps
- ★ SSB; 1,000, 100, 10Hz steps
- ★ Repeater access by use of dual VFO's
- ★ Four easy write in memory channels
- ★ Memory scanning with slot display
- ★ Up/down tuning from microphone
- ★ Priority channel on any memory slot
- ★ Satellite mode allows tuning on Tx
- ★ Scanning for busy or clear channels
- ★ Size (case): 10" D, 2.3" H, 6.9" W
- ★ LED's on air, clear, hi/low, FM mod
- ★ FP80 mains PSU + SC1 console available

£409 inc. VAT @ 15% & SECURICOR

CPU2500RS

- ★ Covers 144 to 146 or 148MHz
- ★ 25/3 watt or 10/1 watt model(s)
- ★ CPU controlled digital synthesiser
- ★ 10KHz (+ 5KHz up) synthesised steps
- ★ Optional 25KHz steps in St version
- ★ 6 digit readout + memory channel number
- ★ Main tuning, by optically coupled encoder
- ★ Up/down tuning/scanning from microphone
- ★ Scanning for empty or occupied channels
- ★ Band scanning up or down the band
- ★ Four normal memory channels
- ★ Further memory for 'odd' split
- ★ Can scan memory channels only
- ★ ± 600KHz plus any split (to 4MHz)
- ★ Sub audio tone squelch option
- ★ Manual (EU) and Auto (UK) tone burst
- ★ High or low (1/10) power switch
- ★ Low noise mosfet RF stage
- ★ LED's for:— 'on Air' and 'Busy channel'
- ★ VSWR and reverse polarity protection
- ★ Punch in frequency on keyboard mic (K)
- ★ 0.5A Rx, 2.5A LTx, 6 A HTx (25). 13.6V DC
- ★ Case; 7" wide, 2¾" high, 10½" deep
- ★ Sensitivity: 0.3μV for 20dB 50
- ★ Selectivity: 12KHz ★ — 6dB (2:1SF)

£235 inc. VAT @ 15% & SECURICOR

FT720RV (FT720 & 720RV)

FT720 Control Head

- ★ For easy write-in memory channels
- ★ Rx priority channel (auto check)
- ★ Scanning of band/memory for empty/busy
- ★ Up/down tuning/scanning from mic.
- ★ Optically coupled tuning control
- ★ Manual and automatic tone burst
- ★ String LED's for 'S' and PO, status LEDs
- ★ 1½ W of audio to internal/external speaker
- ★ 3.3 (4.3)" D x 6" W x 2 (2.2)" H
  720RV 10W, 2M deck **720RVH** 25W, 2M deck
- ★ 144-146MHz (144-148MHz possible)
- ★ 12½ KHz sythesizer steps, 600kHz Shift
- ★ 0.3μV for 20dB quieting
- ★ Rx 0.5A. Tx RV 3.5A, RVH 6.5A
- ★ 5.8 (6.5)" D x 6" W x 2(2.2)" D
  720RU 10W, 70cm. deck
- ★ 430-434MHz
- ★ 25KHz synthesizer steps, 1.6MHz Shift
- ★ 0.5μV for 20dB quieting
- ★ Rx 0.5A, Tx 4.5A
- ★ 5.8 (6.5)" D x 6" W x 2 (2.2)" D
  S72 Switching box
- ★ Pushbutton bandswitching between two decks
- ★ Auto change of synthesizer steps/splits

£245 inc. VAT @ 15% & SECURICOR

FT480R

- ★ 144-146MHz (143.5-148.5 MHz possible).
- ★ USB-LSB-CW-FM (A3j, A1, F3).
- ★ 30W PIP A3j, 10/1 W our A1 F3.
- ★ Bandpass filter no tune design.
- ★ Excellent dynamic range sensitivity.
- ★ Bandwidth 2.4kHz and 14kHz at −6dB.
- ★ Semi break in with side tone.
- ★ Very bright blue 100Hz digital display.
- ★ Display shows Tx and Rx freq (inc RIT).
- ★ String LED display for "S" and PO.
- ★ Digital receiver offset tuning.
- ★ Advanced effective noise blanker.
- ★ FM; 25 12½, 1kHz steps.
- ★ SSB; 1,000, 100, 10Hz steps.
- ★ Any TX Rx split with dual VFO's.
- ★ ±600kHz standard repeater split.
- ★ Four easy write-in memory channels.
- ★ Memory scanning with slot location display.
- ★ Up/down tuning/scanning from mic.
- ★ Priority channel on any memory slot.
- ★ Satellite mode allows tuning on Tx.
- ★ Scanning for busy or clear channels.
- ★ Size (Case): 8.3" D, 2.3" H, 6.9" W.
- ★ LED's; "On Air" Clar, Hi/Low, FM mod.
- ★ Matching PP80 Mains PSU available.

£359 inc. VAT @ 15% & SECURICOR

FT101ZDFM

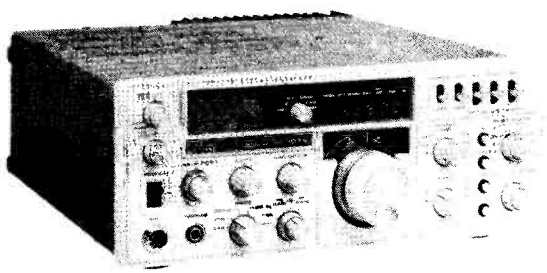
- ★ 160-10 metres including new allocations.
- ★ Variable IF bandwidth 2.4kHz down to 300Hz.
- ★ 8 pole filters for razor edge selectivity.
- ★ Selectable CW fixed bandwidth CW-W and CW-N*.
- ★ Semi-break in with sidetone for excellent CW.
- ★ Digital plus analogue frequency displays.
- ★ 6146B PA's with 6dB of negative feedback.
- ★ 180W PIP and — 31dB 3rd order intermod.
- ★ RF speech processor fitted — adjustable level.
- ★ VOX built-in and is adjustable from the front panel.
- ★ Wide dynamic range for big signal handling.
- ★ High usable sensitivity, for those weak ones.
- ★ Superb noise blanker — adjustable threshold.
- ★ Attenuator; 0-10-20dB, front panel switch.
- ★ AGC; slow-fast-off, front panel switchable.
- ★ Clarifier (RIT) switchable on TX, RX or both.
- ★ Low level transvertor drive output facility.
- ★ Universal power supply 110-234V AC and 12V DC*.
- ★ Incredible range of matching accessories
- ★ 4 models; Digital/Analogue — AM/FM

*Option. **£599 inc.** VAT @ 15% & SECURICOR

FT902DM

- ★ 160-10 metres including new allocations.
- ★ Variable IF bandwidth 2.4kHz down to 300Hz.
- ★ Audio Peak and independent notch controls.
- ★ AM, FSK, USB, LSB, CW, FM, (TX and RX).
- ★ Semi-break in, inbuilt Curtis IC Keyer.
- ★ Digital plus analogue frequency displays.
- ★ 6146B's with negative feedback.
- ★ VOX built-in and adjustables.
- ★ Instant write in memory channel.
- ★ Tune up button (10 sec, of full power).
- ★ Curtis Keyer — Iambic, single or straight.
- ★ Switchable AGC and RF attenuator.
- ★ Optional 350 or 600 Hz CW, 6kHz, AM filters.
- ★ Clarifier (RIT) switchable on TX, RX or both.
- ★ Audio Peak and tunable notch filter.
- ★ Plug in modular, computer style constructor.
- ★ Fully adjustable RF Speech processor.
- ★ Ergonomically designed with necessary LEDS.
- ★ Incredible range of matching accessories.
- ★ Universal power supply 110-234V AC and 12V DC.

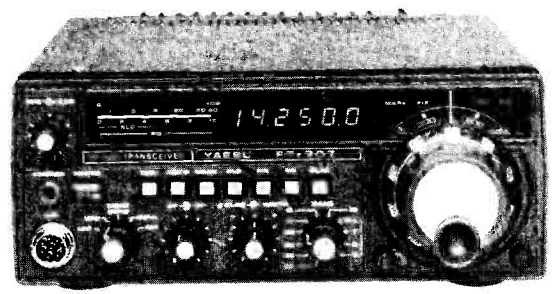
*Option. **£799 inc.** VAT @ 15% & SECURICOR



FT107M

- ★ 160-10 metres (including 10, 18, and 24Mhz).
- ★ USB-LSB-CWW-FSK-AM multi-mode.
- ★ Full broad band "no tune" power amplifier.
- ★ 240W PIP. 75 per cent power output at 3:1 VSWR.
- ★ 12 memory channels with clarifier on memory.*
- ★ Digital Memory Shift gives offset from memory.*
- ★ Up/down scanning control from microphone.*
- ★ Variable IF bandwidth — 16 poles of selectivity.
- ★ Bandwidths: 6kHz*, 2.4kHz-300Hz, 600Hz-300Hz.*
- ★ Selectable CW "fixed" widths CW-W and CW-N.*
- ★ Tunable Audio Peak (AFP) and Notch filter.
- ★ Diode ring mixer for very high Rx dynamic range.
- ★ Noise blanker — front panel adjustable threshold.
- ★ AGC; slow-fast-off switchable from the front panel.
- ★ Attenuator 0-20dB, plus RF gain on front panel,
- ★ RF speech processor fitted — front panel adjustable.
- ★ Digital (100Hz) plus analogue frequency displays.
- ★ Meter Reads; Vcc, Ic, ALC, Compression and SWR.
- ★ Semi-break in with side tone. Vox built in.
- ★ Choice of built-in or separate power supply units.

*Option **£690 inc.** VAT @ 15% & SECURICOR



FT707

- ★ 80-10 metres (including 10, 18 and 24MHz bands).
- ★ USB-LSB-CWW-CWN-AM (Tx and Rx operation).
- ★ 100W PEP. 50% power output at 3:1 VSWR.
- ★ Full "broad band" no tune output stage.
- ★ Excellent Rx dynamic range, power transistor buffers.
- ★ Rx Schottky diode ring mixer module.
- ★ Local oscillator with ultra-low noise floor.
- ★ Variable IF bandwidth — 16 crystal poles.
- ★ Bandwidths 6kHz*, 2.4kHz-300Hz (600-350)Hz*-300Hz.*
- ★ AGC; slow-fast switchable from the front panel.
- ★ VOX built-in and adjustable from the front panel.
- ★ Semi-break in with side tone for excellent CW.
- ★ Digital (100Hz) plus analogue frequency display.
- ★ LED Level meter reads: S, PO and ALC.
- ★ Convenient concentric AF/FR gain controls.
- ★ Indicators for: calibrator, fix, int/ext VFO.
- ★ Receiver offset tuning (RIT-clarifier) control.
- ★ Advanced noise blanker with local loop AGC.
- ★ 25kHz crystal calibrator feature.
- ★ Internal, xtal or external VFO control.

*Option **£529 inc.** VAT @ 15% & SECURICOR

SOUTH MIDLANDS COMMUNICATIONS LIMITED

S.M. HOUSE, OSBORNE ROAD, TOTTON, SOUTHAMPTON, SO4 4DN, ENGLAND
Tel: Totton (0703) 867333, Telex: 477351 SMCOMM G, Telegram: "Aerial" Southampton

BRANCHES: LEEDS, CHESTERFIELD, WOODHALL SPA. AGENTS: G, GW, GM, GI, GJ.

WATERS & STANTON ELECTRONICS

18/20 MAIN ROAD, HOCKLEY, ESSEX. Tel: (0702) 206835

DON'T FORGET

THE ANNUAL AMATEUR RADIO RETAILERS ASSOCIATION EXHIBITION HAS BEEN MOVED FROM LEICESTER TO CASTLE DONINGTON (ADJACENT M1)

DATES:— 29, 30, 31 OCTOBER

INTRODUCING

AZDEN

PCS 3000

ONLY £219

142-150mHz option

At last here is a fully synthesised 2m FM mobile rig with full band scan and eight channel memory — AT A SENSIBLE PRICE! The fabulous AZDEN PCS 3000 is a new 25 watt transceiver which combines the latest technology inside with an easy to use exterior.

★The front 2½ inches is completely detachable and with the optional extra cable kit, the main unit can even be mounted in the boot! YOU NEED NEVER BE AFRAID TO LEAVE YOUR CAR IN THE CAR PARK AGAIN!

The control head fits easily into your briefcase, jacket pocket — even the wife's handbag!

- ★Full 144-146MHz coverage in 25kHz steps or 12½ kHz option.
- ★Computer controlled touchpad for frequency selection.
- ★Multi function microphone gives up/down tuning and memory recall.
- ★Repeater shift and tone burst.
- ★Complete with mobile bracket, microphone and leads.
- ★Control buttons back lit.

NEW ITEMS NOW AVAILABLE:
Yaesu FT290, FT208, Trio TS530S, TR7850, TR9500, TR8400.

INTERFERENCE?

HP4A FILTER

NO MORE TVI FROM CB OR AMATEURS
The HP4A provides a highly effective solution to TVI and simply connects to any UHF TV receiver.
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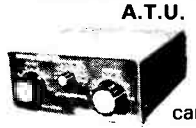

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SHORT WAVE MAGAZINE

(GB3SWM)

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Vol. XXXIX OCTOBER, 1981 No. 456

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Editor: **PAUL ESSERY, G3KFE/G3SWM**
Advertising: **Charles Forsyth**

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AUTHOR'S MSS

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 for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

Short Wave Magazine Ltd.

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AMATEUR RADIO EXCHANGE

October again, and that means Leicester Exhibition time. This year — for rather complicated, "political" reasons — there will be two shows in the month, the official A.R.R.A. one, and the independent one in the Granby Halls on 23rd, 24th and 25th October where we shall be exhibiting. For 1982 we hope that this rift in the industry will be healed and that ALL retailers will have the opportunity of showing together under one roof at the same time. Because only in that way can you, the radio enthusiast, really choose your equipment properly, with all the makes, all the models, side by side . . . to try for yourself and decide which suits you best. But then, that's the choice we've always tried to give you at Ealing . . . at rallies up and down the country . . . and now at our new branch in St. Helens too . . . the best range, and the best deal!

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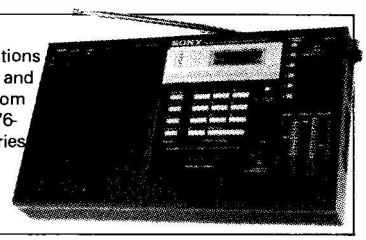

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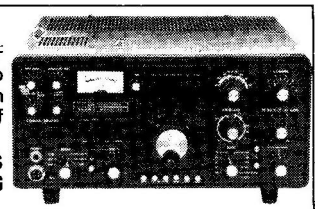

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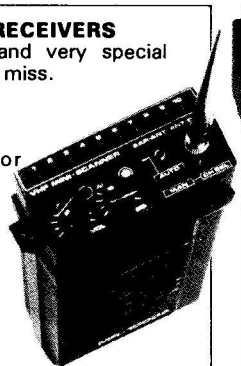

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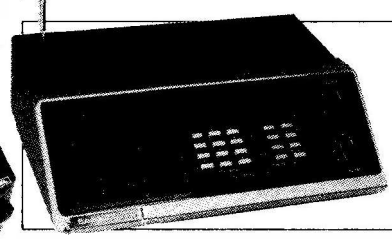

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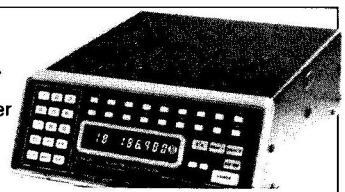

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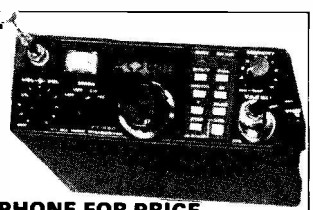

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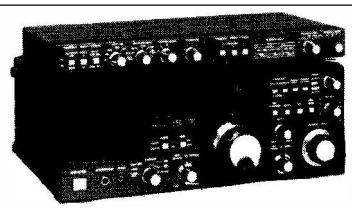

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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT WAVE Magazine

EDITORIAL

Exhibitions

Once again the autumn exhibition season is nearly upon us, with two important ones at the end of October. These are the Amateur Radio Exhibition at the Granby Halls, Leicester, October 23/24/25; and the 10th A.R.R.A. Exhibition, at its new venue Donington Park, October 29/30/31. Sadly, we shall not be having stands at both of them, for the reason that they occur so close together: we cannot maintain our production schedules and spare such a relatively large chunk of total staff-time away, all at once. However, we shall be at Donington (we received their invitation first!), but we wish every success to the Leicester exhibition – which we shall be visiting and reporting on.

If you have the time, both exhibitions should be well worth a visit.

While at Donington we shall be looking forward to meeting friends old and new; and of course we shall have plenty of copies of the *Magazine* for sale on our stand. This brings us to our next point which is that nowadays *S.W.M.* is posted, both to direct subscribers and newsagents, well before publication date, so that the great majority of subscribers receive their copies 'on the dot'. Regarding bookstall copies, however, we do know that there are some readers who have considerable difficulty in obtaining their copies on time from their newsagents, which is usually the result of a delay between wholesaler and retailer – and about which we can do very little. We know that sometimes weird and wonderful tales are told to angry readers about the non-arrival of their copies! Not that this means to imply that the news sale trade as a whole doesn't give readers (and us) good service, because indeed it does.

But if you can't get your *Short Wave Magazine* without threatening your newsagent to a duel, why not take out a subscription? At least that way you'll ensure as far as possible that you get your copy on time. Think about it – and we'll have plenty of subscription forms at Donington!

G3KFE.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

AS THIS comes to be written, the nights are drawing in, the mists hang over the water at night, and the change from summer to autumnal conditions alters our expectations of the bands. But, of course, expectations are funny things; like at long last we made our decision as to which tree exactly the new Top Band aerial would be attached to . . . only to find that our tame archer has cracked a thumb on one side and dislocated his shoulder on the other!

News

Firstly, that Andaman operation signing VU7AN; it would appear that it was a couple of JAs stationed in India and holding VU calls. K5VT worked 'em from Seychelles and the beam was in the right direction . . . but there is at the time of writing some indication that the documents were not so hot.

The San Felix business seemed to be pulling together and the problems of gear had, we understand, been ironed out. There remained the question of U.S. licences for the SV chaps on the trip, and if these were not forthcoming in time there were some Ws standing by to replace them.

We must now turn to the question of the Burma operation, XZ5A and XZ9A. There is no argument that the stations are there and active, but there is also no argument that the stations were not licensed by the central government of Burma, but by the local province governors. Point number three is that they have been on the air for a long time, and no-one seems to have jumped on them for piracy, which argues that the local authority permission is valid in the eyes of the locals. *But* ARRL has been told that amateur radio is still forbidden in Burma and therefore it would seem that anyone working them hasn't got a legal Burma QSL to show for it. It seems to this old greybeard that ARRL could well do to sit back and shut up rather than involving the State Department of the U.S.A. in piddling enquiries of this nature. If they did, then maybe they would have time to put ear to receiver and listen to some of the "list" jobs – and then to bar any "QSO" with a DX station arising from the operation of a list. If it takes a station an hour to make a list of sixty stations, then the DX station should be able to shift more than that *on its own account*, certainly on the HFs. There may be some justification for the old LF DX nets, but even there we doubt if the arguments in favour are valid. After all, sixty an hour wouldn't rate the winner's listing for any of the major SSB or CW contests.

Letters

A thin pack this time, with most of the regulars on holiday. However, the common factor seems to have been the ire of the writers over the problem of CB stations spreading over into Ten – "the band the amateurs don't use". It has been increasingly evident that many of the now illegal CB-ers are going to remain illegal (in that they have openly declared they don't intend to pay for a licence when it becomes available), and that it therefore follows that they aren't going to be put off operating on Ten by the fact that it isn't their band. The Home Office has done little save wring its hands, while awaiting a directive from the Government, RSGB can't do more than make rude noises at the Home Office; and letters to MPs are answered after a time by an apologetic note and a copy of the letter the MP has received from Timothy Raison – and that letter from Mr. Raison is a standard and a bromide. None of them know what to do about the situation they are faced with.

Top Band

Now here is an interesting band, and it is all the more frustrating to be able to read about all the DX, to have a good site and a rig available, and yet not be able to get the aerial up until our archer recovers his mobility and returns from his holiday. Such is life.

G4AKY (Harlow) still confines his operating to the hours around midnight and on, for how long on a particular night depends on the fell for conditions. Again this month five out of the six continents were worked, but Dave notes, like so many of us, that conditions are changing with the season. In the gotaway line there were EZ6DAD and VO1HP, while CW made it to the following: PY1ARS, PY1ZAE, LZ1KDP, LZ1KSN, UK6DAJ, EZ6GAW, RG6GAW, RG6GBX, UL7CBM, UL7PBY, EZ9ABW, UA9AMH, UA9SAX, UK9UBC, C31LM (QSL *via* EA3BDW), FC0GQQ (QSL to DJ6ZM), DL8NU/OH0, GJ3OQR, LU9EIE, OY7ML, ZD8TC, and VE1ZZ. SSB was also tried, to work GD4BEG, GJ3VLX, and OH5NG.

