RADio COMmunication

November 1985

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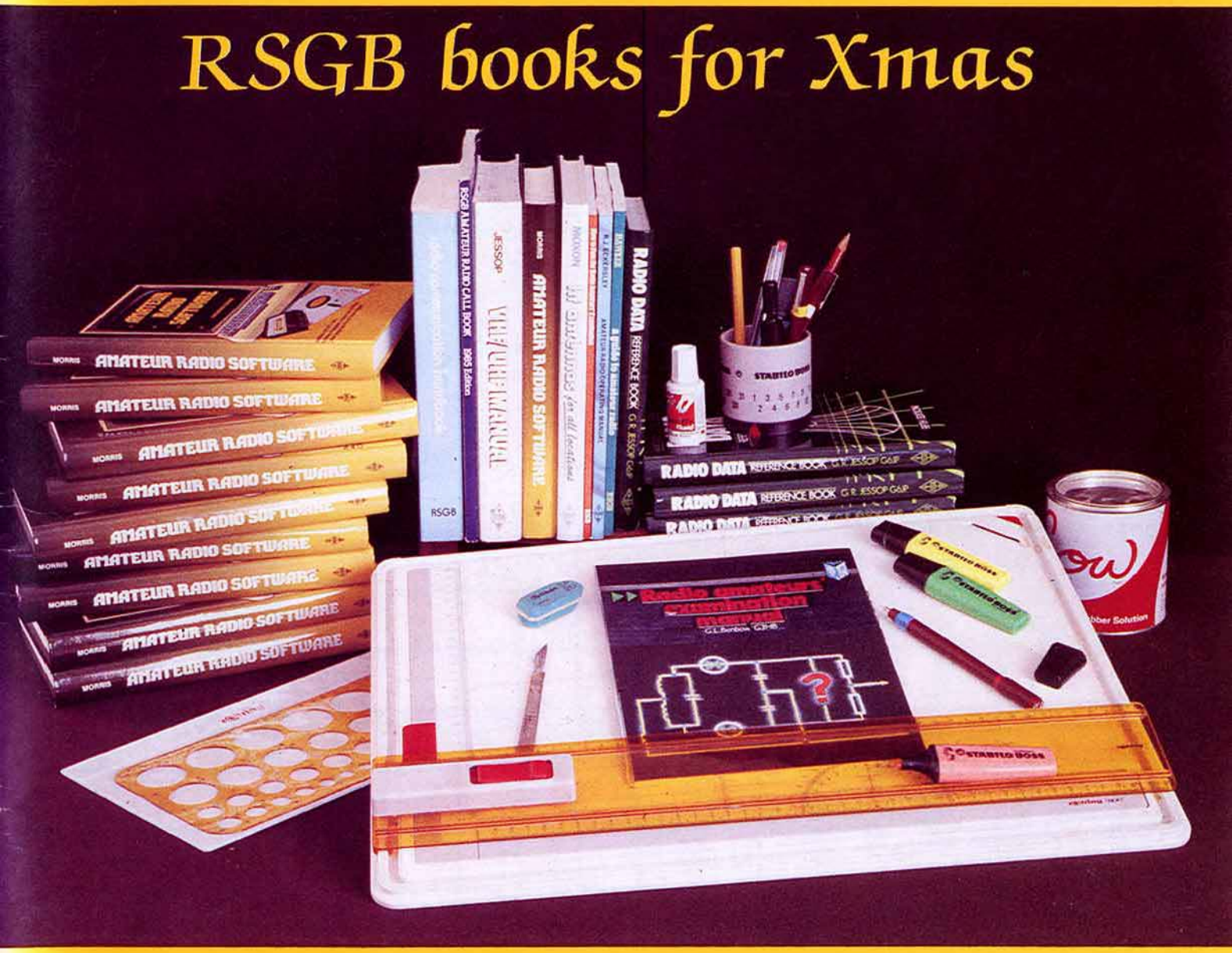

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RADio COMmunication

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All articles received are reviewed for technical merit by the RSGB Technical & Publications Committee, or an acknowledged expert on the subject, before acceptance. Payment at high competitive rates will be made for all articles published.

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The editor will be pleased to send intending authors a manuscript preparation guide and to give any other advice and assistance requested.

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Closing date for contributions unless otherwise notified: five weeks before publication date

hf transceivers

TS940S HF transceiver with general coverage receiver
Top of the range, the TS 940S has every operating feature that the discerning HF operator needs. Amateur bands, 160 through to 10 metres plus a general coverage receiver tuning from 150KHz to 30MHz. Modes of operation are USB, LSB, CW, AM, FSK and, included as standard, FM. Forty memory channels, each effectively a separate VFO and simple keyboard frequency entry make operation and ownership of a TRIO TS940S a pleasure.