Next we come to G2HKU, who reports his ankle repairs are well in hand; but it seems the doctor suggested a body transplant and the XYL suggested a head transplant, which sounds as though they are a sympathetic lot on Sheppey! Just to add insult to injury, the wasps came back, and before he could get at them they dug-in over the kitchen door and *inside* the eaves, and seemingly not going to move for anything short of dynamite! We would suggest poking a couple of aerial-ends into the next and a quick CQ – that should shift 'em (and maybe get some DX too). Legpulling apart, Ted offers SSB to PA0PN, PA0ZQ, and PA0WWV; and CW managed SP1DA, EI9J, OE9SLH/3, UT5AB, and, again, EI9J.

Ten

Here of course the Sporadic-E manifestations haven't helped, insofar as it has brought loads of CB-ers onto the band and on occasion buried the "proper" DX. G3ZPF (Dudley) reckons that if the Home Office asked magistrates always to exact the maximum penalty (four hundred quid and seizure of the gear) they'd soon be in profit; meantime, SSB manages to get out to PT7YS, C31LM, G3MUV/CE0, VK6PM, VK6NS, ZB2FK, and VE3NFR/4U who says he counts as YK and is operating from the Golan Heights . . . Turning to the CW, we note HB0ALO, DL2VK/ST3, XT2AW (for an all-band, all-time new country), LU8DQ, and LU1AO. The adhesive of the G3ZPF fingers wasn't quite sticky enough all the time, as he failed to land S79WHW.

G2HKU used his QRP CW rig to work just the one station, namely YU3TLZ.

From Newbury, G3OUC reports on the results obtained with his home-brew 40 watts input SSB rig, all solid state, used with a mobile whip from the Ford Escort: ZS1ES, ZS1CS, RQ2GGI, 4X6DS, 4X6AS, C31NL, A4XGC, UA9CFC, ON5JE/P/IS, and loads of Spanish and German stations. Pat has a new angle on the problems of the CB invasion; apart from the normally expected QRM from them, they are often to be found operating from the "good sites" locally, which puts the QRM onto an unpleasantly close footing. Were that not enough, a local SWL has just obtained G4MLG – and by local Pat means next door! This gets interesting when they both take part in the local Sunday Top Band net! But the

best of luck to them both.

On now to G4HZW in Knutsford, who has a two-element home-brew quad at 24 feet, fed with a TS-820. Ten wasn't all that good during the month but in the few days before writing things picked up no end, with ZS6BRK, OD5QR who used to live in Knutsford, VK6NS, VK6NXX, UJ8JKO, 5H3TM, VE3NFR/P/4U, OA4AXK, 8R1J, WB0VHH, G3MUV/P/CE0 (Easter Island), VK3KBC, the first JAs of the season on August 29, UA9CIY, P29CH, A4XGY, FP8HL, more VKS, VP8QG, and five minutes before the letter was started N6COV was worked for an hour in a band full of W6/7s.

G3NOF is another to observe that things are picking up a bit. Don mentions SSB contacts with A4XGC, FP8HL, JA5AQC, JH3CGR, JR6MBW, PT7RNP, PY2ABO, RF6FFT, VE3NFR/4U/YK, and a shoal of Ws, including WD0BFT in Colorado, plus XZ9A and 4X6CA.

21 MHz

We had to chuckle at the letter from G3ZPF in Dudley; David found Ten dead so went up to 21 MHz and raised a couple of JAs. Fired with ambition, he decided to join the pile-up on FO0FB. This gave him the pleasure of seeing his target "slipping like the bride of Orpheus, gracefully but inexorably into the murk". Such lyricism! There was some of a different sort when, having rather mis-used the TS-520 some bulbs needed replacing and it took an awful long time to find out just how to achieve the desired end; and as no bulbs were available from the local dealer, David swapped some good ones over only to have them also curl up, for some more Anglo-Saxon language. So – at the second try . . .

All QRP at G2HKU, and CW, for QSOs with LU8DYH and K8IF. Ted mentions a local CB merchant telling over the air where he lives, and where he keeps his 2½ kilowatt after-burner!

From G3NOF in Yeovil, we hear about his doings on the band; conditions were not so good as at the same time a year ago, the log says, particularly in the evenings. Mornings, however have seen some very good openings to VK and sometimes ZL; the North Pole route has been open around 0800z to KL7 and thence the Pacific, and East Coast Ws have been around between, say, 1100 and till band closure, while the West Coast stations have been around in the early evening albeit not as well as last year. As to Africans they have been heard around 1700z, in amongst YB, DU and VU. SSB QSOs were made with AH3AA, AH8AA, C31LM, DU1PJs, DU6RCL, FO0FB, G3WNZ/MM, G3JOA/TR8, HL9KH, HS0HS, JAs, JT0LAJ, OH6JW/OH0, P29NGG, SV2JL/5, UK1PGO, VKs,VK2KE/MM off Timor, VK9NYG, VP8AGY, VS5DD, VS6JW, VU21OC, Ws, WA6HAE/HB0, YB8AEG, YU7QGC/HB0, ZS6BNZ, ZS6BSA, ZB2GR, 5T5ZZ, 9Y4TM, DA1CM/HB0 and DA1GE/HB0.

Contests

The Big Ones are almost upon us. Biggest of all, we hope, our own MCC – the dates are October 17/18 and detailed rules in the September issue on p. 379.

From W1WY, as always, we get the good gen on all the contests that matter. October 11 sees the RSGB 21/28 MHz contest, and earlier in the day the 21 MHz CW contest which clashes as to date but not time with MCC.

The VK/ZL contest this year has its Phone leg on October 3/4 and CW October 10/11, in each case starting 1000 GMT Saturday till 1000 on the Sunday. Score two for VK or ZL contacts, one for anyone else in Oceania, and the usual serial number starting with 001. Multiplier is the sum of the VK/ZL call areas worked on each band. Logs to be in the hands of the contest committee by January 31 1982, with the usual declaration, addressed to WIA Contest Committee, c/o Neil Penfold, VK6NE, 388 Huntriss Road, Woodlands, 6018, West Australia.

The CQ WW DX Contest is also upon us, the Phone leg being on October 24/25, and the CW November 28/29. Rules as last year, but a couple of clarifications appear. Copy or computerised logs will be acceptable but it is open to the contest committee to call for the original if they wish to check further. An extension of time on the deadline for logs is also possible provided there is a written request and if the circumstances are considered by the committee to justify the request. Logs to go direct to CQ Contest Committee, 76 N. Broadway, Hicksville, NY 11801, U.S.A., and be clearly marked on the outside as "CW" or "Phone". Note this is not the addressing arrangements used last year but a reversion to the earlier system.

The ARCI QRP contest is on the same weekend as MCC; from noon on the Saturday to 2359 on the Sunday, and this year they have come down to acceptance that QRP is five watts or so. Contacts with a member count 5 points, with non-member two points, with stations outside W/VE four points and with Novices three points. Same station may be worked on each band for multiplier and QSO points credit. The exchange will consist of RST and State, Province or Country, members add their membership number, non-members their power *output*. There is a power multiplier of ×10 below one watt, 1-2 watts ×8, 2-3 watts ×6, 3-4 watts ×4, and 4-5 watts ×2. In addition bonus multipliers are available: ×2 for solar or wind power, ×1.5 for battery power. Score is QSO points times (states + provinces + countries) times power multiplier times bonus multiplier. Favoured frequencies to look for contacts are: 1810, 3560, 7040, 14060, 21060, 28060 kHz, and VHF. Logs to be received by November 20, to William Dickerson, WA2JOC, 352 Crampton Drive, Monrow, MI 08161.

"CDXN" deadlines for the next three months –

November issue – October 1st
December issue – November 5th
January issue – December 3rd

Please be sure to note these dates

Eighty

Not many reports this time. G2HKU worked RK9XBB with the Big Rig, and then took to QRP to work G3RJV and G3PDH.

G2NJ (Peterborough) notes that he has again been able to have a session of CW and VHF mobile operation, with G5NX at the wheel, operating the Uniden rig from the back seat. G2NJ/M on CW is a sure way to get a pile-up going. On another occasion, G2NJ was at home but in QSO on CW with G5NX/M, while the latter was *en route* between Sheringham and Newark: for G2NJ the description of the aircraft lined up while G5NX was passing Cranwell brought back memories. Cranwell, of course, was the original home of the R.A.F. Amateur Radio Society in the pre-war years and indeed for a long time after the war, before it was moved to its present location at Locking. On a totally different tack, Nick observes that G3RJV in his recent offering mentions the W3EDP aerial, and he says he used it often on 7 MHz pre-war and on occasion after; and a recent CW QSO with GW6AQ indicates he is another W3EDP aerial addict, having used it to work a *lot* of DX on eight watts of CW.

Twenty

On the few occasions your conductor has been able to look in the mornings, it has been its usual bright and perky self – far more pleasant than the evenings and the attendant QRM!

Let G2HKU take up the cudgels first – he needs practice if he is to deal with those wasps! Ted starts with SSB, which mode was used to work 7X2AC, ZL1VN, ZL3SE, ZL3FV, G4LBK/MM

who was near the coast of Spain, K5VRX/SV5, KV4AA, IE9UZA, and VP2MIX; CW managed LU2KO and SV1NA/9, and the QRP CQ hooked LU2KO again and also UH8HBZ.

From 0600z says G3NOF, the band has been good to W6/7, followed a little later by the VKs on Long Path who remain until about 0900. Around 0800 some over-the-pole openings to KL7 and the Pacific, plus ZL, were observed. In the matter of action, Don scored with AH3AA, CE0AE, FK8DD, HB0AQW, IE9UDB, IE9UZA, IT9HLO/IF9, J3AAE, J88AB, JX7FD, KH7FD, KH3AB, KH6LW/KH7, KH6MD, KL7G, KS6DV, TG9NX, TI1FAG, UK1PGO, VE7CWG, VKs, VK2AGT/LH on Lord Howe Is, VK9YC, VS5DD, WA4YPJ/AM, W6s and 3X1Z.

Forty

Sadly neglected, we feel, but having said that we must admit to not having turned to it this time for even a quick listen. On the other hand, a competent observer in the shape of G3NOF did investigate the state of things, largely to improve his country score on that band, and he heard A4XGC, and made SSB contacts with CN8CU, LU6FAE, VE1KG, VP2MCK, and UA9TE, all between midnight and 0100z. On a different note, G3NOF confirms the remarks of G3PKS last time round about odd fading, and adds an observation of his own, which is that the band will fade right out around 1200, and make a return to life again about an hour later.

Looking at his letter, it seems that G2HKU is the chap who has done most on this band: SSB to RK9X/1, UR2TAX, UA3AKC, and UB5WCW, not to mention the CW obtained for calling PY1MAG, UA9SGW, UL7CAL, UK9ADS, and UA9SHU. Then there was the QRP CW, and this managed to find its way to HB0ALO, UP2BCG, and UL7JAW, the power input being just four watts.

Here & There

We've already mentioned the Andaman's operation; well, we now have it for sure they weren't licensed, and the same goes for their appearance from the Laccadives.

Again some late news, which indicates the San Felix operation has hit snags – possibly political – and that they may have to postpone, or even reverse, the operation, with Juan Fernandez first and a final quick blast from San Felix, which might be both very quick and possibly even all-CW.

On the other hand, K5VT did manage to get his permit and person on from S9VCT although it was understood to have been brief.

Old-Timers will need no reminder that W4BPD is a lad to watch if he has owt to say about an expedition; he has indicated his presence at the DXPO 1981 in October, so his projected long round-the-world cruise and expedition has clearly slipped back a bit – like from July to November. We hope he won't sully his name with a busted flush.

Finale

Lots of reports, please, for next time – deadlines in the 'box', addressed to your scribe, "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. *73 es DX.*

A SPEECH AMPLIFIER WITH TONE BURST

I. D. POOLE, G3YWX

WHEN it was decided that the best way to get back on to two metres, after selling the previous rig, was to build a transmitter, thoughts went to the various options open for the individual sections: design the audio stage, experiment with various well known circuit configurations for the 8MHz oscillator, FM modulator and tripler, and then take the easy way out and drive this into a standard RF strip to give about 2 watts output at 144 MHz from the input at 24 MHz.

AF clipping was used in view of the good results which could be obtained using a minimum of components, provided that adequate filtering is provided after the clipper stage.

The accepted bandwidth for communications purposes is taken to be 300 Hz to 3kHz. In fact the lower frequencies contribute very little to the intelligibility of the signal, adding mainly to the naturalness. Accordingly it was decided to reduce the lower frequency response by staggering the breakpoints of the R/C networks used to control the low frequency response, so that it would fall faster below 300 Hz than above it. It was also thought that it would be advantageous to filter the high frequencies before clipping in order to reduce any intermodulation distortion caused by out of band frequencies, and to generally limit the overall high frequency response.

The clipping process not only introduces intermodulation distortion as mentioned earlier, but also harmonic distortion and the products which lie outside the permitted audio bandwith must be removed. This is accomplished by using a low pass filter having a cut-off frequency of 3 kHz.

Tone burst was required as repeater operation was envisaged; a CMOS circuit which had previously proved to give good results was incorporated.

Circuit Description

The circuit, which is shown in Fig. 1, is designed to operate from a supply of around 12 volts, although this is not particularly critical.

The input stage consisting of TR1 and TR2 gives a fairly high input impedance for use with most microphones, and provides a gain of ten. The two RF chokes are included to remove any stray RF which may have been picked up in the microphone lead, causing instability. These chokes are constructed out of three turns of enamelled wire on a ferrite bead; C4 and C3 give roll off at high and low frequencies respectively.

VR1 provides pre-clipping gain control, and this is followed by a stage using a 741 operational amplifier in a non-inverting configuration, giving a gain of about 100. Therefore with VR1 fully advanced the gain should be more than enough for all but the most insensitive of microphones. This stage again incorporates filtering at low and high frequencies, and this is accomplished by C7 and C8.

The output from this stage is applied to D1 and D2 which symmetrically clip the signal applied; the signal output after clipping is about 1.2 volts peak to peak. This is passed through a low pass filter consisting of R13 and R14, and C11 to remove some of the unwanted distortion products. Further reduction of the unwanted distortion products is provided by C12. IC2 not only serves to amplify the signal, reduce unwanted high frequencies,

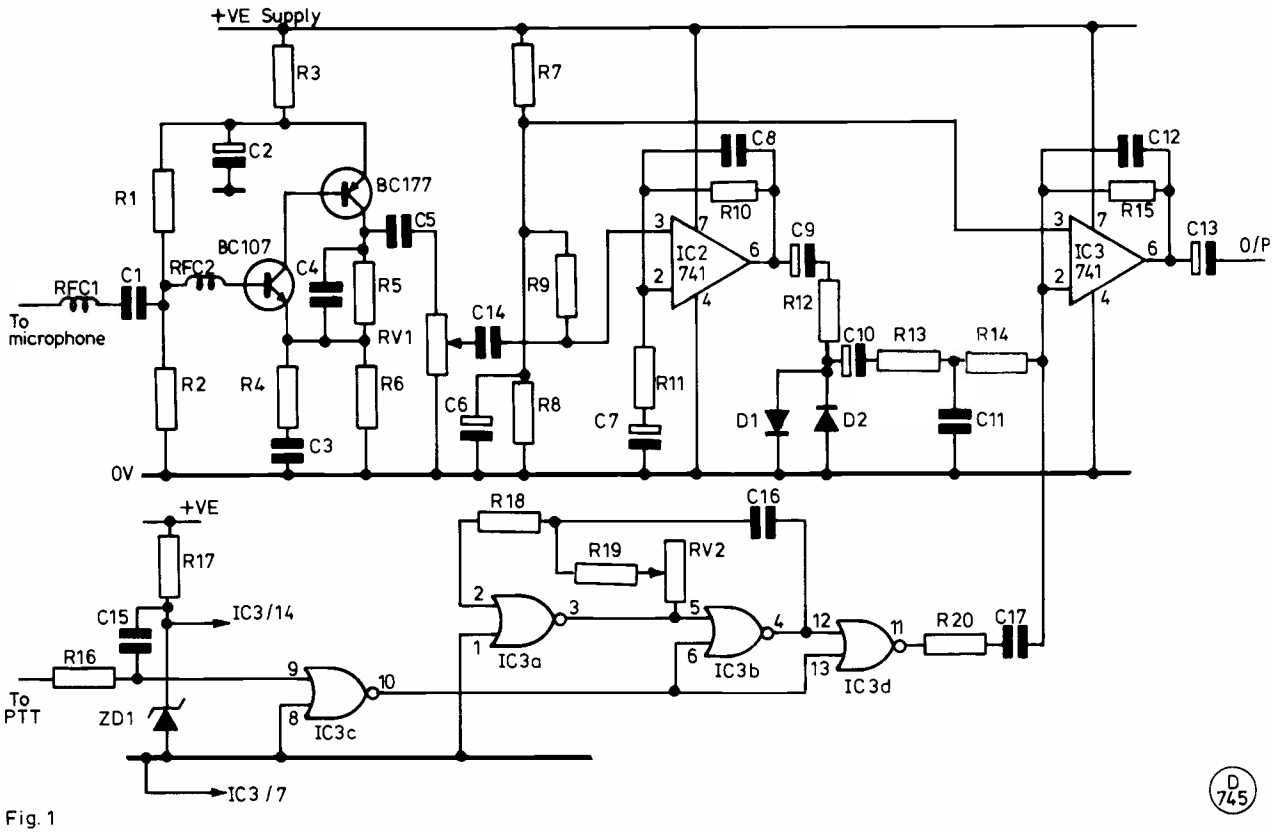


Fig. 1

Table of Values

Fig. 1

R1, R9 = 82K	C1, C4, C5, C14, C16, C17 = 0.01μF
R2 = 33K	C2, C6, C7, C9, C10, C13 = 25 μF
R3 = 8K2	C3, C15, = 0.1 μF
R4 = 470R	C8 = 330 pF
R5, R6 = 4K7	C11 = 0.047 μF
R7, R8, R15 = 10K	C12 = 4700 pF
R10 = 100K	VR1 = 50K
R11 = 1K	VR2 = 5K
R12 = 680R	ZD1 = 8.2v.
R13 = 2K2	TR1 = BC107
R14 = 1K2	TR2 = BC177
R16 = 8M2	IC1, IC2 = 741
R17 = 390R	IC3 = CD4001
R18 = 1M	D1, D2 = 1N914 or equivalent
R19 = 27K	RFC1, RFC2 = 3 turns of enam. wire on ferrite bead
R20 = 39K	

Note: All capacitors, must have a working voltage of 15v. or more.

but also as a virtual earth mixer to mix the speech with the tone burst. The gain of this stage can be altered by varying R15, but C12 should be altered by an inverse proportion in order to keep the break point the same.

R7 and R8 are used to derive the "half rail" supply for both of the 741's used. This is required because operational amplifiers are usually operated from a positive and negative supply with a centre zero. Resistors R7 and R8 set up the correct operating conditions for these integrated circuits.

Tone Burst

The tone burst is a well tried and tested design which the author has used several times over the past few years and has always operated well. The design is based around a CD4001 quad NOR gate. When the transmitter is in the receive state it is assumed that the press-to-talk switch connection will not be earthed and pin 9 on the IC will rise to a voltage which will give a logic 'one', and accordingly the output of IC3(c) will be approximately zero volts. This will put a logic zero onto an input of IC3(b) thus enabling the audio oscillator based around IC3(a) and (b). VR2 is used to set the frequency which can be measured either by using a frequency counter or by testing access to a repeater. Once set the tone burst has been found to be very stable with respect to time.

When the transmitter is placed in transmit the press-to-talk connection will be earthed causing C15 to charge up and the voltage to fall on pin 9 of IC3. The rate of fall of voltage is determined by the time constant of R16 and C15. When the voltage falls to the logic zero level the output on pin 10 will go to logic 'one', and inhibit the oscillator; thus the oscillator is inhibited at a time after the press-to-talk switch is pressed determined by R16 and C15.

Conclusion

The circuit has been on the air and has received some favourable comments saying that the audio was "punchy" without being too harsh. Careful adjustment of the clipping level will obviously be required to achieve best results. However when this has been done the circuit should give very acceptable results.

November issue due to appear on Friday, October 30th.