TS940S . . . **£1695.00** inc VAT, carriage £7.00

TS930S HF transceiver with general coverage receiver
Much has been said and written about the TS930S and it now has a place high in the affection of those amateurs fortunate enough to own one. Providing full coverage of the amateur bands from 160 to 10 metres and including a general coverage receiver tuning from 150KHz to 30MHz, the TRIO TS930S is ideal for today's crowded frequencies.
TS930S . . . **£1295.00** inc VAT, carriage £7.00.

TS430S HF transceiver with general coverage receiver
A compact transceiver suitable for mobile or portable operation, yet having all the facilities necessary for effective radio communication. The TS430S has, in addition to the amateur bands from 160 to 10 metres, a general coverage receiver. Modes of operation are USB, LSB, CW, AM with FM optional. Owned by many radio amateurs worldwide, the TRIO TS430S is an ideal way to combine amateur radio with short wave listening.

TS430S . . . **£720.00** inc VAT, carriage £7.00.

TS830S HF amateur bands transceiver
Needing no description, the TS830S, which uses for finals a pair of 6146B valves, is well known on the amateur bands for its superb signal quality. Having variable bandwidth tuning, IF notch, IF shift and provision for various filters, its receive performance is excellent too.

TS830S . . . **£832.75** inc VAT, carriage £7.00

TS530SP HF amateur bands transceiver
A standard HF valve transceiver without frills but providing today's amateur with all necessary facilities for reliable worldwide communication. Modes of operation USB, LSB and CW.
TS530SP . . . **£698.00** inc VAT, carriage £7.00

handheld transceivers

TR2600E and TR3600E 2 metre and 70 centimetre FM handhelds
The latest handhelds from TRIO are a natural progression from the much liked TR2500/TR3500. By adding DCS, the ability to skip particular memory channels, to hold for either timed or carrier when scanning, for the memory to hold whether the channel is simplex or repeater shift and an illuminated "S" meter, TRIO have produced a first class pair of handhelds.
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TR3600E . . . **£292.00** inc VAT, carriage £7.00.

TH21E and TH41E 2 metre and 70 centimetre FM compact transceivers
The TH21E and TH41E are two simple handhelds, each extremely small yet having full repeater facilities including reverse repeater. Power output is one watt or 150 mulliwatts in the low position and frequency selection is by means of thumbwheel switches. Very small but still convenient to operate, the two transceivers are just right for the amateur who wants to stay in touch.

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TH41E . . . **£199.00** inc VAT, carriage £7.00.

vhf/uhf all-mode transceivers

TS780 VHF/UHF dual band transceiver
The TS780 is the ideal base station for the enthusiastic operator who wants both 70 centimetres and the 2 metre band in one transceiver. Modes of operation are USB, LSB, CW and FM. Full repeater facilities, plus two VFO's, IF shift, two priority channels, memory and band scan combine to make the TRIO TS780 the perfect rig.

TS780 . . . **£948.00** inc VAT, carriage £7.00.

TR9130 two metre all-mode transceiver
The TR9130 is now a classic rig—so popular that to have one on the second hand shelf is rare. 25 watts on SSB, FM and CW, green frequency display, six memories, two VFOs and memory scan make the TRIO TR9130 ideal for either mobile or base station operation.

TR9130 . . . **£499.00** inc VAT, carriage £7.00.

TS711E and TS811E 2 metre and 70 centimetre base stations
Following on in the tradition of the TS700 series, the TRIO TS711E and TS811E are perfect base station transceivers. Each produces 25 watts output and has a full range of operating features. Forty memory channels are available, each of which can be used as a separate VFO. The TS711E/TS811E operate on either mains or 12V DC making them suitable for either shack or mobile/portable use. Digital code squelch is also a feature of the TS711E and TS811E.
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TS811E (70 centimetre version), **£895.00** inc VAT, carriage £7.00.

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vhf/uhf fm transceivers

TW4000A FM VHF/UHF dual band transceiver

To have both 70 centimetres and 2 metres available in one mobile transceiver has been a desire of the VHF/UHF enthusiast for many years. TRIO with the TW4000A have satisfied that need. The transceiver is well known for having an excellent receiver and as those who already own and operate one know, is a delight to use. Compact and producing 25 watts on both bands, the TW4000A is the enthusiast's natural choice.

TW4000A . . . **£522.00** inc VAT, carriage £7.00.

TR7930 2 metre FM mobile/base station transceiver

A mobile FM transceiver that also doubles as a piece of shack equipment. Producing 25 watts and having 21 memories, priority alert, full repeater facilities including reverse repeater, programmable band scan, memory scan and keyboard frequency entry, the TR7930 is ideal for mobile operation using the programmed memories, yet is suitable for shack use with the front panel keyboard.

TR7930 . . . **£329.00** inc VAT, carriage £7.00.