CIRCUIT OPERATION AND ALIGNMENT OF THE FRG-7 RECEIVER, PART II

RECEIVER ALIGNMENT PROCEDURES

J. L. LINSLEY HOOD, MIEE, MIMC

IN THE first part of this article I tried to provide a 'conducted tour' through the electronic circuit of this receiver, partly as a means of providing a greater insight into its way of operation, so that the user could have a greater appreciation of its potential strengths and limitations, and partly as a necessary preamble to clarify those areas under consideration if the user wished to improve or restore the alignment of the tuned circuits in the instrument.

While some of the more simple adjustments can be done, without misgivings, without the benefit of the Yaesu owner's instruction manual, and with little more than one or two small screwdrivers by way of equipment, it is urged that any more comprehensive adjustments should not be attempted without a copy of the manual, a reasonable collection of small tools, a frequency counter which will cover the range up to 100 MHz, an adequate HF signal generator, with an output attenuator, and a high impedance (preferably electronic) voltmeter. With these, and a bit of patience, wonders can be done!

Since I can remember well what it was like not to have a good collection of instruments (which didn't, I recall, stop me from wanting to do those things which the subsequent possession of those instruments made a lot easier), I will start with the easy ones — with the caution that some of these would be worth leaving until later if one has better test equipment. I will indicate when this is the case.

RF Stage Alignment

The initial tuning of the receiver is a single tuned circuit on the input to the RF stage preceding the first mixer. This is the part controlled by the 'Band' switch and the 'Preselect' knob on the far left of the front panel of the unit. This should give a scale reading appropriate to the frequency to which the Rx is tuned, so that if one is on, say, 21 MHz, the 'Preselect' dial should indeed read this figure when the S-meter shows maximum signal. However, this is easy to arrange.

Looking at the upper half, with the case removed from the receiver, the RF section is on the PCB to the left of the mains transformer and behind the twin-gang 300 pF RF tuning capacitor. (Although only a single 300 pF is used, separate gangs are used for the MW and the three SW bands.) The adjustments required are to the coil trimmers T101-104 and the trimmer capacitors TC101-104. These numbers are marked on the PCB, and on the diagram on page 13 of the manual. In each case, the preferred adjustment is to the inductor, first, at the bottom end of the band, followed by the trimmer capacitor at the high frequency end. While a signal generator makes this task a little easier, it is far from being essential, since a suitable signal can almost always be found near the desired spot on the lower frequencies, and aerial noise will serve quite well on the higher ones (though here, do not rely on the ear to judge maximum, but use the voltmeter on an AC range across the LS terminals as a 'noise strength' meter).

While on this subject, I would recommend that an external, longer scale, instrument should be connected across the internal S-meter, where possible, since this makes accurate adjustments easier. However, the main moral is — don't judge by ear! This organ is very uncritical of small changes in loudness, and a series of nearly correct adjustments can rapidly add up to a very inferior final result.

The procedure is simple. On band 'A' find a suitable signal at or near 0.5 MHz, and adjust coil T101 until the S-meter shows maximum deflection when the input signal has been reduced on the generator, or by other means, so that the reading is at about half-scale. Too large a signal input will make the meter difficult to read, and will modify the receiver response unfavourably for this purpose. When this has been done, repeat the exercise at 1.6 MHz with adjustment to the capacitor TC101. (A trimmer screwdriver with a small, insulated, blade such as the *RS* 543-399 and 543-334 "Trimtool" is desirable here.) The same procedure is then carried out for the other input ranges, at 1.6-4 MHz, 4-11 MHz and 11-30 MHz. If one has perfectionist inclinations, each range can be checked over twice — by going back to the bottom end again after the top end has been tuned and then returning to the top.

Sadly, this exercise is likely only to be cosmetic, unless the tuning is so far out that signals at the extremes of the range could not be properly tuned on the input. However, it is nice to have things right.

The Main Tuning Scale

Only do this adjustment at this stage if you do not intend to check the operating frequency of the BFO. If you do, leave it to later.

Firstly, set the 'Fine' tuning knob to vertical, and anchor the sliding 'Dial Set' cursor so that it is in the middle of its travel with a piece of adhesive tape. Then with the 'MHz' scale set to 29, and the 'Preselect' range set to 'A' (to limit the amount of unwanted aerial signals present), tune the main scale to a reading of 1000; this will effectively tune the second, variable frequency, part of the receiver to 2 MHz. If the 'Mode' switch is now turned to the 'LSB' position, a whistle should be heard due to the receiver picking up a very small amount of one of the harmonics of the internal 1 MHz crystal. For most practical purposes, it is sufficient to adjust the third oscillator frequency (Q403) so that there is a zero beat, by adjustment of the ferrite core slug of T403. If the upper and lower VFO frequencies have been adjusted, a neater style of adjustment is such that the beat note for the LSB and USB switch positions is identical.

The main tuning is then set to '0' and the exercise repeated with TC403. This, of course, is to set the receiver tuned stage to 3 MHz.

The Main Oscillator "MHz" Scale

It will be recalled from the first part of this article that this part of the circuit a Colpitts oscillator covering the range 55.5-85 MHz, tuned by a single variable capacitor (this is actually two 30pF capacitors connected in parallel). Although a signal generator is helpful, it isn't absolutely essential for this adjustment, provided that the receiver is not too far in error. To proceed with this, find a signal as close as may be practicable to 3.5 MHz, and tune to this; adjust the slug in coil T201 gently (some delicacy in this is desirable, as well as a low-capacitance trimmer tool) until the 'lock' lamp extinguishes with the 'MHz' tuning scale at the middle position of the scale 'blob' marked '3'. Now look for another signal at around the 27.5 MHz mark, and tune to this. Then adjust the trimmer capacitor TC201 until the LED lamp labelled 'lock' extinguishes in the middle of the 'blob' labelled '27'. A little care is necessary here not to get a complete 1 MHz step out; however, one can count up from the bottom to make sure that the lamp extinguishes the right number of times.

Because of some small errors in the law of the capacitor, or the engraving of the 'MHz' dial, it will probably not prove possible to achieve the desirable result of the 'lock' lamp extinguishing in the middle position of every MHz calibration, but one can get near this. As in the case of the RF stage alignment, these adjustments are only 'cosmetic' and will not

The author's FRG-7 and home-built digital frequency meter.

do more than make the receiver tuning behave as intended. Nevertheless, they do help make using it more satisfying. For tangible performance benefits, the equipment listed above is very desirable, though the resourceful and competent may achieve much with limited facilities. I assume, though, that those wishing to proceed beyond this point will have access to necessary apparatus.

The BFO

This injects into the diode ring-modulator at the end of the 455 kHz 3rd IF chain, through an emitter follower buffer stage. The required operating frequencies are 457 kHz in the LSB position of the mode switch (set by adjustment to the coil slug T406) and 453 kHz in the USB position (set by trimmer capacitor TC404, which only comes into operation on this switch position). A frequency counter is desirable for this, connected to TP405.

The 3rd IF, 455 kHz

The procedure recommended by Yaesu makes the assumption that the 455 kHz mechanical filter FL-1 is correct, and proposes that one should merely tune to a signal generator set to 7.5 MHz, and then adjust the coils on the output of the 1st and 2nd 455 kHz IF stages (T404 and T405) for maximum S-meter reading. I prefer to dangle a short length of insulated wire connected to the signal generator output in proximity to the transistor Q402 (the 3rd mixer), with the signal generator tuned to 455 kHz, and rely on enough pick up or breakthrough. However, this isn't a very critical adjustment since only T404 is at all sharp in tuning; T405 is very damped, which makes it difficult to be sure of optimum adjustment.

The 2nd IF, 3-2 MHz. Variable (Tuned) Frequency

Some benefits can be gained from setting this correctly, but keep in mind the point that the tuning works 'backwards', so that the coils are adjusted apparently at the higher input frequency, and the trimmer capacitors at the lower. Having said that, it helps to adjust these a little way in from the end of the tuning range. The Yaesu recommendation is to tune to 7.1 MHz to adjust the trimmer capacitors TC401, TC402 and then to tune to 7.9 MHz to adjust the coils T401, T402. This adjustment is, inevitably, repetitive until the optimum setting is achieved, but should show some improvements in general receiver performance.

The 1st IF, 54.5-55.5 MHz Bandpass

The purpose of this stage is to amplify, uniformly, a slab of signals 1 MHz wide, plus a bit at either end. To achieve this, four separate, individually screened, coils are used with external coupling capacitors (2 and 3pF respectively) to achieve the desired over-coupled double-hump response. These tuned circuits are on the inputs to the IF amplifier (a dual gate MOSFET) and the second mixer (a junction FET).

If one has access to a wobbulator covering the 55 MHz band this task is relatively easy. (A simple DIY job is not too difficult to make: I use the one I described in the VCO article in *Wireless World*, September 1979, as an add-on mod to a cheap and cheerful commercially made signal generator). However, even in the absence of such a piece of kit, it is still straightforward, though more laborious. The procedure is to inject a signal in the desired frequency range into the first mixer (Q102-Q103), *via* test point TP103, with the receiver tuned to 20.5 MHz and the aerial removed, and measure the output from the stage, at the end of the strip, at TP104 using a good 'scope.

A method which is slightly less demanding of equipment is simply to swing the signal generator frequency up and down over this frequency range and measure the output — either by tuning in on the main tuning knob and using the S-meter, or by means of the simple gadget shown in Fig. 1, which allows a high impedance voltmeter to act as a crude RF meter; a sensitive meter helps. However, keep the RF leads short, and let the DC leads be the longer ones. The aim in tuning these coils is to get the flattest response over the 54.5-55.5 MHz band, compatible with sensitivity. Some method in the adjustment procedure is essential, and I would commend the tuning of T106 and T105 to a maximum at 54.8 MHz, and T107 and T108 to a maximum at 55.2 MHz.

As a final check on the extent to which one has achieved the desirable end of a uniform sensitivity of the receiver across the whole 1 MHz band covered by the kilohertz tuning scale, one can tune to the top band of the Rx (29-30 MHz) and check that the aerial noise is reasonably constant across this swing. However, prepare to be a bit disappointed in this. Nevertheless, some useful improvement in Rx sensitivity will probably be made by setting these coils to the compromise optimum.

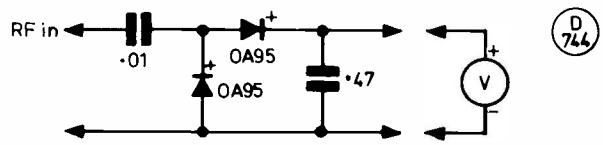


Fig. 1 Simple circuit to allow monitoring of RF signal levels using sensitive high impedance DC voltmeter

The 52.5 MHz Selective Amplifier

I have left to the last the adjustment which is likely to bring about the biggest improvement in receiver sensitivity of all these tuning adjustments, which is the alignment of the 8 coils in the three-stage selective amplifier which feeds the second mixer oscillator input.

This mixer, Q105, is an N-channel junction FET with the signal input from the 55 MHz IF stage applied to its gate and a local oscillator RF signal applied to its source. For good conversion efficiency, at least 0.5v. r.m.s. is needed as this input, and the task of the selective amplifier is to extract a signal of this magnitude, at around the 52.5 MHz frequency mark, from the miscellaneous RF rubbish generated at the pin 3 output of the *Texas* SN76514N double-balanced modulator IC. To recap. from *Part I* of the article, the input to this IC is provided by the first oscillator, and also the output from the 2-33 MHz harmonic generator driven by the internal 1 MHz crystal.

To accomplish the alignment of these tuned stages, it is necessary to remove the LO input, either by disconnecting or by earthing it at TP101; a 52.5 MHz input can then be fed from the signal generator into the input stage of the selective amplifier at TP107. Ideally, the output as measured with the gadget shown in Fig. 1 connected to TP109, at the output of the selective amplifier, should be constant over a bandwidth of some 100 kHz centred on 52.5 MHz, and adjustments to coils T109-T116 — situated in a double row on the right-hand side of the RF unit PCB — should be made until this is achieved as well as possible.

The reason for the attempt to attain a flat-topped frequency response from this amplifier chain, is that too sharp a tuned response would make the setting of the 'MHz' knob too critical, and would emphasise changes in sensitivity arising from small drifts in the local oscillator frequency, which is undesirable. There is, I think, little cause for worry on this score, since a 52.5 MHz amplifier cannot readily achieve a selectivity much better than this unless some incipient instability is present which would indicate a faulty component.

For this reason, when the centre frequency of the amplifier has been established correctly, the local oscillator input can be restored, and the RF signal voltage produced at TP109 can be monitored as the "MHz" knob is adjusted — with a little delicate tweaking of the coil adjustments to optimise the ouput. If wished, at this stage, the setting of the DC threshold of the 'lock' level monitor can be adjusted, by VR102, so that the extinction of the LED is reasonably precise, without being too fussy. In my experience, the influence of the oscillator signal input to the second mixer, and derived from this chain, is so great — both in its effect on the receiver sensitivity and upon the elimination of spurious signals 1 MHz remote from the chosen tuned frequency — that the whole Rx performance can be noticeably improved.

Sundries

The only other adjustment which it would seem worthwhile to make, while the receiver is out of its case, is the adjustment to the balance of the mixer. This is done by disconnecting the aerial, setting the 'MHz' knob to '0', and tuning to the internal spurious signal at 910 kHz; VR101, at the front of the RF unit, can then be adjusted to reduce the magnitude of this on the S-meter. It is a fairly flat adjustment, with a minimum of about 5-6 on the 'S' scale. The manual also refers to TC105, but this control no longer exists in the circuit.

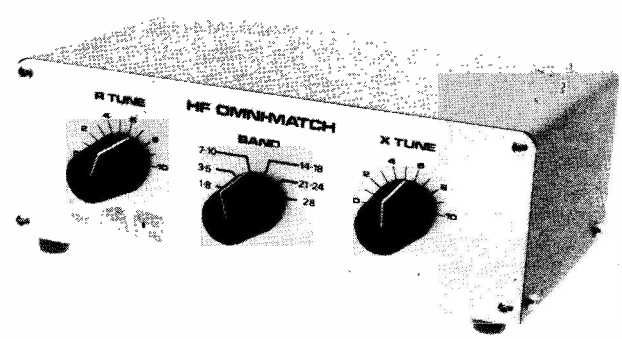
For a receiver which is as sensitive as the FRG-7, when aligned as the designer had intended, the adjacent channel selectivity is only marginally adequate for use on the SW broadcast bands, where very strong signals can exist in close proximity to weaker ones of interest, and where the agreed 8 kHz separation between stations is frequently ignored. In these circumstances, particularly if reception conditions are good, some improvement in the 3rd IF selectivity is a good idea, and several DIY mods. have been proposed to this end. In my own case, I made a direct replacement of the LFC-6 455 kHz filter with a *Murata* CFG4551, which has given as high a selectivity as would be practicable for general purpose broadcast listening.

However, every mod. brings problems, and the snag in this case is that it becomes very difficult to be absolutely certain of the frequency to which one is tuned, since the selectivity is now several times better than the allowed lateral movement of the tuning cursor, or even the precision of calibration of the kilohertz dial, so a digital frequency display then becomes the next requirement. At this stage it is sensible to ask whether it would not have been better to have bought a more expensive model incorporating a digital frequency meter in the first place!

For those, like me, to which this piece of wisdom came a little late in the day, there are add-on frequency meters, both as commercial units and as DIY jobs, of which one that comes to mind, at once, is that in *Short Wave Magazine*, Jan-Feb 1980. My own, very simple, frequency meter — for which no magic whatever is claimed — solved those operating problems which arose when I improved the selectivity of the design, and is shown on top of the FRG-7 in the photograph.

In conclusion, I can only say that the FRG-7 is a good receiver, of more than adequate sensitivity, and free from many of the shortcomings so often found in such receivers. It is clearly very popular as a general purpose instrument, and I think deservedly so.

concluded



The new *LAR Modules* HF Omni-match which will tame a VSWR as high as 5:1. It is available from them at their 60 Green Road, Leeds LS6 4JP address, price £71.00 including VAT and post/packing.

SIMPLE L-SECTION IMPEDANCE MATCHING

IAN H. MOTH, B.Sc., G4MBD

THIS article is intended to shed a little light onto some of the electronic engineer's black art and is therefore written very much for the beginner and not the practitioner.

It is commonly understood that transistors, valves and most other electronic devices must have "proper impedance matching" to function correctly. The reason why designers aim for this is invariably to prevent waste of signal energy, since energy flowing along a path will be diluted by encounters with abrupt changes in impedance, a proportion being reflected back whence it came. Most amateurs will be familar with one example in particular, the problem of antennas which are not of the correct impedance. The solution here is to provide a matching network, or impedance transformer, between feeder and antenna to transform the one impedance to the other, and therefore "conceal" the impedance discontinuity. This article presents a set of equations by which the inductances and capacitances of simple L-section impedance transformers can be calculated. Networks of this kind are particularly useful in matching into and out of high power transistors of low impedance. The derivation is given in two ways, so that the reader may have the opportunity of extending the mathematics to his own requirements. S.I. units are used throughout.

Series to Parallel Conversions and *vice versa*

The first method depends on circuit conversions. A complex impedance is a concept of an electrical component having both a resistance and a reactance; either capacitive or inductive or (as we shall see in a moment) both. Taking the usual terminology let R be resistance and X be reactance. Referring to Fig. 1, each of the two circuits has a property of impedance. If R1, X1, R2 and X2 satisfy the four equations given in the caption to Fig. 1, then the circuits will be identical, *i.e.* their impedances will be the same. These equations are the standard "parallel to series" and "series to parallel" conversions given in the textbooks, including *Radio Communication Handbook*. Since X is a function of the frequency of operation, the equations will only hold for one frequency at a time. Let

$$X = \frac{-1}{2\pi fC} \text{ and/or } X = 2\pi fL,$$

where f is frequency in Hz, C is capacitance in Farads and L inductance in Henrys. Thus, reactances which the mathematics turn out negative will be capacitive and the positive ones, inductive.

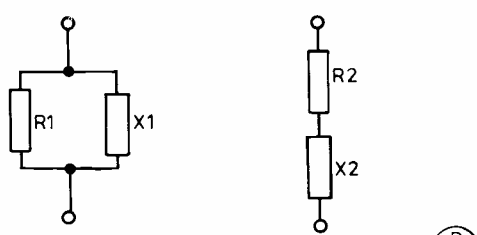


Fig. 1

Fig. 1. Series and parallel equivalent circuits.

$$R_1 = \frac{R_2^2 + X_2^2}{R_2}, \qquad X_1 = \frac{R_2^2 + X_2^2}{X_2},$$

$$R_2 = \frac{R_1 X_1^2}{R_1^2 + X_1^2}, \qquad X_2 = \frac{X_1 R_1^2}{R_1^2 + X_1^2}$$

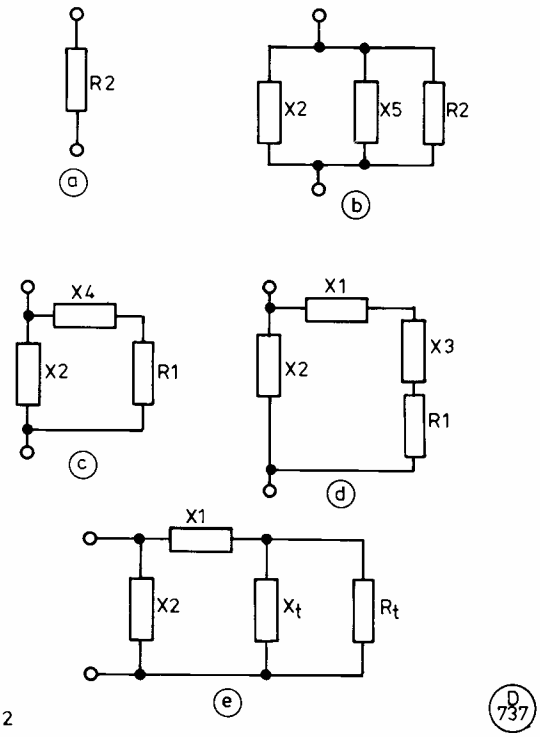


Fig. 2

Fig. 2. Progression to simple network. The equations which govern each stage are:

$$X_2 = -X_5, \qquad R_1 = \frac{R_2 X_5^2}{R_2^2 + X_5^2},$$

$$X_4 = \frac{X_3 R_2^2}{R_2^2 + X_5^2}, \qquad X_4 = X_1 + X_3,$$

$$X_3 = \frac{XtRt^2}{Rt^2 + Xt^2}, \qquad R_1 = \frac{RtXt^2}{Rt^2 + Xt^2}$$

Fig. 2 shows a progression from a single resistor to a network of impedances. If the equations given in Fig. 1. are used then each circuit is equivalent. The first stage is a simple resistor. Next, two reactances equal in size but opposite in sign are added; one of those reactances is then combined with the resistor in a parallel-to-series conversion. The reactance found is then split into two, a portion going into a series-to-parallel conversion with the resistor. The form is convenient because any transistor's input or output can be approximated as a resistor in parallel with a reactance. Therefore the values of X1 and X2 can provide the values of inductor and capacitor required to design an impedance transformer to match such a device to a purely resistive source or load.

The equations relating all the components in Fig. 2 are given in that Figure's caption. It is a simple matter to manipulate these equations to cancel out various components, leaving the equation set in Table 1. It can be seen that if Xt and Rt, the transistor's parameters (these are given in the relevant manufacturer's data sheets) and R2, the source or load resistance is known, then X1 and X2 fall out of the chain. An example may make things clearer.

The BLY62 requires 1W in to give 5W out at 145 MHz, and its input can be approximated as 4.6 ohms in parallel with 7.1nH. If this is used, for example, as the first stage in a PA for a 1W output transmitter, then this must be matched to 50 ohms resistive to suit the transmitter.

Turning to Table 1, with Rt = 4.6 and Xt = +6.5,

X3 = +2.173
R1 = +3.055
X5 = +12.755
X2 = −12.755 = 86pF at 145 MHz
X1 = +9.803 = 10.76nH at 145 MHz.

The circuit is therefore as shown in Fig. 3.

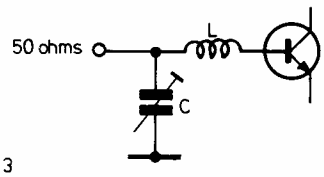


Fig. 3

D 738

Fig. 3. Input matching to BLY62 at 145 MHz, worked example.
L = 10.79nH C = 86pF.
Bias arrangements would depend on mode, etc., and are not shown.

j Notation

A more rigorous and helpful description of an impedance is got by handling resistance and reactance in one composite expression. Thus a resistance, R, in series with a reactance X is expressed R + jX. Note that the components have to be in series for this to hold true.

Fig. 4 shows a device Rd + jXd with an impedance transformer X1 and X2; *j* is necessary to label the quantity associated with it as a reactance, and although it is a label it can be treated as if it were an algebraic unknown. The impedances can be summed exactly as resistors, *i.e.* R = R1 + R2 if in series, and 1/R = 1/R + 1/R2 if in parallel. The reader is invited to check the expression given in the caption for the total effective impedance.

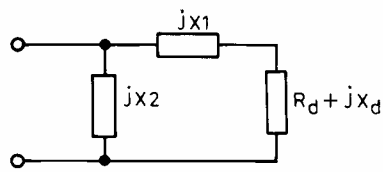


Fig. 4

D 739

Fig. 4. Network of inpedances. Total impedance = jX_2 in parallel with Rd + j(X_1 + Xd)

$$= \frac{jX_2Rd + j^2X_2(X_1 + Xd)}{Rd + j(X_1 + Xd + X_2)}$$

The expression is simplified by ordinary algebraic manipulation and by letting $j^2 = -1$; *j* is therefore a number which your calculator will tell you can't exist, but, as the reader will discover, pretending that it does can be very useful. The expression boils down to the form given in Table 2 and then (if one assumes that the network can be equivalent to a simple resistor and no reactance) to the equations which ultimately derive X1 and X2. Using these to repeat the worked example of the BLY62, the Rt, Xt, must first be converted to the series form, therefore Rd = 3.055 and Xd = +2.1725. The intermediate stage A = 11.9757 and so X1 = +9.8032 (10.76nH), and X2 = −12.755 (86pF) as before.

Table 1

Simplified "Progression" Equations.

$$X_3 = \frac{XtRt^2}{Rt^2 + Xt^2}, \qquad R_1 = \frac{X_3Xt}{Rt},$$

$$X_5 = \sqrt{\frac{R_2^2R}{R_2 - R_1}}, \qquad X_2 = -X_5$$

$$X_1 = \frac{R_2^2X_5}{R_2^2 + X_5^2} - X_3$$

Table 2

Calculation of circuit values from Fig. 4 expression.

Fig. 4 Total Impedance =

$$\frac{-Rd\,X_2(X_1 + Xd) + X_2\,Rd(X_1 + Xd + X_2)}{Rd^2 + (X_1 + Xd + X_2)^2}$$

$$+ j\left[\frac{Rd^2\,X_2 + X_2(X_1 + Xd)(X_2 + Xd + X_2)}{Rd^2 + (X_1 + Xd\,X_2)^2}\right]$$

$$= R_{total} + jX_{total}$$

$$= 50 + jO \text{ (say).}$$

This assumption creates two equations, which simplify to:

$$50 = \frac{-Rd\,X_2\,A + X_2\,Rd\,(A + X_2)}{Rd^2 + (A + X_2)^2},$$

$$O = Rd^2 + A(A + X_2).$$

Let A = X_1 + Xd, then

$$A^2 = \frac{(50Rd - 2Rd^2) + \sqrt{(2Rd^2 - 50Rd)^2 - 4(Rd^4 - 50Rd^3)}}{2}$$

$$\text{and } X_1 = A - Xd\,,\ X_2 = \frac{-Rd^2}{A} - A$$

Q Factor

The Q factor of these circuits may be calculated by considering the effective series resistance on either side of the inductor X1. In the worked example the value of the resistance on the transistor side has already been shown to be 3.055 ohms. The series resistance on the other side works out to the same value, *i.e.*

$$R = \frac{R2.X2^2}{R2^2 + X2^2} \text{(from Fig. 1 caption),}$$

$$\text{so } R = \frac{50 \times 12.755^2}{50^2 + 12.755^2} = 3.055.$$

$$\text{Since } Q = \frac{X}{R} \text{ then Q in this case is 3.21.}$$

If the designer prefers a higher Q then this can be achieved by using a larger inductance than the calculated value of X1 would indicate and compensating for it by mounting a series capacitor. The circuit then becomes as Fig. 5.

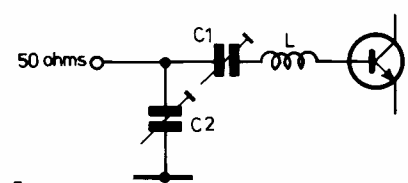


Fig. 5

D 740

Fig. 5. Higher Q input matching to BLY62 at 145 MHz, worked example.
L = 33.53nH, C_1 = 53pF, C_2 = 86pF, Q = 10.

Conclusion

There are a large number of possible configurations to use in transistor interstage and input/output coupling. Each has its advantages and disadvantages in various types of application, and only many years experience (for which there is no substitute) can guide the designer to the best choice. However, the procedures given here will provide a starting point and help with the analysis of different networks of components.

THE VISITUNE

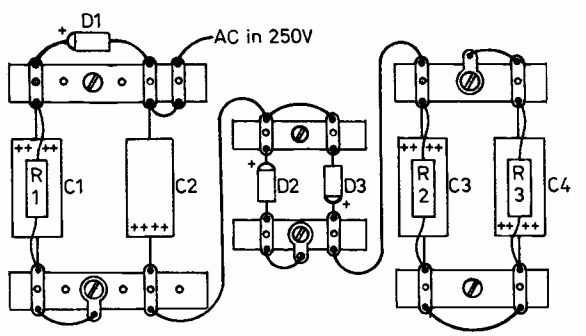
A MODERN AID FOR CORRECT TUNING OF RTTY SIGNALS

J. BROWN, G3LPB

THERE is a great need these days for ever more selective receivers, and even if we can get this, for some modes we still require an even more accurate tuning. Casting the mind back to the old AM days, we used to tune for the best audio quality. Then along came SSB, and even by tuning the BFO we still found it a difficult task; however, the advent of the product detector made it easier once again to tune simply for best audio. Progressing along the way, tuning of SS/TV was made easier by gadgets using 'magic eye' LED's or meters, all of which are in about the same category of usefulness: so — we turned again to tuning for best resolution!

Now, coming to RTTY we find a new problem, arising from the need to use narrow shift ('shift' was defined in an article by the author in the April, 1981, issue). The difference now is only 170 Hz, whereas in the earlier days we used 850 Hz shift which allowed a little latitude in tuning the receiver. In RTTY, we cannot "tune for best readout" — there are many things to consider, such as the shift being used by the other station, and also of course the rate of drive of our receiver tuning. These days, most stations possess a decent receiver or transceiver — the days of the HRO, AR88, and CR-100 are all but over, though they are still in some areas stalwarts of amateur radio. The writer has tried numerous methods to obtain correct RTTY tuning. One was the meter method, found to have snags; then two 'magic eyes', one for Mark and one for Space, which meant going almost cross-eyed during tuning. Thus, thoughts were turned to using an oscilloscope, which obviously had considerable advantages, though this implied the 'scope being tied up for this particular task and not being available for any other work without considerable disruption of the station.

The set-up given here is already known to some, but is probably new to many who have great need of a method to tune RTTY. Various circuits were tried, including transistor circuits, but the final design shown here is a complete instrument in itself, self-powered, needing only two (screened) leads for input and, of course, mains connection. The consumption is very small and it can therefore be allowed to run at all times when RTTY is in use. As far as RTTY goes, it is the most respected instrument in the shack.

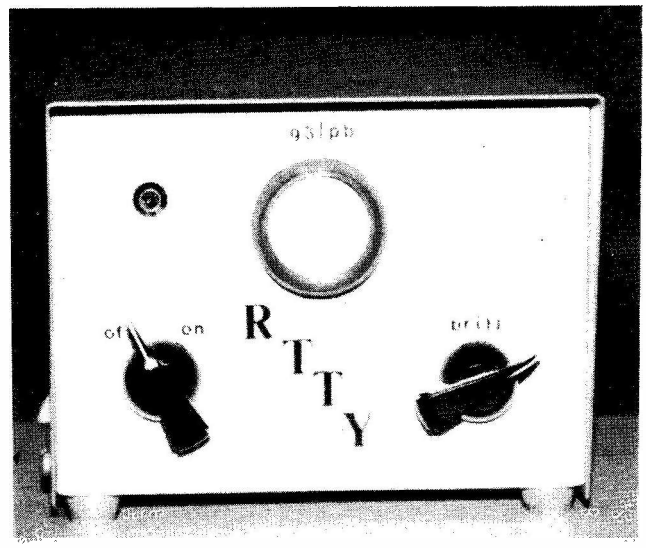


Solder tags taken to earth via screw and pillar

Fig. 1 POWER SIDE LAYOUT

D 713

Refers to Fig. 5.



The Visitune.

Circuit Description

See Fig. 8. A first look at the circuit may make some wonder "why this or why that". Perhaps we had better start by explaining some of the reasons. The thing was largely evolved around the selection of a suitable CRT, and one that is possible to obtain fairly easily. The writer had a few CRT's about: 2AP1, 3AP1, an old Mullard of unknown type, a DG7 by Mullard and a few others. All were tried, and there were problems with every one. EHT required was 800-1000 volts, which implied voltage tripling, which is a bit of a problem constructionally and component-wise. The type eventually chosen was a 1CP1 (or with a different phosphor, the 1CP31); a CV2302 or Mullard DH3/91 is equivalent.

On the other hand, if one gives a little thought to the matter of reversing PSU components to get a negative EHT, one can easily see ways of using one of the many small CRT's about; for instance, the VCR22.

Use of transistors as amplifiers, drivers and timebases were all tried; the best result comprised three transistors and was quite good, but of course generated another snag, in the need for either another DC supply or use of high resistors from the HT supply — or even high-voltage zener diodes.

Power Supply

After some thought it was decided to build a power supply first, Fig. 5, to see how decent EHT could be accomplished; the attack here was to utilise existing transformers and see how they would behave. An ex-TV pre-amp. transformer was ideal, giving some 240 volts DC after rectification at some 30 mA, and there was also a 6.3 volt heater winding capable of about 2 amps AC.

The power supply was built-up, *see* Figs. 1 and 3, using component strips (*RS Components* reference 433-781). They were modified by removing some of the little metal tags, so giving holes through which the strip could be mounted, obtained after cutting it to the desired size using a hacksaw. The method of mounting them on the base-plate is by the use of tapped

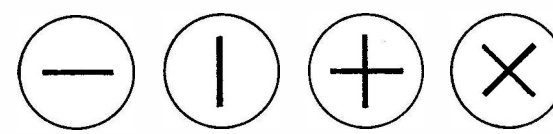


Fig. 2 TRACES AVAILABLE ON CRT FACE

D 714

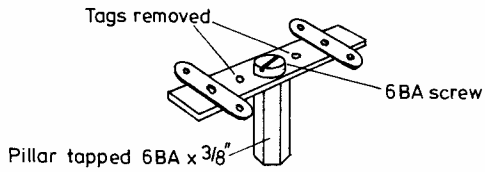


Fig. 3

hexagonal pillars — ⅜" long and with an internal 6BA thread right through. The idea is to drill the base and mount using a short 6BA screw, locking the pillar well down, and then to fit the mounting strip on top using more 6BA screws. This gives a good solid mount, insulated and stood-off nicely from the base. Such pillars come in plastic or plated brass — this design uses the latter variety.

Two alternative approaches to the power supply, with different transformers, are shown in Fig. 6.

After completing the power side it was run on dummy loads to ensure that all would be well in use. The resistors across the capacitors do to some extent regulate the supply voltage, and also serve to discharge the capacitors when the unit is switched off. A separate on/off switch was fitted so the brilliance control could be left alone; the original idea was to combine the brilliance control with the on/off switch to reduce the chance of burning the CRT face. In fact, the two resistors and a separate on/off switch see to the problem and enable the brilliance setting to be left alone. So — with the PSU working OK, thoughts were turned to the other requirements.

Visitune Construction

Returning to the TU itself, the ideal situation is where the output of the two filters *via* the discriminator are exactly equal, *i.e.* mark and space voltages are the same. In many TU's the take-off is by way of two high value resistors, resulting in the need for amplifiers to be high-impedance. An arrangement was tried using an FET and two other stages, which worked nicely, but of course required another DC supply. This would have meant another transformer, more cost and not a lot gained. So, rambling back through the years G3LPB recalled the days when he used an 813 in the PA for AM, with series-gate modulation by a 12BH7, the audio being amplified to the required level by a single 12AX7 (ECC83). A start was made trying to remember the values used, and after a long search a Brimar valve book of about 1955 yielded "the necessary", and we were away. A search-around presented a couple of double triodes, including a 12AX7. Base data is shown in Fig. 9.

The idea was to mount the valve (Fig. 4) so that leads to components were short and so that the latter were firm (no birds-nest for us!), and use was made of an *RS Components* mounting strip reference 433-680. Again this comes in standard lengths, so the desired length of eight pairs of tags was cut off, and mounted using pillars as before. The metal bracket was bent up from a bit of aluminium, and drilled as necessary for the valve-holder and

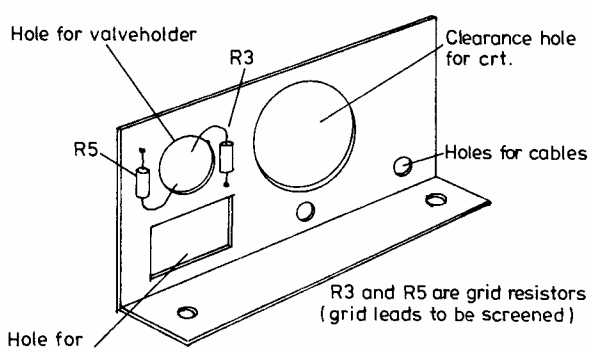


Fig.4 VALVE MOUNTING BOARD

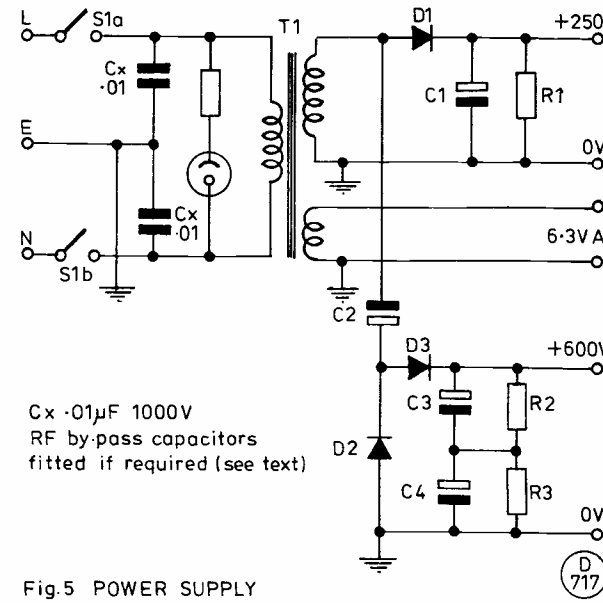


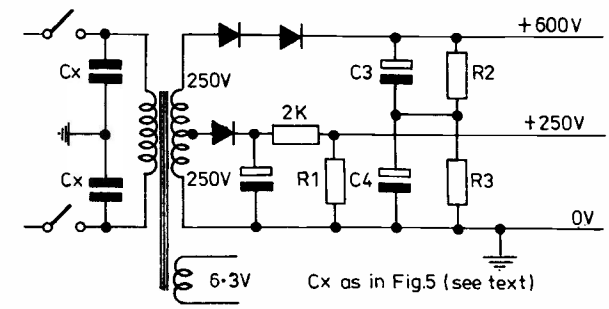
Fig.5 POWER SUPPLY

the mounting strip, together with a hold for the CRT, and its mounting. The latter was a capacitor clamp with some sponge rubber fitted to avoid smashing the CRT. As an alternative, a slight redesign and a *Terry* clip could be used to hold the CRT.

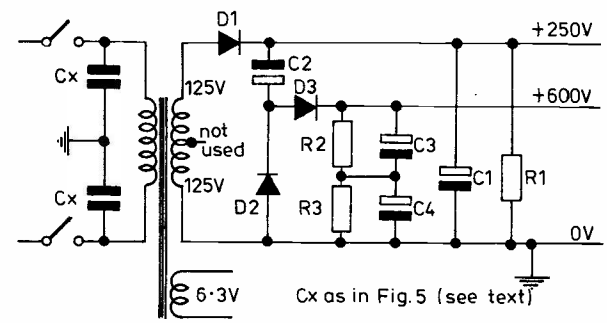
Wires were run from the holder to the components on the strip, and interconnections between components made at the back of the strip. Long wires were fitted as necessary before mounting everything up — *see* Fig. 7. The long leads are marked, and go to other parts of the circuitry — make 'em plenty long at this stage.

This lot, once made up, was again tested for long periods and found to be happy enough.

Next, we needed shift connections and voltages, so that the spot could be centred; also, we required to be able to make due allowance for the different output from different TU's, so gain potentiometers were incorporated in the circuits. Thus we had two gain controls, and two shift controls, one of each for mark



(a) Using a 250-0-250V Transformer



(b) Using a 125-0-125V Transformer

Fig. 6 ALTERNATIVE POWER SUPPLIES

Table of Values

Figs. 5 and 6

D1, D2, D3 = BY127 silicon or equiv.
C1, C2 = 16 μF, 300v.
C3, C4 = 32 μF, 350v.
R1 = 120K, 2W carbon
R2, R3 = 270K, 2W
Transformer = *see* text
C_X = *see* text
Also: mounting strips, pillars, nuts and bolts.

Fig. 8

R1, R4 = 1M
R2, R6 = 220K
R3, R5 = 2K2
R7 = 2M2
R8, R9 = 82K
R10, R11 = 1M
C1, C2 = 0.01μF
C3, C4, C7, C8 = 0.005 μF, 1000v.
C5, C6 = 0.01μF, 500v.
C9 = 0.001 μF, 1000v.
RV1, RV2 = 500K
RV3, RV4 = 1M
RV5 = 500K
V1 = 12AX7 and holder
CRT = 1CP1, also *see* text

Note: RV1 to RV5 are carbon pots, preferably with insulated spindles. *Also required:* one 8-way double-ended mounting strip; mounting strips for components on the power side; pillars, solder tags, nuts and bolts.

Most components available from *J. Hartley*, 78B High Street, Bridgnorth, Salop. Valves and CRT's available from *Zaerix Electronics Ltd.*, 46 Westbourne Grove, London W2 5SF.

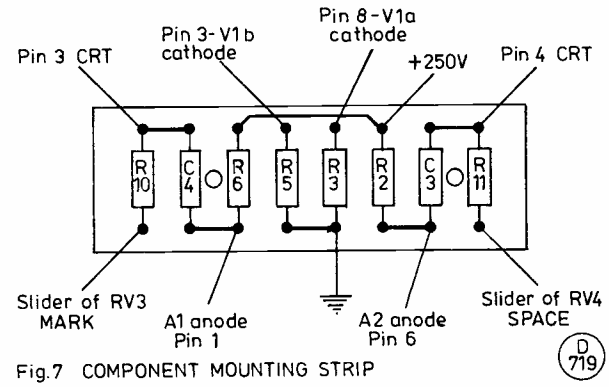


Fig.7 COMPONENT MOUNTING STRIP

Refers to Fig. 8.

and the others for space. It was intended that these, which would not need attention very often, should be fitted at the back of the case; and also have the two inputs (mark and space) in screened connections, along with the mains-lead input, all on the back. A case was hunted for; the writer ended up by making one, but the one shown is an *RS* case (reference 509-709) which is reasonably cheap, and though not perfect for the task fills the bill quite nicely. Various panel layouts were tried, the outcome being as shown. As already indicated, all the rarely-used controls are at the back; the pots can be normal volume controls or even ex-TV set ones will serve, while the screened inputs are the so-called phono-sockets.

This leaves the front panel free for the CRT face, on/off switch, and the brilliance control — the mains neon was an afterthought to remind us when the shack lights were put off that maybe we'd left the RTTY gear switched on, being all driven from the TU mains switch.

Having mounted up everything mechanically, it was then taken all to bits again! The case was cleaned off, and given a few coats of aerosol undercoat, allowing time to dry off completely between coats (this refers to the 'bottom' which includes front and back panels — the other half is already adorned with blue PVC). A final top coat series was applied, in white; one mounting hole was cleaned off to guarantee a good earth, between the bracket and the case. The front panel and back were now lettered. All this was done *after* the holes had been drilled, not forgetting those for the four rubber feet on which the case sits.

After the lettering was completed, using *Letraset*, it was all given a coat of lacquer which keeps the *Letraset* in good condition and prevents the case finish from getting to look scruffy too quickly.

The mounting bracket was also stripped and given the same treatment with undercoat and white finish as the case — one could even *Letraset* the component references in if desired.

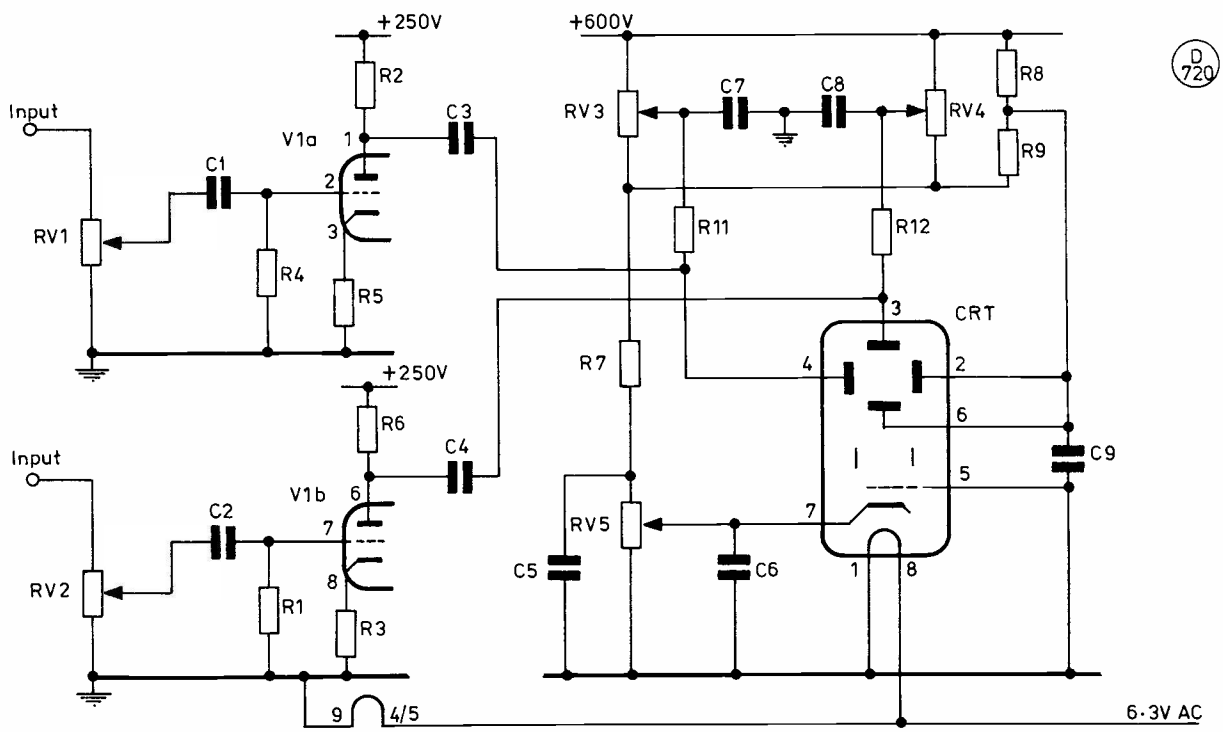
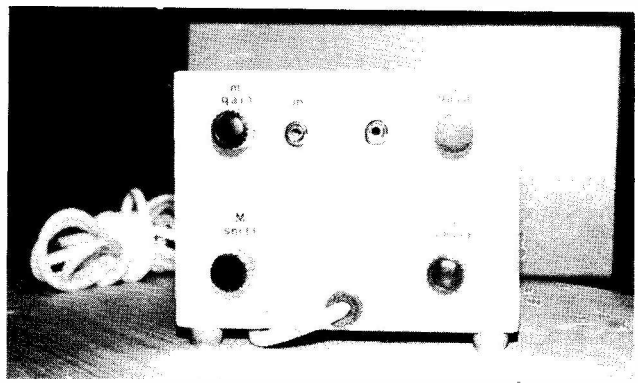


Fig. 8 CIRCUIT OF 'VISITUNE'



Rear view showing input sockets, gain and shift controls.

Re-building

Now, to put it all together. This must be done with care, remembering we have 610 volts of EHT at the high-voltage pin of the smoothing capacitor to ground, plus 250 volts DC for the valves, and 6.3 volts AC for the heaters. First fit the bits on the back side, the pots (watch you get the right values in the right places!), the mains lead with a P-clip or other restraint to stop it being pulled out of the case again and rubber grommet to avoid chafing, the two input sockets, and the four feet. Turn now to the front and fit the Brilliance pot, the on/off switch and the neon. Now the bracket, after first remounting the various bits. A tip here is that if you are careful, the valveholder, the tagstrip and all the components and wiring will all come away as a piece, and they can go back likewise.

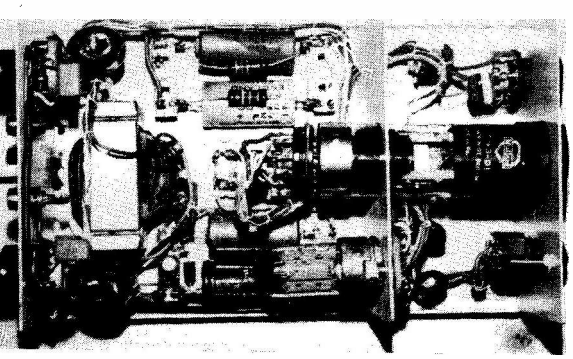
Now the power transformer, and the strip of PSU bits already wired-up are assembled in their allotted places. Make sure those pillars are tight as some of them may be providing earth connections. Now we must wire up what is left, and this is where the significance of the long wires comes in. If you arrange them to travel most of the way along the same route, you can end up with a nice looking cableform if you care to use some lacing-twine or the more modern cableform ties. If you lace, don't forget that where you leave one tie for the next, the departing piece of string should go *under* and on, so that if you have to unlace a part later on the whole cableform won't fall apart.

Thoughts

If you haven't built anything with a valve or CRT for a long time (or perhaps never), don't forget the voltages. The capacitors in the doubler circuit need care, both as to polarity of wiring and how they are mounted. While you have the "care" idea in mind, check over all the soldering, for dry joints, and 'spikes' of solder which might be the cause of a problem. And, of course, those valve and CRT pins are counted from the underside going round clockwise from the marker point.

The decision to use this particular CRT is simply that it is an ideal size for the job, and is current. Additionally, it is also designed to run with a positive supply on the anode, and it is self-focussing. The transformer defines the power supply, and the use of the valve arrangement helps to hold the volts on the CRT from going too high for comfort. The valve heater on the 12AX7 and similar double triodes is a 12.6 volt one with a centre-tap, so you can either run it at 6.3 volts or 12.6 volts.

If you have a negative-supply type CRT, use the PSU's shown in Figs. 5 and 6 with diodes and electrolytics reversed.



Looking inside the Visitune from the top.

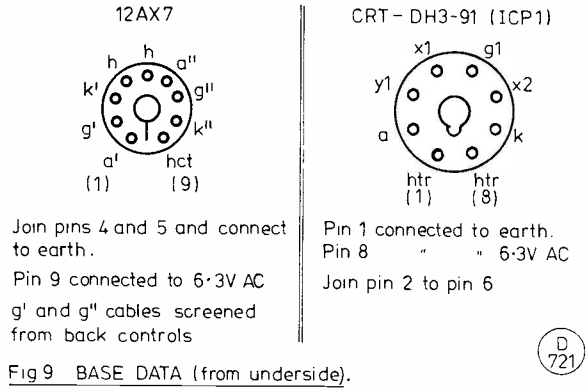


Fig 9 BASE DATA (from underside).

Setting-up

Check the wiring again, and check that the HT line and the EHT line aren't wired to an earth tag! Seriously, it isn't at all a bad idea to put everything together but leave the valve and CRT on the bench when one first switches on. If nothing "goes west" you can switch it off again, let the supplies discharge, and then plug in the valves and CRT. At least that way, if it blows up you'll have a fair idea where to look!

Wind up the brilliance and centre the spot, then wind down the brilliance to a reasonable level. Now plug in the leads from the 'scope connections of the TU to the two sockets at the back. If the spot won't centre, defer plugging in the TU outputs until you find why the spot won't play; most likely R8 (or R9) will need to be checked to see if it is what it appears to be . . . or a wiring error.

Now you've got it right, the two leads from the TU are plugged in. The spot should start leaping madly about, the degree of madness being affected by receiver tuning, Visitune gain settings, and of course receiver gain control setting. All this says your handiwork is at least trying. Now, switch on the receiver or station crystal calibrator; remove one input to the Visitune, and tune the receiver until the calibrator appears both audibly and as a trace on the CRT — it should be a line, and we can now twist the CRT round until the line is vertical. Adjust the gain of the receiver and the Visitune such that the receiver is set as you normally run it and the Visitune gain is set to make the line fill the screen. Now, without touching the receiver or the TU in any way, unplug the input from its socket on the Visitune and transfer to the other socket. You should now have a horizontal line which you can set to just sweep the screen — thus the vertical line and the horizontal are of equal length for an equal signal. Call the horizontal Mark and the vertical Space, and plug the appropriate connections from the TU into the proper sockets for this convention.

Now you just tune so that the lines are equal in length, *see* Fig. 2. Fig. 2(d) shows what happens if you swing the CRT through 45 degrees — but the writer prefers the cross as it is easier to remember which one is which.

Conclusions

The Visitune has been used with just about all the TU's there are — BARTG, SRD1, ST5, ST6, the M.K. set-up, all with equal success. All the bits and pieces are available. C_x on the mains side need only be fitted if one has an RF problem — they should be marked at least 1000 volts DC or 250 volts AC.

CLUBS ROUNDUP

By "Club Secretary"

AN enormous pile to get through this time – so we'll have to be as brief as possible! However, a quick moan is indicated on the subject of the sending-in of data for this piece. If you send in a newsletter (and we really do enjoy reading them), please be sure that the dates, venue, Hon. Sec's address are all there, clearly marked; and of course the programme detail if you have it. If we are to have more than one newsletter in the month under review, please indicate which is the most recent. We had three of one club's newsletters this time, and it took quite a time to sort out the latest gen.

The Mail

Acton, Brentford & Chiswick first; October 20, G30JX on his experiences with the Argonaut 515, at Chiswick Town Hall in Chiswick High Road.

Addiscombe are mainly a contest club; find them in their new base, the Woolpack, 154 Gloucester Road, Selhurst, Croydon, every Tuesday from about 9 p.m.

Ashford, in Kent, is well settled in its hideaway at the top of Hart Hill, where they foregather on Tuesdays. None too easy to find, they say, so we suggest you contact the Hon. Sec. first for directions. He is in the Panel.

A talk and film by G8AGE on D/F Hunting is the subject for **Aylesbury Vale** on October 6, at Elmhurst Youth Centre, Fairfax Crescent, Aylesbury, with talk-in on S20 and the local repeater.

A.R.M.S. – one for the mobile operators, with all sorts of things to offer. Details from the Hon. Sec., at the address in the Panel.

This month sees the start of the RAE classes which are being run by **Axe Vale** group. They have Hq at the George Hotel, Axminster, on the first Wednesday in each month.

Monday to Thursday evenings are all used at **Barking,** with the main session on Thursdays; the venue is Westbury Recreation Centre, Ripple Road, Barking.

At **Bishops Stortford** the group are to be found in the British Legion club at the top of Windhill on the third Wednesday of each month.

For **Brighton** it's junk sale time: October 7, at 47 Cromwell Road, Hove, where the group meeting is on alternate Wednesdays.

B.A.R.T.G.: if you operate RTTY, as SWL or transmitter, this is the group for you, and if you are thinking of starting, even more so! Details from the Hon. Sec. – *see* Panel.

We could say the same words, applied to amateur TV, for **B.A.T.C.** They will be having an Exhibition and Open Day on October 4th, at the Post House in Leicester. Admission free, and all welcome — and there is good parking nearby.

Bromsgrove now, at Avoncroft Centre, for the main date of October 9 (a talk on UHF), with the informal at the Parkgate Inn slated for 27th.

The publicity lad at **Bury** can certainly turn out a fair bit of lettering; and it tells us that they are to be found on Tuesdays at the . . . oh, dear, he forgot to say! Luckily our records come to the rescue and say Mosses Community Centre, Cecil Street, Bury. Incidentally, the 'main' meeting is usually the second in each month.

Cheltenham have a place at the Old Bakery, Chester Walk, Clarence Street, which we believe is behind the library. October 1 is a junk sale, 16th a natter, and on 30th they have a coach trip to Donington set up.

A belated congratulation comes from the **Chesham** scribe to all members who passed the May RAE. They get together on Wednesdays at Chesham's Whitehall Centre.

October 6 is club-night for the **Chichester** lot, at Lancastrian Wing, Chichester High School for Boys, Basin Road, Chichester; at the time of writing no details, but doubtless by the time this appears the new committee will have something sorted out.

Chiltern are still based on the canteen at the John Hawkins' furniture factory, Victoria Road, which is off the A40 Oxford Road in High Wycombe. The next date we have is October 28, when Werner Kolterman of British Telecom will be talking informally about radio interference.

Every Friday evening the **Clifton** lads foregather at the New Cross Inn, which lies at the junction of New Cross Road and Clifton Rise, New Cross, London. On October 2 they have some films, and on 9th the AGM.

Now to **Conwy Valley.** This is the correct, Welsh, spelling of what we Gs would call Conway Valley, as the Hon. Sec. kindly confirmed for us. They have a very nice Hq at Green Lawns Hotel, Bay View Road, Colwyn Bay, where they will be found on the second Thursday of each month.

Cray Valley have a junk sale on October 1, and a natter on 15th, both meetings being at Christchurch Centre, High Street, Eltham.

Don't forget MCC, October 17/18! Rules in September issue, p. 379. Get in and have a go; and don't forget a challenge to the gang up the road – show 'em who's best!

Another junk sale – they are popular this month! – is at **Crystal Palace** on October 17; the venue is Emmanuel Church Hall, Barry Road, London SE22.

At **Derby** the Hq is the top floor at 119 Green Lane, Derby, where they meet every Wednesday. Particularising, October 7 is a junk sale, and on 14th there is to be a talk and demonstration of fast-scan TV. G4AFJ takes up October 21, to discuss his own personal views on aerials, leaving October 28 for G3OUF to talk about RSGB.

Next we have **Dudley,** and Dudley Central Library is the club Hq. October 13 is the AGM, and on October 27 they are going to visit the motorway control centre at Great Barr.

We like the way they have the committee meetings at **Edgware** – all present but the Agenda! Nevertheless, to be able to admit to a hang-up of that sort indicates the members are happy enough with the results, and that's what matters! October 8 is an informal, and on 22nd G4HMD will be talking about his QRP activities.

Ex-G, we hardly need to say, is the club for those who were born in UK, and now resident abroad; and this includes amateurs with British parents or who have become naturalised UK citizens. The UK Hon. Sec. is the chap to get in touch with, and his name and address is in the Panel.

A full programme for the rest of the year comes in from **Fareham,** and from it we see that on October 7, the microprocessor and RTTY will be discussed by G4FJO, and on 14th the G8VOI audio filter project takes over. A natter is down for October 21, and on 28th G8HND will be talking about "Making Bits for 10 GHz". All this, and much more, at Room 12, Portchester Community Centre, at 7.30 p.m.

Now **Farnborough,** where as far as we know they still have a place at the Railway Enthusiasts Club, Access Road, off Hawley Lane. October 14 is down for a pre-AGM discussion, and on October 28 there is the "Ron Ham" evening.

Our next stop is at **Gloucester,** where they head for Hq every

Names and Addresses of Club Secretaries reporting in this issue:

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THANET: I. B. Gane, G8HLG, 17 Penshurst Road, Ramsgate, Kent. *(Thanet 54154)*
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TORBAY: H. Davies, G4DZH, 18 Bowland Close, Paignton, Devon, TQ4 7RT. *(Paignton 523063)*
TYNESIDE: J. Dingwall, G4ILW,. c/o Amateur Radio Society, Community Centre, Vine Street, Wallsend, Tyne & Wear.

UK HORIZONTAL FM: A. Dorsett, G8YLH, The Coach House, Dogmersfield Park, Dogmersfield, Hants. *(Aldershot 850678)*
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YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset. *(Yeovil 24956)*

Thursday evening. Hq is at Chequers Bridge Centre, Painswick Road. For more details, contact the Hon. Sec. – *see* Panel.

At **Guildford** they have the second and fourth Fridays at the Model Engineers Hq in Stoke Park. We don't have the October data, for which we must refer you to the Hon. Sec. at the address in the Panel.

Of the **G-QRP** club what can we say? Over 1100 members

and – the final accolade – a GW3COI cartoon on the front page of SPRAT, the club magazine. If you like working with flea-power, this is the club for you. Details, of course, from the Hon. Sec. – *see* Panel for his address.

The **Harrow** newsletter puts all the essentials on the front cover – Friday evenings at Harrow Arts Centre, Harrow Weald.

Harwell have their meetings on the third Tuesday of each month, at the Social Club of AERE, Harwell. More details of this group – membership isn't restricted – from the Hon. Sec. – *see* Panel.

On we go to **Hereford,** where they are based at the County Control, Civil Defence Hq, Gaol Street, Hereford on the first and third Fridays of each month.

We have already mentioned BATC, and now we come to the **Home Counties Amateur Television Group,** who are going to meet at the Swan Hotel, High Street, Iver, on the fourth Wednesday in each month. (G3KFE recalls that he was first licensed /T, and he wonders why local ATV groups have not been formed before).

Ipswich have booked October 14 and 28 at the "Rose and Crown" at the junction of the A45 Norwich Road and Bramford Road; the former is for planning their J-O-T-A activity and the latter is set apart for G3XAP to talk about aerials.

If you want to know anything pertaining to amateur radio in Eire, then you have to get in touch with **IRTS**; for details of the current meetings schedule we must refer you to the Hon. Sec. again – his address is in the Panel.

Change is the word for the **Isle of Wight** group, who changed their officers round at the AGM. They are still to be located, though, at the Unity Hall, near the "Sloop Inn", Wootton Bridge, on Friday evenings.

Jersey are based at the Communicare Centre, St. Brelade, on the second Wednesday in each month; and in October they are also to take part in J-O-T-A at the Scout Hq Tower, St. Ouen, signing GJ4HXJ.

Now we must head north, to **Kilmarnock & Loudon,** and note that they are now foregathering every second Tuesday, at the Buchanan Centre, Riccarton, Kilmarnock.

If you join the **Liverpool** lot, you can also join their RAE course – a good deal in these hard times! The gang are at home to visitors every Tuesday evening, at the Conservative Rooms, Church Road, Wavertree.

Loughborough are based on Brush Sports & Social Club, 18 Fennel Street, every Friday evening, and visitors are welcome.

The new venue for the **Loughor** group is Loughor Scouts Hall, fortnightly on Tuesdays. No details are yet to hand on the programme, for which contact the Hon. Sec. — *see* Panel.

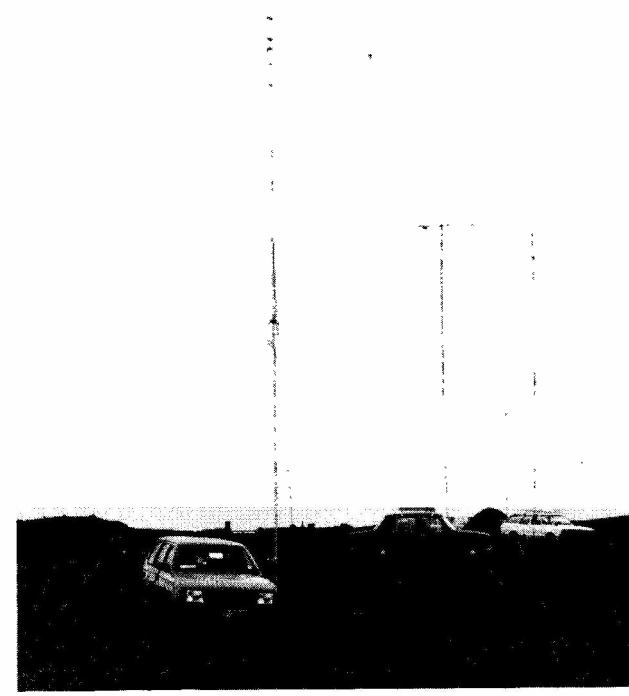
Louth are in session on October 13, for a constructional evening, which will have been discussed at an earlier meeting. The Hq is understood to still be Pleasant Place, off Ramsgate, Louth.

A brief note from **Maidenhead** tells us that on October 1 there is to be a talk on "Locator Systems" by G4ANB, while on October 20 there will be a talk and demonstration by *CQ Electronics*. The Hq is at the Red Cross Hall, The Crescent, Maidenhead.

"Speaker's Choice" on October 1 lets John Knight have a free hand at **Meirion.** As to the 'where' – try the Ship Hotel in Dolgellau.

The front page of the **Midland** newsletter this month features the minutes of the first ever committee meeting in June 1931 – fifty years ago. Now they have their own place, at 294A Broad Street, Birmingham (facing the Repertory Theatre). For the rest we must refer you to the Hon. Sec. *see* Panel.

Now we turn to **Mid-Sussex,** and we admit to missing their old newsletter cover picture of the Marle Place Hq, which is in Leylands Road, Burgess Hill. October 1 is the next meeting date, when G4GKO will be talking about his travels.



The Sutton and Cheam Radio Society 1981 VHF NFD, at Leek, Staffs (ZN71). Above, Brian Cannon, G8DIU, operating the 23cm. station (G3DCZ/P), comprising a TS-7OOG, Microwave Modules transverter, and a G8DIU home-brew 40-watt output PA using two 2C39A's. Below, the aerial array showing, left to right, 2m. station (G4CQR/P), 4m. station (G4BOX/P), 23cm. station (G3DCZ/P) and the 70cm. station (G4ADM/P).

Norfolk foregather at Crome Community Centre, Telegraph Lane East, Norwich, where they are to be found every Wednesday evening.

A problem has hit the **North Bristol** gang who have outgrown their Hq at S.H.E.7, Braemar Crescent, Northville, Bristol 7, where they meet on Fridays. As a result, they have had to close their ranks against new members at least for the time being.

Wednesdays at the Bradshaw Tavern, Bradshaw, Halifax, is the form for **Northern Heights**; we don't as yet have the new season's programme, as they seem to have a minor hang-up in that area – but doubtless by the time you get to read this, all will have been resolved.

If you want to find the **Plymouth** gang, you must look for Paradise Road, Millbridge, and then Tamar Secondary School; alternate Mondays is the routine.

October in **Pontefract** looks like: October 1 a talk on microwaves by G3ZIV, October 9 (Friday) a disco dance in aid of Club funds; and on October 15 a talk by G4KYL and her OM, G4AAQ, on "American Ham Radio", illustrated by slides. The Hq is at Carleton Community Centre, the room being on the top floor.

We mustn't forget to mention **R.A.I.B.C.**, the group for those of our hobby who are blind or invalid. If you know someone in those two categories, get them signed up; and, while you are about it, sign up yourself as a Supporter or Representative, send a donation, or get the club to have a whip round for R.A.I.B.C. funds. The contact of course is the Hon. Sec. – *see* Panel for her name and address.

R.A.O.T.A. membership is open to all those, whether licensed amateur or SWL, who can prove activity in our hobby over a period of 25 years; for an SWL a QSL card would be adequate proof. Details from the Hon. Sec. at the address in the Panel. As an aside, the club call is G2OT, and they have a net on Eighty SSB at 11 a.m. on Thursdays, 3740 kHz.

R.A.T.E.C. is a club in the South Manchester area which has been formed to promote technical involvement in amateur radio, their Hq address being the British Legion, Moor Lane, Woodford, Cheshire. For programme details, please refer to the Hon. Sec. – *see* Panel.

At **Reading** you have to look for the B481 Reading-Nettlebed Road, and then Emmer Green, where their Hq is a pub called the "White Horse". October 13 is down for a showing of the ARRL film "The World of Amateur Radio", while on 27th they will be seeing the latest products from Wood and Douglas Ltd.

On to **Reigate** and the third Tuesday of each month at the Constitutional and Conservative Centre, Warwick Road, Redhill. For programme, we must refer you to the Hon. Sec. – *see* Panel.

The Annual General Meeting of the **R.A.F.A.R.S.** is to be held at R.A.F. Locking on Friday November 6; all the members are cordially invited, and talk-in will be provided on S22 and the 'BC repeater.

Having mentioned the R.A.F. we mustn't forget the **Royal Navy:** get the details from the Hon. Sec. – *see* Panel. Membership is open to all who are serving or ex-R.N., and associate membership is open to those of the mercantile marine or foreign navies.

For news of everything that happens in A4-land, the **Royal Omani** Radio Society Hon. Sec. is the chap to ask; his address is in the Panel.

Closer to home, we have the **Saffron Walden** group, who are in session on the third Wednesday of each month at Debden Village Hall.

Although we have a recent letter from the Hon. Sec. of **Sefton**, we don't have the essential details of the programme. However we do know they have their base at Liverpool Prison Officers Social Club, Hornby Place, Hornby Road, Walton, Liverpool 9, where they foregather fortnightly on Wednesday evenings.

The **Silverthorn** group have Hq at Friday Hill House, Simmons Lane, Chingford, London E4, where, oddly enough, they meet every Friday.

On up to **Skegness**, and here we are advised that the locals head for the "White Swan", Burgh-le-Marsh on the first and third Tuesday in every month. This is another group who have an R.A.E. class planned; details from the Hon. Sec.

South Birmingham have their main meeting on the first Wednesday in each month, the lecture to start prompt at eight, so notices are read five minutes before this; the Hq is open every Thursday and Friday evening. As to the whereabouts, try Hampstead House, Fairfax Road, West Heath, Birmingham.

Southdown now, and the first Monday of the month, at Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne; October is a junk sale, and November is down to Mrs. Ham to talk about "Codes and Cyphers".

The club serving the Dover area is called **S.E. Kent YMCA**, and the Hq is naturally enough at the YMCA, Leyburne Road, on Wednesday evenings 7.30 for 8 p.m. October 7 is a natter with emphasis on SWL topics, and on 14th there is a talk on weather forecasting. October 21 sees G3LCK talking about his view of amateur radio, and on 28th they have a slide show.

Looking at **Southgate** we note firstly that we must congratulate the Hon. Sec. for changing her G8 call to G4MCD. For the October meeting on the second Thursday, they are hoping for a talk on RTTY. The venue is St. Thomas Church Hall, Prince George Avenue, Oakwood, N14.

Stourbridge have the third Monday in every month, at Longlands School, Brook Street; the October meeting is to be a talk on Air Traffic Control by G8AIR.

The **Surrey** venue is at *TS Terra Nova*, 34 The Waldrons, South Croydon, on the first and third Monday. Thus on October 5, G30OHX will be giving his talk on TVI/BCI, and on 19th they have an informal, with the club rig on the air and whatever.

Deadlines for "Clubs" for the next three months —

November issue – September 25th
December issue – October 30th
January issue – November 27th
February issue – December 31st

Please be sure to note these dates!

Having two meeting places, as do **Sutton & Cheam**, is a bit confusing for your scribe, but this month they spell it out clearly: October 9 at Sutton College of Liberal Arts, and October 30, a junk sale at Banstead Institute, High Road, Banstead.

It's quite a while since we heard from **Sutton Coldfield;** they meet nowadays in the public library in Sutton Coldfield on the second and fourth Mondays, and we understand that most evenings have a formal programme, with visitors made welcome.

Thames Valley have their corporate being at Dittons Library meeting room, Watts Road, Thames Ditton, Surrey. The subject on October 6 will be Amateur Slow Scan TV, by G3CDK; a talk and demonstration.

On alternate Fridays, we hear, the Radio Club of **Thanet** congregate at Birchington Village Centre. No details of the programme are given but we understand this new club wouldn't say 'no' to a few visitors or prospective new members.

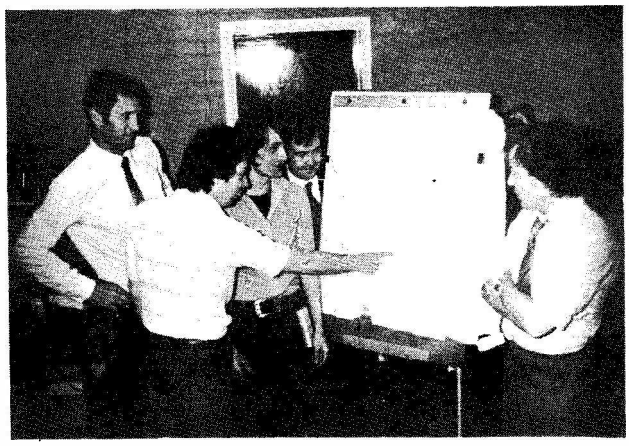
We have to hand the first issue of the new **Thornton Cleveleys** newsletter – quite a nice effort. They now have some 140 members, who are to be found on Monday evenings at the Leisure Centre, Cleveleys.

Torbay say they haven't a lot to report this time; however they still foregather every Friday evening informally, and also have a formal-with-lecture on the last Saturday evening of each month. Find them at Bath Lane, rear of 94 Belgrave Road, Torquay.

Tyneside's home is at the Community Centre, Vine Street, Wallsend, on Monday evenings. They have various activities set up, and a station to put on the air, not to mention making a 'thing' of helping newcomers to the hobby.

UK Horizontal FM Group again mention their contest, on October 18, details of which have been passed to G3FPK for *VHF Bands* mention. Details of the group can be obtained from the Hon. Sec. – *see* Panel.

University College of North Wales now, based on the UCNW, Dean Street, Bangor, Gwynedd. They are to be found in Room 216 around 1300, or whenever lectures get a bit



G4BEG indicates the coverage of the new 70cm. repeater, GB3VH, during a recent talk to Verulam A.R.C. members, at which he was assisted by, left to right, G8FPR, G8ATO and G4MES. On the far left, club chairman G3JKS.

wearing! The gang want to rope in all possible members, so get in touch with the Hon. Sec. for all the details *and* a free pint!

The **Vale of the White Horse** foregather on October 6, when G3NVO of Siliconix will be talking about VMOS FETs, but they are in the "White Hart" in Harwell village every Tuesday evening anyway. An interesting piece in their newsletter details G4ANB's activities with a bicycle and a hand-held portable rig!

October 27 sees G3ROO of the G-QRP club, talking to the **Verulam** chaps about SSB QRP working. They also have informal meetings on the second Tuesday of the month at the R.A.F. Association, Victoria Street, St. Albans. The main meeting already mentioned, is at the Charles Morris Memorial Hall, Tyttenhanger Green, Tyttenhanger, near St. Albans.

Wakefield have October 6 and 20 booked at Room 2, Holmfield House, Denby Dale Road; the former date is a natter and station evening, while the latter is a home-brew evening.

October 2 at **West Kent** is down for a talk on pulsars by Jocelyn Burnell, and on October 16 they have a talk on the measurement of SSB output power by G3ROO, followed on October 30 by the first part of a talk on colour TV. These are all at the Adult Education Centre, Monson Road, Tunbridge Wells; they also have informals on the Tuesday after each Friday date, which are at the Old Drill Hall in Victoria Road, Tunbridge Wells.

There are hints of possible change at **Wirral**, in the matter of the venue. This being so, we suggest a contact with the Hon. Sec. if you intend paying a first visit – his details are in the Panel. (Congratulations on the G4, OM!). October 7 is a practical demonstration of amateur radio equipment on the air, and on October 21 it is AGM time.

The **Worcester** Hon. Sec. says he isn't going to carry on after the AGM, but is willing to have his name in the Panel until the new chap is in contact – thanks! October 5 is down for G4BVY to talk about receiver performance, at the "Old Pheasant", New Street, Worcester.

Worthing meet every Tuesday evening at Pond Lane Amenity Centre, and have now a membership of above 100. It is also noted that they have the AGM during October, although the actual date is not mentioned.

October for **Yeovil** is quite interesting; October 7 sees G3MYM explaining what power output is, and on 8th they have the tape talk "World at their Fingertips"; October 15 is down for G3MYM again, this time to talk about modulation. October 22 sees a change of speaker, with G3DSS asking them "Why Balanced Mixers?", which leaves October 29 for a natter. The venue is Building 101, Houndstone Camp, Yeovil.

Finale

That's the lot for another month; the deadlines for the arrival of your news are in the 'box' in the piece as usual. The address is "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. See you next time!

More R.A.E. Courses

Stevenage and District A.R.S. are running two classes on Tuesday evenings, one for the December exam and the other for the May R.A.E. These classes started in September, but we received notification too late to publish with our main listing in the September issue. Anyone interested should contact Frank Collett, G3OVT, 8 Silam Road, Stevenage, Herts.

The same 'late arrival' story applies to the course being held at Marle Place F.E. Centre, **Burgess Hill**, West Sussex, on Tuesdays 7.30-9.30 p.m., which started Sept. 22nd. Further details from T. Carter, G3BPV, QTHR (tel: Burgess Hill 2501).

Special Event Station

Imperial College A.R.S. (G5YC and G8EYC) will be operating GB2IC at the Imperial College Freshers' Fair on 6th October. Operation will be on 15/40m. HF, and 2/4m. VHF. They hope to have calls from old members of the Society, but QSO's from anyone will be very welcome. Although Freshers' Fair (which introduces new students to the college societies and clubs) is the main reason for GB2IC, this callsign will be used from 1st to 28th October to introduce as many new students as possible to amateur radio. Contact G5YC, QTHR, for further details.

Silent Key

It is with great sadness that we record the death of Frank Rayer T.Eng (CEI) AIERE, G3OGR. As well as writing several books on amateur radio and allied subjects, many readers will know that Frank was a regular contributor to "Short Wave Magazine" over many years, his articles always being on very practical and well-tested projects — introducing many to the fun and satisfaction of home-building. He will be a great loss to amateur radio. We extend our deepest sympathy to his family, in their loss.

QUICK TWO-METRE GUTTER MOUNT ANTENNA

J. V. MOSS, B.Sc., G4ILO

MAGNETICALLY-mounted mobile antennas are popular for many reasons, for example, to allow the aerial to be removed from the car when it is parked in the street, or simply to avoid drilling holes in the bodywork. However there are occasions, particularly when one is in a hurry, when it is a nuisance to have to set up the antenna before driving off.

The antenna to be described costs next to nothing, particularly if junk box parts are used. It can be made in under half an hour, can be clipped to the gutter in seconds from inside the car, and performs as well as a commercial quarter-wave antenna.

Construction

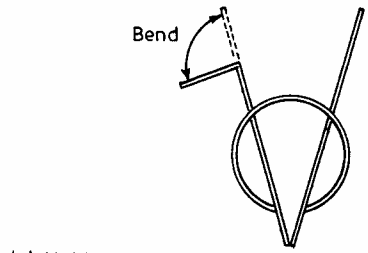
The mount is made from a large 'bulldog' clip, as can be obtained from an office stationers. The one used had 2½" jaws, but one with extra long 5½" jaws could be used for extra grip; these clips have a 7/16" hole in each 'ear'. It will be found that an ordinary in-line phono socket will locate in one of the holes, and can be clamped in position by tightly screwing up the plastic cover. One of the 'ears' is bent outwards through slightly more than a right-angle, as shown in Fig. 1a. The co-axial cable is soldered to the socket which is then clamped in position as described; a suitable RF connector is then fixed to the other end of the cable.

A 19½" length can be cut from an old mobile aerial, or a wire coat-hanger can be opened out and used; this is soldered to the centre connection of a phono plug. The outer ring of the plug should be made slightly oval with pliers to ensure a tight fit on the socket. Whip and mount are assembled and the antenna is ready for use.

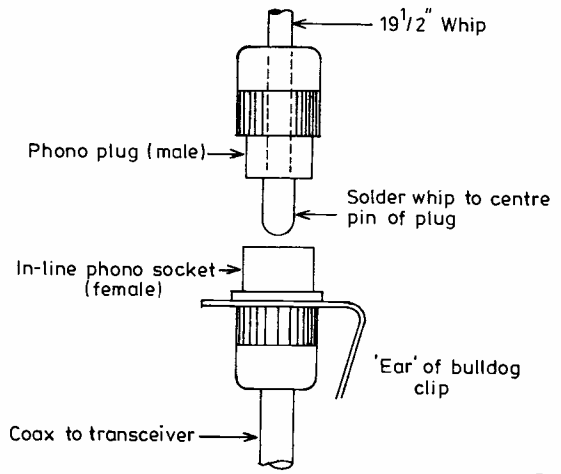
Use

The antenna is simply passed through the car window and clipped to the gutter; moving the clip from side to side should establish a secure position and the whip should not fall off at normal driving speeds. Clamping the cable by winding up the window provides additional security. If thin 52 ohm cable is used, it would be possible to pass it between the door and the frame, allowing the window to be fully closed. Such a short length (a few feet) would have negligible loss at 144 MHz.

With the prototype antenna, simplex contacts of 30 miles have been made, and repeaters 60 miles away accessed, using 2 watts of FM.



(a) Making the clamp



(b) Detail showing complete assembly

Fig. 1

D 706

Variations

Interchangeable whips for other bands could be made up using additional phono plugs. However I would hesitate to use longer than 20" whips at motorway speeds.

Owners of the popular IC-2E should note that a nut-fixing BNC socket intended for chassis mounting will fit the holes in the 'bulldog' clips: this would allow the use of IC-2E accessory aerials while mobile, although some way of water-proofing the co-ax connection would have to be found.

Finally, with the addition of a quarter-wave wire counterpoise, the aerial can be clipped to a window frame and used from /A locations.

"SOME GOOD TURNS"

A PRACTICAL METHOD OF PRODUCING A USEFUL TAPPED COIL

NOT infrequently in amateur radio one needs use of a large tapped coil, for such coils are extremely useful for aerial matching purposes or incorporating in aerial tuners. The use of physically small coils for such tasks is quite useless except perhaps in QRP sets-ups, and 'air-cored' types are generally to be preferred. To facilitate 'fussy' final turns selection it is convenient if every coil turn is tapped.

It is not easy to locate a source of supply of coils of this kind and even if a few are to be seen occasionally at mobile rallies the prices asked even for 'tatty' items can be quite off-putting to say the least, whilst the once fairly easily obtainable roller coaster units

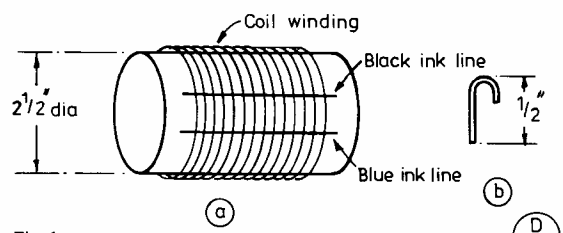


Fig. 1

D 732

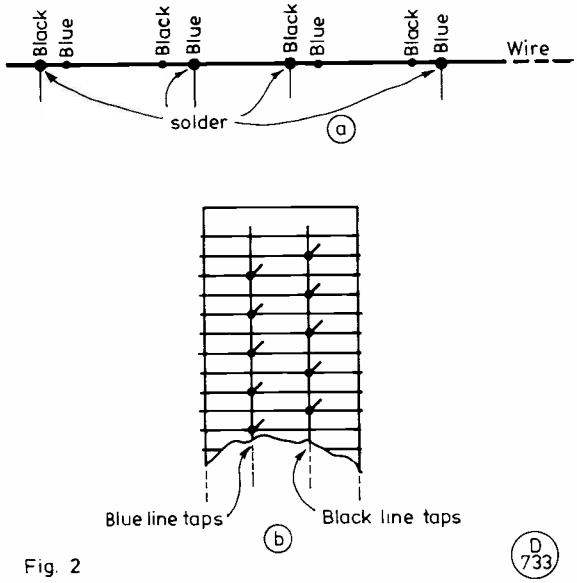


Fig. 2

have become a rarity, the rarity value being mirrored in the prices asked.

So you walk away still clutching your crisp unhurt £10 note — and why not? After all it is surprisingly simple to construct a good quality coil of the kind required for a very modest cash outlay. "But, tapping it at every turn — there's the rub", you say! But it's very easy really and here is a sure-fire way of doing it almost painlessly.

Let's assume the coil is to be approximately 65mm diameter and is to have about 30 turns and each one tapped. The first item to seek out is a bit of hard plastic drain pipe or other suitable 'former', and as the precise diameter is not critical in any way one of those oddments in the corner of the garage or shed that you thought would come in handy one day is now needed.

Now, off to 'Woolies', or somewhere similar, for some single-core insulated wire (sometimes sold as 'bell wire'); the conductor thickness may be around 21 *s.w.g.* and about 7m. will do, but make sure the insulation is white.

Back home, anchor one end to the 'former' and wind on the desired number of turns — and too many is better than not enough — as a trial, then holding the free end firmly draw two lines in parallel along the length of the coil insulation in biro, one in black and the other in blue (or other colour) and about 15-20mm. apart as in Fig. 1a, making certain that every turn is clearly marked in two places.

Now let the wire spring free and straighten out the concertina-shaped muddle! Next make up some plain copper wire tapping hooks something like Fig. 1b and get the soldering iron heated up.

Taking the coil wire which is now marked in two colours evenly spaced along its length, starting at one end nick the insulation with a sharp knife at a *black* spot, part the covering, crimp on one of the tapping hooks and solder. Move along the wire and locate the next pair of biro marks, and ignoring the black one nick the insultation at the *blue* mark and similarly solder on a tapping hook. Proceed along the wire soldering tapping hooks to *alternate* colours until — blessed relief — the end comes! A wire resembling that shown in Fig. 2a now results. Large blobs of solder are not needed but joints made both mechanically and electrically sound are absolutely essential.

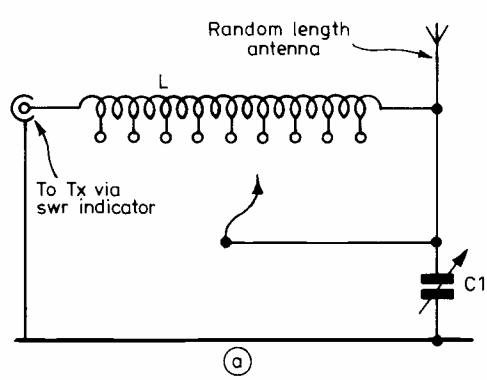
The next step is to hand your jersey or sweater to the nearest obliging female to have all those pulled threads made good, whereupon the coil can be carefully and finally rewound. Any dodgy joints will now show up like your sore thumb, for a little judicious wire twisting will be necessary here and there to make the taps stand free of the windings. When the final anchoring is done a rather neat, tapped coil results, the taps standing clear of each other. The wire insulation provides a small 'turns spacing' effect — *see* Fig. 2b — but if a larger turns spacing is wanted wind thin string with the coil turns; this can be finally removed and the spaced windings locked firm with *Araldite* or other suitable adhesive. The unwanted length of the 'former' can then be sawn off, all the tappings trimmed to the same length and the work eyed with satisfaction!

Making it Work

The uses for such coils are already well known and lie mainly in the field of aerial to transmitter matching or aerial tuning. Such a coil can easily handle the output of a 50W transmitter designed to work into a 50-ohm load. The addition of a variable capacitor of, say, 470pF (nominal) value and a small crocodile clip is all that is required to make the coil into a very effective 'L' match coupler, capable of matching the transmitter 50-ohm output impedance to a high impedance end-fed aerial wire of non-critical length; it becomes in effect an extension or addition to the transmitter pi-network. The circuit of Fig. 3a is a familiar one and suitable taps are selected for the band in use in conjunction with variable capacitor C1, using a decent SWR meter in the line to the transmitter which has earlier been adjusted for optimum results into a 50-ohm loading dummy; if the device is for use with a receiver only, no SWR indicator is needed and taps and adjustments are made to give maximum 'S' meter indications.

The tapped coil can also be used to load into a vertical aerial of, say, 6m. in conjunction with a good 'ground' system, using the coil as shown in Fig. 3b. The inner conductor of the 50-ohm coaxial cable can be placed initially at the second or third turn from ground, experimentally. With the transmitter already adjusted with the aid of a dummy load for optimum 50-ohm working the crocodile clip is adjusted a turn at a time until the SWR monitor reads low reflected and maximum forward power. This can clearly be time consuming when several bands are to be catered for, but later the croc. clip can be exchanged for a switch. A waterproof plastic case is needed for the vertical arrangement.

All that remains is to get the rig fired up on the CW patch of 'Ten', plug in the key and deal with any intruders with a juicy CQ call! It's a band worth looking after!



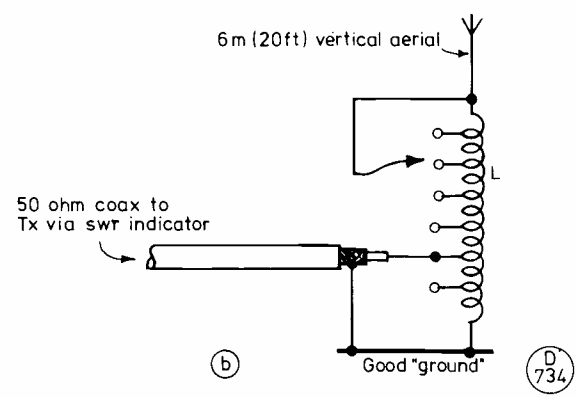


Fig. 3

"A Word in Edgeways"

Letters to the Editor

The views expressed here are not necessarily those of the Editor, nor should they be taken to represent any particular SHORT WAVE MAGAZINE policy.

Dear Sir – With reference to G3OHK's excellent suggestion in the September issue that G8's (and G6's) should have 28 MHz, I myself made this point in correspondence with Geoff Arnold, G3GSR, a few months ago.

His feelings that this band should be used under a novice licence, as in some other countries, permitting low-power CW operation are, I think, very sensible. This would keep the band busy and give us budding G4's some practice under actual operating conditions.

J. Acton, G8UXT

Dear Sir – It was with dismay and indignation that I read a proposal in "CDXN" (Sept.) to use Phone for shifting CB intruders from the CW section of the Ten Metre band. This way of thinking has already led to the formation of amateur vigilante groups in Yorkshire, which engage in CB-hunting using QRO SSB in the CW section. For all I know, this practice may be widespread.

Before we allow matters to descend to the level of chaos and confusion, let us consider the effect of using Phone in the CW end of the band. It contravenes existing and well understood principles of band planning, is inefficient, and causes irritation to CW operators.

If, as seems usually to be the case, QRO is used in order to deliver a strong ground-wave signal at several miles range, then the inverse square law will ensure that some neighbouring amateurs are going to get fed up before the CB intruders. Moreover, when the band is open, a lot more RF is going to come to ground where it is not wanted and may even lead to the Phone-using vigilante being mistaken for a CB-er himself.

The existing, unlicensed CB fraternity are well organised, not only to further their own aims but also to outwit the law; and this they do at present with impunity. I take the view that when the UK licensing procedures release genuine activity on to the top end of 27 MHz, there will be an increase of unlicensed 'breaker' activity in the nearest part of the spectrum – Ten Metres!

Amateurs must for their own protection make full use of Ten. As stated in "CDXN", CW test calls can be made to render affected channels uncomfortable for the intruders. Even so, if brain rather than brawn is to succeed, we need to adopt an organised approach which nonetheless stops short of the Phone vigilante concept. CW "Test" calls can be made distinctive for this purpose, perhaps by including strings of alternating dots and dashes (easy for the el-bug users!), or by the use of "QRM?" (literally, "is there interference on this channel?"). This would lead to an exchange of information about strength, direction and possible location of the intruder.

Particularly in those instances when ground-wave propagation is concerned, this procedure, supplemented by the use of the landline, can be used to involve other interested amateurs located close enough to the offender to be able to deliver a strong, localised signal without use of excessive power. There is a role for Phone, in the setting up of control nets to direct operations when the intruder problem is severe or complex.

The majority of CB intruders are well aware of what they are doing and take little heed of polite requests to move. Far better that they should come to understand that use of unauthorised bands invites a sharp and effective response.

G3RJV does well to draw our attention to the weapons in the CB-ers armoury (Sept. issue). He and I as, respectively, Secretary and Chairman of the G-QRP Club, are concerned with the use of minimal power to achieve the desired effect in communications. Many of the CB fraternity stand diametrically opposed to such views and must not be allowed to turn the lower end of 28 MHz into a battleground of the giants!

G. J. Bennet, G3DNF

Dear Sir – Recently, after a lapse of some years, I have returned to short wave radio as an SWL hoping to get my ticket shortly.

However, on tuning across the amateur bands I am often appalled at what I now hear. The standard of operating appears to be so low and seems to be exactly what is implied by the term 'amateur', and one can easily see how the late Tony Hancock obtained the material for his "Radio Ham" sketch.

For myself, my interests lie mainly in CW and RTTY, which at least require some real skills.

I happen to be the holder of a Flight Radio Telephony Operator's licence, and can well remember taking the exam. One had to pass, in addition to the technical exam, an operating test using simulated RT circuits, as well as being virtually perfect on procedures, in order to gain a licence. The use of standard phonetic alphabet was, and still is, mandatory.

When I hear the drivel coming over the HF and VHF bands I can understand why many of the public confuse CB-ers and radio amateurs. I am a mere amateur pilot, but when I use VHF (Aeronautical Bands), I try to be as professional as possible; in return I am treated by the professional operators as someone who can be relied upon to understand and pass messages of all types, including urgency and distress. Can the same be said of many amateurs? From the sounds on the amateur bands, personally I doubt it!

The very least an Amateur licence holder can do in return for the privilege of being allowed on the air in what is an increasingly crowded radio frequency spectrum, is to set an example to others in his standard of operating. That means at least using the standard phonetic alphabet (latest version!), standard procedures and sticking to the rules: because that is what places, or should place, radio amateurs in a class above CB-ers.

Not that I knock CB-ers. They have a place, just as glider pilots have their three special frequencies in the Aeronautical Bands; just listen and you will understand why they are restricted to those three frequencies (130.1, 130.4 and 129.9 MHz)!

The world of amateur radio is an extremely interesting one, offering all sorts of avenues for experiment and adventure. It seems a pity to this humble newcomer to reduce it to the status of a poor public telephone, albeit a party line at that. Surely this is what CB is for.

D. F. Barley, West Croydon

Dear Sir – Short wave listeners who are keen on collecting QSL cards can be assured of getting prize examples by sending reports to special and exhibition stations using the GB callsigns. But please, please, do remember to send a *large* stamped addressed envelope; otherwise the cards have to be spoiled by folding in two. And if you don't send an S.A.E. at all, how can you possibly expect a reply?

Douglas Byrne, G3KPO/GB3WM,
Hon. Curator,
National Wireless Museum

Address your letters for this column to "A Word in Edgeways", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

VHF BANDS

NORMAN FITCH, G3FPK

A New Tropo Record

CONGRATULATIONS to Richard Baker GD8EXI (XO77h) and Salvador Patruno, EA8XS (SO73d) for achieving a very convincing, new 2m. tropospheric distance record of 3,025 kms. on Sept. 4 1981 at 2240 GMT. This historic QSO was a prime example of marine ducting with S9 signal strength reports exchanged. A QSY to 70 cm. did not produce a completed contact although they tried for two hours at 15 minute intervals during which EA8XS heard GD8EXI at RS52, using 2m. as a "talk-back" band!

Obviously this is a "first" GD to EA8 contact on 2m. Earlier, Salvador worked portable stations EI3VFF and EI3VGG in VL square. Richard is very grateful to Lyn Leach, GW8JLY, for telling him that the EIs had worked EA8XS and which set him searching for Salvador. He tuned the band and heard a Spanish speaking station quite weakly, called in, and was delighted it was EA8XS who answered at S9. There is no doubt that a 2m. and 70cm. beacon in the Canary Islands beaming to the U.K. would be a very useful research tool. Richard Rimmer, GD3YEO, heard GD8EXI's contact with EA8XS and called afterwards but is uncertain if a completed QSO took place as Salvador may not have copied his call correctly. If a QSO is later confirmed, the QRB would be a little more.

The Space Scene

Latest news on the *UOSAT* launch is that it was put back from the Sept. 12 or 15 date to the 16th, or more like the 20th. By the time this issue is read, hopefully this unique, amateur radio space project will be orbiting the Earth in the desired orbit. As for *Oscar 8,* the only amateur transponder still working, its managers, the *ARRL,* are now switching it off completely on Wednesdays, these days being devoted to battery charging. This has become necessary due to the increased use of *0-8* following the failure of *0-7.*

Awards News

Nick Button, G4IRX, from Biggleswade, Beds., become the 341st VHF Century Club on 2m. He was first licensed in Feb. 1979, at the age of 16, with his late father's call, G8AEL. After three days of FM operation an *Icom* IC-202S was acquired with an 8-ele. *Yagi* aerial, the latter changed for a 9-ele. *Tonna Yagi* in April, 1980. Nick passed the Morse test and became G4IRX in Sept. 1979. The present power is 100 watts, best DX being LZ2XU *via E's,* although CT1AIF was worked with only 3w. in July 1980. Some "dabbling" on 160m. is mentioned. For the next three years, Nick will be in Nottingham at the Trent Polytechnic so hopes to operate the G4HQT call on 2m.

Roger Thorn, G3CHN, holder of QTH Squares Century Club Certificate No. 4, was issued with his "175" sticker for 2m. on Sept. 3, the new 25 squares comprising 9 tropo., 12 *E's* and 4 *Ar* QSOs. These included the notable "first" with EA8XS; LZ2KBI (LD) *Via Ar* and the recent ON1AMR/MM in Wk.

From time to time, readers inquire about *Magazine* awards and table entries. There are two VHF/UHF awards, the VHF Century Club and the QTH Squares Century Club. An *s.a.e.* will bring full details. Anyone may put an entry into the monthly tables. No QSLs are required, just a claim of what has been worked. The Four Band Annual Table is intended for fixed stations only from one QTH. For the Squares Table, provided you do not move your permanent QTH more than 50 kms, you may carry on adding new squares, but if you move more than that, you will have to start again in line with the rules for the QTHCC award.

Contest Notes

Results: From *GB2RS,* the results of the 70 MHz. Open Contest on June 7 which revealed G3WHK as winner of the Fixed Station section, G4IBA coming second and G3UKV third. The All Other Stations part was won by GW3XBY/P, runners-up being GW4ALE/P with GW4ASR/P in third place.

Coming Events: All times are GMT. On Sept. 26, 1900-2300, the AGCW-DL 144 MHz Contest for brass pounders with scoring system and exchanges as *per* page 38 of the March issue. The week end Oct. 3/4 sees two, coincident contests from 1600-1600, both for 432 MHz and all other SHF banks. The RSGB one requires the usual RS(T), serial number, QTH locator *and* QTH to be exchanged, with scoring at one point *per* kilometre and no band multipliers. The IARU Region 1 event does *not* need the exchanges of QTH. Scoring is based on 1pt. per km. but with multipliers of 5, 10 and 20 for 1,296, 2,304 MGz and higher bands, respectively. The RSGB affair is for members only and has Single-op. and Multi-op. sections, while the IARU one is open to all amateurs with two sections; Single-op. by licensee only and All Others.

October sees three legs of the 432 and 1,296 MHz *Cumulatives* on the 9th, 17th and 25th, the former being on 1900-2100 on the 9th and 17th and 2000-2200 on the 25th, the latter scheduled for 2100-2300 on the first two sessions and 2200-2400 on the last. The *UK Horizontal FM Group* is running and FM contest on Oct. 18, 0900-1700 on 144.500 MHz and above, observing the band plan. Details from the group's secretary at Dogmersfield Park, Dogmersfield, Hants. The 70 MHz Fixed Contest is on Oct. 25, 0900-1300 and is a single section event.

Operating Notes

The Home Office is busy dealing with the issuance of several thousand, new amateur licences following the May *Radio Amateurs' Examination* successes. Already the G6E-series are under way. Time to remind newcomers of the VHF and UHF Band Plans as agreed for IARU Region 1 at the Brighton Conference at the end of last April. Dealing with the 2m. band, which is by far the most heavily populated, the 144.000-144.150 MHz segment is exclusive CW and the 144.150-144.500 is for SSB and CW only. The calling frequencies for CW and SSB are 144.050 and 144.300 MHz respectively. The random meteor scatter calling QRG for CW is 144.100 and for SSB, 144.400 MHz.

The 144.500-144.845 MHz section is designated as an all-mode area with various sport frequencies for RTTY, FAX, etc. 144.845-144.999 MHz should be avoided as it is the international beacon band and operation therein would cause interference to those listening for specific beacons for research purposes. 145.000-145.800 is the channelized FM segment including repeater inputs and outputs, while 145.800-146.000 MHz is the space section reserved for satellite users. Observance of this basic plan should enable the various mode users to get the maximum benefit from the band.

Once again it seems worth mentioning that those calling "CQ" should say where they are and where they are beaming for the benefit of listeners. Not everyone has a **Call Book** and in any case, thousands of later callsigns are not listed. Simiarly, if, say, a London station is calling, "CQ long distance towards EI and GI", he probably won't appreciate a reply from someone ten miles away!

Finally, a plea yet again for honest reporting of signal *quality.* Unfortunately, the proportion of bad signals is on the increase and if the

originators are not told, in a polite way, they will go on annoying others, often unwittingly. Many cases of distorted and wide signals are due to incorrect setting up of the equipment: *e.g.* far too much microphone gain on SSB, too much drive to an amplifier, incorrect loading of the PA stage. In many cases, half an hour of experimentiation with another amateur who know what to listen for can result in a transformation of a real stinker of a signal into quite an acceptable one.

Beacon News

Many readers are missing the 2m. beacon GB3CTC. The good news is that the RSGB is exploring a couple of proposals to restore a service from the southwest in the not-too-distant future. The much-missed Lannion beacon, FX3THF (YI13d) has been heard testing on 144.905 MHz, once or twice recently but no firm news as to if and when a regular service will be resumed. Geoff Brown, GJ4ICD, reports that the "Paris beacon," FX1UHF (BI21b) on 432.830 MHz is back on the air again.

Vernon Boldy, G8SVG (W. Yorks.) mentions locals operating in the beacon part of the 2m. band. One was heard to comment that there were many beacons in that part of the band, ". . . but they won't bother us, will they?"

Another First

In the big *Sporadic E* event on July 10, Peter Hallam, GI4GVS (Co. Antrim) worked CN8BA (WT24h) over a distance of 2,337 kms. for a GI/CN8 "first" on 2m. So far, 1981 has produced some super DX, with many new distance records and "firsts" by various propagation modes. Darrell Mawhinney, GI4KSO (Co. Antrim) had a successful *Perseids* MS QSO with CT1WW on Aug. 11 and reckons this to be a GI/CT1 "first", unless any other GIs managed Portugal in the July 10 *E's*?

Four Metres

Syd Harden, G2AXI (Hants.) has been trying to work Gibraltar ". . . for donkey's years . . ." on 4m. His patience was finally rewarded on Aug. 16, when he contacted Jimmy Bruzon, ZB2BL, in the contest. Other notable contacts in the month included GM3WOJ/P (XS79f) *via* MS on Aug. 11 and GW3YET (Gwynedd) the following day. Dave Thorpe, G4FKI (Essex) is another reader who has had a QSO with ZB2BL, for square no. 21. He has contacted G5KW/A (Scilly Is.) which counts as a separate county, of course.

Peter Turner, G4IIL, regularly copied ZB2VHF up to mid-August from his Brighton QTH. Using *TW* crystal controlled gear on 70.26 MHz. He has raised G3PFM in Dorset. From his Welsh QTH in Tregaron, two new locals worked were GW3YET and GW4HXO (not 'HFO as mentioned last month – *Ed.*). Others worked for the first time were G3BW, G4BWW (Merseyside), G6WR and GI3TLT (Co. Down). During the contest on Aug. 16, Peter contacted GM4HNS/P (Moffat); GM3XBY/P (Port Ellen); GM4BVE/P (Mull of Galloway); G3FDW/P (Stanhope) and GI4GIY/P. On the 30th, GM3UKV/P (Isle of Barra) was worked and on the 14th, GM3WOJ/P was copied *via* MS working G3IKR.

Nick Peckett, G4KUX (ex-G8PFC) lives at the bottom of one of the steepest Pennine valleys so does all his serious VHF/UHF operating from a nearby site as G4KUX/P (YO20c) some 1,700 ft. *a.s.l.* On 4m. he transverts from 2m. with a *Microwave Modules* 10w. rig using a 3-ele. home made aerial, and is willing to make skeds, if asked. The contest provided Arthur Breese, GD2HDZ, with his first GD QSO of 1981, plus six other new ones including GI4DBB/P (Co. Derry); G3CO in Essex and G30RA/P in Somerset.

John Baker, GW3MHW, sent his usual, detailed band report from Dyfed. He writes that GW4HXO (Haverfordwest) now has 5w. of SSB on the air with a 50w. solid state PA planned. Anyone wanting a sked. with Clive Smith, GM4FZH, (YS33d) is invited to telephone him, or his wife, Helen, GM4KNQ, on 084 783 510. John has stopped his tests with SM6PU in which he used automatic keying, as, ". . . a certain amount of opposition exists . . ." He wonders if these transmissions have been a nuisance to other operators. GW3MHW's signals were often received by SM6PU when he was mobile, whereas the beacons were not so reliable. John participated in the contest and added three counties but no new countries. He also worked GM3WOJ/P in XS by MS but not when Chris was in YS.

About 6m. John is looking forward to transatlantic signals from the end of October. Nearer home, he reports ZB2VHF as being pretty consistent in August and well over S9 on the 23rd at 1100. Both John and G3VZJ have received 10/6m. crossband certificates for contacting all U.S.A. call areas, from W6LS.

Two Metres

Mike Allmark (Leeds) reckons the *Perseids* meteor shower was not so good this year, an opinion shared by some other readers. The visual *ZHR* was 75 compared to 120 in 1980, so no doubt radio reflexions would have been similarly down. Nevertheless, he heard 19 countries, with many Is and YUs. Best CW DX heard was UA3LBO (QO) and the best bursts on SSB came from OE3OBC (II) who runs 3kW and four 16-ele. *Yagis*! Mike reckons the shower peaked at about 1000 on Aug. 12, but reflexions from the SM/OH direction were not all that good. He heard some

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
GJ41CD	1	96	207	304
G3VYF	–	91	262	353
G3JXN	42	86	120	248
G8HVY	22	83	141	246
G3XDY	30	83	123	236
G3COJ	24	74	123	221
GJ8KNV	8	73	164	245
G3PBV	13	62	123	198
G8LEF	22	62	101	185
G4CMV	14	59	157	230
G8TFI	–	59	113	172
G3NAQ	–	58	128	186
G2AXI	5	58	106	169
G8GXE	13	57	89	159
G8ATK	6	56	113	175
G8FMK	15	56	69	140
G8HHI	6	52	120	178
G4HFO	–	50	78	128
G4ERX	5	45	92	142
GD2HDZ	12	44	90	146
G8KAX	9	43	78	130
G4BWG	–	38	136	174
G80PR	1	38	111	150
G8JJR	–	38	108	146
G8VLQ	–	38	106	144
G8IFT	15	34	81	130
G8LGL	–	31	128	159
G3BW	5	30	187	222
G4MCU	–	29	118	147
G3FIJ	–	29	79	108
G8KGF	–	28	99	127
GJ3RAX	1	27	74	102
G8MFJ	–	26	128	154
I4EAT	–	25	238	263
GM4CXP	–	25	142	167
G18EWM	–	25	67	92
G8WRD	–	25	44	69
G4AWU	–	22	130	152
G8LXY	–	18	32	50
G4ERG	–	16	208	224
EA3LL	–	15	211	226
GW3CBY	3	14	65	82
G4IGO	–	13	203	216
9H1CD	–	13	178	191
GM4COK	–	12	172	184
G4MJC	–	12	76	88
9H1BT	–	11	163	174
G8WUU	–	11	37	48
G8KPL	–	7	91	98
G8JAG	–	7	81	88
G4GSA	–	6	51	57
G4FBK	–	5	105	110
G8SKG	–	5	53	58
G4GXL	–	4	52	56
G8VR	–	3	132	135
G4JZF	–	3	115	118
G8TIN	–	3	56	59
G4LDY	–	2	39	41
G6UW	–	1	89	90
G3POI	–	–	343	343
G3IMV	–	–	290	290
SP2DX	–	–	280	280
DK3UZ	–	–	275	275
G4IJE	–	–	215	215
G3CHN	–	–	212	212
G3SEK	–	–	182	182
G3FPK	–	–	179	179
G3KEQ	–	–	173	173
G4DEZ	–	–	171	171
GW4EAI	–	–	146	146
G8IXG	–	–	139	139
G8CXQ	–	–	117	117
G8TGM	–	–	109	109
G4GHA	–	–	95	95
G4IRX	–	–	85	85
G8RWG	–	–	71	71
G8VFV	–	–	66	66
G8JGK	–	–	62	62
G8SVG	–	–	58	58
G8XQS	–	–	47	47
G8MBI	–	–	40	40

Starting Date: January 1, 1975. No satellite or repeater QSOs. "Band of the Month" 70cm.

deliberately bad operating on the old random SSB QRG of 144.2 MHz. G8VHB was suffering from a certain G8V-- station who seems to think that 144.2 is his personal frequency. Mike thinks that the idea to hold an MS contest is not good as it attracts people who have no idea about operating procedures and who mess things up for others. August tropo. and *E's* were not very good in Leeds, it seems.

G2AXI was one of the lucky ones to work ON1AMR/MM in WK square, of which more details later. On Aug. 28, a 20 *years* search for Tyne and Wear was ended when G6AVL in Newcastle was contacted. Bill Hodgson, G3BW (Cumbria), managed three new countries in the *Perseids* for 1981 – ON5FF/CT (VA); OE9XXI (EG) and YU2EZA (IG), to make it 28 so far. Other successes included SP6GZZ (IL); DF1YQ (GM); PA2HKR/LA (DR); OH3AWH (LV); Y22UL (HO); and OK1MAC (HJ) after the shower. In a small *Aurora* on Aug. 23, Bill got LA9BM and LA9FY, both in EU square; OZ4VV (EQ); SM5FRH (HT) and EI6AS.

Brian Bower, G3COJ (Bucks.) worked CN8BA near Casablanca, in the Aug. 11 *E's* event covered in last month's *Stop Press* item, but did not hear ZB2BL. Dave Sellars, G3PBV (Devon) echoes Mike Allmark's comments about the *Perseids* adding: "Ineffective CQ-ing by inexperienced stations using unmodified 'black boxes' and small crossed *Yagis* is hardly sufficient to bring replies and only clutters up the band, especially when they keep 'QRZ-ing?' in the listening periods". Dave's only MS contacts were YU2EZA in 3 mins. on random, and a sked with DC7OH (GM). Tropo. was good after the shower as well as during it with GD6UQ/P a phenomenal signal. The 12th. brought his first ever GI – GI6CJG/P – in a very difficult direction, but the best DX occurred on his birthday, the 19th, when C31HY was worked for country no. 26. It seemed to be a very narrow duct as the C3 only worked about four or five Gs. The 26th brought some good tropo. to GI, GD and GW but the *Ar* on the 23rd was poor with only GM4ILS heard.

Clive Penna, G3POI (Kent) is now up to 343 squares on the band and his *Perseids* contacts included ON5FF/CT in all three squares – WA, VA and WZ; PA2HKR/LA; OH4UC (NV); SP6APV/8 (MK); YU1NRV/6 (JB); GM3WOJ/P (XS); and UA2FAY (KO) for country no. 52. Mike Lee, G3VYF (Essex) also worked the CT squares, and UA3LBO (QO) in 65 mins. Valera now runs 1.2kW and has an 80-ele. aerial array. UA1MC (Leningrad) is also a very strong signal now, but does not seem to get on the 20m VHF net.

ANNUAL VHF/UHF TABLE

January to December 1981

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	23 CENTIMETRES Counties	23 CENTIMETRES Countries	TOTAL Points
G2AXI	58	9	64	19	44	9	*7*	*1*	203
GD2HDZ	47	6	63	15	42	9	*4*	*3*	182
G3BW	41	6	65	28	32	6	*6*	*4*	178
G8FMK	–	–	64	17	54	10	27	2	174
G8VLQ	–	–	69	26	45	14	–	–	154
G3PBV	*2*	*2*	60	23	41	9	8	1	142
G8GXE	–	–	52	11	44	9	17	5	138
G8HHI	–	–	49	16	44	12	14	2	137
G8RZP	–	–	66	20	40	10	–	–	136
G8RZO	–	–	66	20	33	9	–	–	128
G3FIJ	33	5	46	10	27	4	–	–	125
GW3CBY	22	6	50	14	17	6	*3*	*2*	115
G6ADC	–	–	60	11	39	5	–	–	115
G8VR	32	3	44	26	6	1	–	–	112
G4JZF	–	–	74	20	6	1	–	–	101
G8WUU	–	–	60	14	23	3	–	–	100
G4HAO	–	–	79	20	–	–	–	–	99
G8KAX	–	–	43	10	27	5	10	3	98
G4DEZ	–	–	67	30	–	–	–	–	97
G3FPK	–	–	74	22	–	–	–	–	96
G3CO	14	3	39	8	22	5	–	–	91
G4FKI	37	5	20	5	16	4	–	–	87
G8VFV	–	–	67	18	–	–	–	–	85
G4ARI	18	2	54	10	–	–	–	–	84
G8WRD	–	–	41	12	21	8	–	–	82
G4GXL	–	–	55	15	7	2	–	–	79
GW8TVX	–	–	52	15	–	–	5	2	74
G8RWG	–	–	57	15	–	–	–	–	72
G8TGM	–	–	48	18	–	–	–	–	66
G8TIN	–	–	40	7	12	3	–	–	62
G8XTJ	–	–	48	9	–	–	–	–	57
G8LXY	–	–	26	5	19	6	–	–	56
G6ABB	–	–	44	12	–	–	–	–	56
G8TRW	–	–	44	11	–	–	–	–	55
G4LDY	–	–	42	9	2	1	–	–	54
G8RZA	–	–	44	9	–	–	–	–	53
GM4CXP	3	1	35	13	–	–	–	–	52
G8SKG	–	–	39	10	2	1	–	–	52
GW3MHW	44	8	–	–	–	–	–	–	52
G4MJC	–	–	29	11	5	4	–	–	49
G8MBI	–	–	28	9	–	–	–	–	37
GM4COK	–	–	21	12	–	–	–	–	33
GM4ELV	–	–	10	3	–	–	–	–	13

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

Bob Lane, G4AWU, has not been on very much due to domestic QRM. However, he did make his first SSB MS QSO in the *Perseids* with YU. Seems he will be joining the MS scene as he has completed a memory keyer and a "Rugby" clock. Steve Fletcher, G4GXL, went to XJ square on Aug. 23 for a few days but, despite having 160w. and a 13-ele. *Yagi* at 25ft., only a few Gs were worked. He reckons anyone going to the Lizard should ensure good, prior publicity!

Rob Mackean, G4HAO (Liverpool) confesses that he is now hooked on MS. In the *Perseids*, he and John Wilkinson, G4HGT, used Rob's rig and QTH, with John's keyer for completed QSOs with SM3FGL (IV); OE5XPL (HI); HG4XT (JH); YU2KDE (JF); I3LGP (GF); YU3ES (GF); SM5CNQ (HS) and OK3CGX (II). So bitten is Rob with the MS bug that he has now built his own memory keyer and is saving up for a set of paddles. (Why not use a hacksaw blade? Much cheaper!)

Ken Osborne, G4IGO (Bristol) thinks his call is being pirated on the east coast as DL0SP/P reckons he worked a G4IGO. Sounds unlikely though, to your scribe. Ken worked the CT expedition in WA and VA on Aug. 6 and 9, and YU2GZA (IG) on the 9th. The next day SP2DFW (JM), then on the 12th, OK2KZR/P (IJ); ON5FF/CT (WZ); YU1EQ (?); IV3HWT (GF); YU1EV (KE); HG1YA (IH); F1JG (CD) and SP8AOV (LL).

Graham Taylor, G4JZF (Staffs.) now has a 100w. *MM* amplifier. On Aug. 11, he raised EB7IY (WW) *via E's*, and on Aug. 30/31, LA9LS (DS) *via* tropo. provided country no. 20. This period also saw QSOs with OZs in EQ, ER, and FQ. G4KUX/P uses an *Icom* IC-26OE, *Lunar* 150w. amplifier, 8-ele. aerial combination. During the MS Contest, Nick and G8EEM operated from ZP61b and worked 31 stations worth over 75,000 points, but were using a bigger amplifier and 16-ele. *Yagi* at 40ft. Reflexions were poor from 1700-1900 but very good thereafter. Best DX was HG6KVB (KH) at 1,734 kms. Best burst was from EA3LL (AB) and the quickest QSO was with IW3QBC (GG) in 10 secs. All QSOs were on SSB. On tropo., conditions had been building up nicely to the north from Aug. 28 when GM3JIJ (WS) was worked. On the 31st, both the

2m. and 70cm. OY beacons were S7. Four OYs were worked in WW76g. They were in the same car on a mountain side 650m. *a.s.l.* running 10w. to a 16-ele. aerial. Also worked were LA6HL and LA3EQ, both in CS. On Sept. 1, LA9FB (CU); LA6HL; GM4LBE (ZU65f) in Shetlands; LA5OH (CU) and GM8OGP, (ZU26c) Unst, were contacted.

G4KUX reports that TF3YH has plans for QRO operation from Iceland following LA6HL's trip recently. Also, LA3EQ is building a 2 times 4CX250B amplifier. Jon Stow, G4MCU (Essex), managed to complete a *Perseids* MS sked. with HG4XT on SSB in five minutes on Aug. 12. Ken Ellis, G5KW, has sent some nice colour prints of the yacht "Rebel", belonging to Robert Michielsen, ON1AMR. The -/MM trip in WK square on Aug. 4 produced 29 QSOs between 1000 and 2050. Ken was the second operator and the log shows 21 G QSOs; 5 Fs; 2 GWs and one EI. Grateful thanks to Roger Thorn, G3CHN, who acted as "anchor man" from his clifftop vantage point on Bolberry Down throughout.

John Lemay, G8KAX, took part in the QRP contest on Aug. 2 from Kinder Scout in ZN square. At 1,930ft. *a.s.l.* and with a 13-ele. beam at 25ft. results with one watt were quite poor. John wonders just how some of the other one watt stations manage so many more QSOs and would like to see more details published on aerials and their heights, etc. John and Jackie Brakespear, G8RZP/G8RZO, took part in the two-part, Harlow Club contest and made 231 contacts with a multiplier of 49.

Neil Clarke, G8VFV (W. Yorks.) found the band open to PA on the 28th of August, and to OZ and SM on the 30th in the evening. Stations in three new squares, ER, FP and FR were raised. Bob Lane, G8VLQ (S. Yorks) has fitted a BF981 preamplifier ahead of his *Trio* TS-770E, which was a bit hard of hearing on 2m. He has been busy on MS after working some nice *E's* and *tropo*. DX in July. On Aug. 8, he completed with IV3HWT in 46 mins. at 0400. On the 11th, the sked with YU7PXB (KF) took just 6 mins. with all details in the first 30 secs., the QRB being 1,730 kms. On the 12th, HG1KYY (IH) was worked on random MS and EA3AIR (BB); SM5DRV (HR) and IW3QBC (GG) on skeds. The best DX was OH2BWL (MU56e) at 1500, who was only running 150w. PEP to a 6-ele. *Yagi*. The 30th provided LA, OZ and SM QSOs and the 31st, contacts with the OY quartet, 3OZ, 5A, 9JD and 9R, and GM4LBE in Lerwick.

Darrell Mawhinney, GI4KSO, made 17 CW QSOs in the *Perseids* including CT1WW (WB); SM0IME (JT); Y22UL and Y41VL (HO); PA3BFM/LA (DR); LA1K (KX) and F80P (CG). SSB successes were F1JG (CD); OZ4VV (EQ) and DK2LM (EJ). GJ4ICD had 17 MS contacts in 17 squares for 43,332 pts. in the *Perseids* contest, best DX being YU1EU (KE13h). Geoff says that although he is a Class "A" licence holder, *all* his MS QSOs are on SSB. On Aug. 16, from 0800, Geoff worked 10 YUs in the 6 call area *via E's*. On Aug. 13 and 14, there was good tropo. propagation into Y, OZ and SM. He would like to confirm that U.K. postage stamps are *invalid* in the Channel Islands, so those requiring direct QSLs should send an IRC and envelope.

Derrick Dance, GM4CPX (Borders), has been overhauling his 14-ele. *Parabeam* so has not been very active lately. He seems to have many other activities including cycling and camping. Walt Davidson, GW3NYY (Swansea), is another who has succumbed to the MS habit with satisfying results. During the *Perseids* he was stuck on SSB only and completed 24 QSOs, all in different squares. Later he built the GW4CQT keyer and made a further 10 MS QSOs on CW. Walt's gear consists of a *Yaesu* FT-221R with *MuTek* board, a 4CX350 amplifier and single 9-ele. *Yagi*, the latter to be replaced later by a pair of 16-ele. beams. He is very keen to make skeds from XL square, SSB or CW (preferred speed 700 *l.p.m.* but up to 1,000 possible). QTH is: PO Box 21, Swansea, Wales, SA1 1ED.

Seventy Centimetres

Claus Neie, DL7QY (FJ61e), was QRV on July 30/31 for the tropo and worked 23 Gs in AL, AM, YO, ZL, ZM, ZN and ZP squares from 2000. During the *Ar* on Aug. 23, G3BW worked EI6AS on 2m. but a test on 70cm. was quite negative. G3PBV suffered severe *Syledis* QRM from Aug. 11-25, from both Start Point and Portland. The first PAs of 1981 were worked on the 13th, while the 17th produced F1BOF/P (BF). On the 19th, Dave worked F5VR/P (XH) at S9.

G4KUX/P (YO20c) has 50w. to an 18-ele. *Parabeam*. Aug. 31 saw QSOs with LA6HL and LA3EQ, both in CS square. Adrian Chamberlain, G6ADC (Coventry) is now getting used to his *Yaesu* FT-780R which is used for working through *Oscar 8*. On the terrestrial side, GJ4JWA has been worked for a new county, country and square on the band. G8RZO and 'RZP have been hearing LAs from Sheppey, but they always seem to be working to PA and ON. Several were S9 at the end of August but Jackie figures they have rather deaf receivers!

G8VLQ found SM6HYG (FS58f) and OZ1FEF (EQ25c) during the evening of Aug. 7; E14CL (WN60g) in the early hours of the 13th; GM4BBU/P on the 18th and G8KBQ in Somerset on the 21st. The evening of the 30th brought OZ9PZ (EQ75b) and SM6HYG again. GD2HDZ's list shows six more 1981 G counties worked on the 25/26th period, including G3AUS in Devon.

Geoff Brown, GJ4ICD, asks it be made quite clear that his 70cm. amplifier is *not* a *K2RIW* design. Although based on that circuit, he has extensively modified it, so has agreed with Dick Knadle that it will not be marketed under his callsign. Geoff has heard CT1WW on the band but no QSO yet, but he did work F6EVT/P (AC07c) for square no. 96 on Aug. 14. He reports that, in the tropo. opening to central Europe on Aug. 13, Phil Johnson, GJ8KNV, made several fast-scan TV QSOs with OK stations at, "fantastic quality and strength".

Twenty-three Centimetres

Claus Neie, DL7QY, was very disappointed not to have made any 23cm. QSOs with the U.K. on the 30/31 July period. GB3BPO beacon was 5 dB. above the noise at 2200 and rose to 40 dB. *a.n.* after midnight. He called "CQ" on CW from time-to-time, but to no avail. At 0049, he worked SM6HYG (FS) then they QSY-ed to 70cm. exchanging S9-plus 20 dB. reports. Finally they went on 13cm. CW with 529 reports and established a new European DX records of 1,018km. for the band. By 1100 on the 31st, GB3BPO had faded away.

G3BW has been QRV but with little luck due to one watt and insufficient aerial gain. G3PBV has installed a length of *Andrews* LDF4-50 feeder which has made a noticeable difference on reception. So far, Dave has worked G4CCH (Humberside) and his fourth nearest "local" G4GLN in London! PA0CRA was a good signal on Aug. 13 but even his *GASFET* pre-amp. was not enough to pull in Dave's 3w. G4KUX/P puts Co. Durham on the 23cm. Map with a home-built transverter giving 2½w. output to a 45-ele. *Quad Loop Yagi*.

For GD2HDZ, Aug. 25 and 26 brought G4CCH, and G6FK (W. Midlands). G2AXI has an amplifier, ". . . coming along nicely", but has not been active on 23cm. in August.

Deadlines

Not quite such an exciting month as July but no doubt more *Auroral* events are on the way. All your reports and claims by Oct. 7 and then Nov. 4 to: "VHF Bands", SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. *73 de G3FPK.*

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