TM201A and TM401A 2 metre and 70 centimetre mobile FM transceivers

Accepting the fact that there is little space in a modern car for anything other than a radio/cassette unit, TRIO have with the TM201A and TM401A produced the definitive compact transceiver. By removing the speaker and making this separate TRIO have given you excellent receive audio quality. The TM201A and its 70 centimetre version, the TM401A are ideal for the amateur who wants a high performance rig with no frills.

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TM401A . . . **£316.00** inc VAT, carriage £7.00.

TM211E and TM411E FM VHF and UHF mobile transceivers

By taking the popular TM201A and TM401A and adding DCS and a tiltable front panel, TRIO have produced higher specification transceivers. Even easier to fit in tight locations, the TM211E and TM411E are transceivers designed to cope with today's crowded bands.

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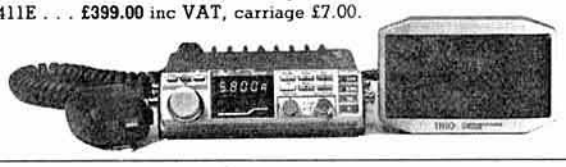
TM411E . . . **£399.00** inc VAT, carriage £7.00.



general coverage receivers

R600 general coverage receiver

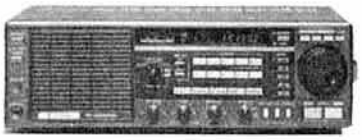
The R600 is a general coverage receiver covering 150KHz to 30MHz. Modes of operation are AM, USB, LSB and CW. Operating is on either mains or 12V DC. Easy to use and with a green digital frequency display for easy tuning and internal speaker, the TRIO R600 is equally at home in the lounge, caravan, boat or shack.

R600 . . . **£299.52** inc VAT, carriage £7.00.

R2000 general coverage receiver

The R2000 general coverage receiver from TRIO covers the frequencies from 150KHz to 30MHz. Modes of operation are AM, USB, LSB, CW and FM. For convenience the R2000 has ten memories, each of which holding frequency and mode information. Memory scan and programmable scan between user designated limits are also included. Provision has also been made for an optional internal VHF converter covering from 118 to 174MHz. Operating from either mains or 12V DC the TRIO R2000 is an ideal way to listen to the world.

R2000 . . . **£479.47** inc VAT, carriage £7.00.
VC10 VHF converter 118 to 174MHz . . . **£128.36** inc VAT, carriage £2.50.



station accessories

TL922 HF amateur band linear amplifier

The TL922 is a class AB2 grounded grid linear amplifier using two high performance EIMAC 3-500Z tubes. It covers 160 to 10 metres for SSB, CW and RTTY modes of operation. Engineering perfection, those who have seen a TL922 will know what I mean.

TL922 inc tubes . . . **£1150.00** inc VAT, carriage £7.00.

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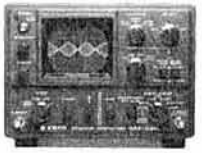
Based on a wide frequency range oscilloscope, the SM220 station monitor features in combination with a built-in two-tone generator, a wide variety of waveform observing capabilities. The SM220 aids efficient station operation as it monitors transmitted waveforms and it also serves as a sensitive wide frequency range oscilloscope for various adjustments and experiments. When fitted with the optional BS8 panoramic display and connected to one of the following transceivers (TS940, TS830, TS180, TS820 series) signal conditions in the vicinity of the receive frequency can be seen over a 40 or 200KHz range.



SM220 . . . **£243.00** inc VAT, carriage £7.00.
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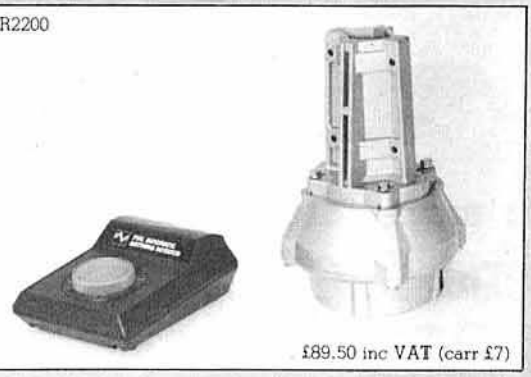
MTV7000 £39.50 inc VAT (carr £7)

AR2200



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"as I said to John"

So far, radio receivers have been considered receiving only one signal in ideal conditions. Real conditions on a band are far from this ideal, and a receiver is expected to extract the required signal from a plethora of unwanted stations. Not surprisingly the performance of a receiver (its ability to produce a comprehensible output) is comprised by a signal close in frequency and stronger than the one being received. There are several ways in which the unwanted signal can affect the receiver:—

BLOCKING of the wanted signal can occur when a strong signal overloads the front stages of a receiver and causes non-linear operation. The gain of the receiver will reduce when this occurs, and its sensitivity will worsen. Closely linked to this effect is CROSS-MODULATION, where modulation of the strong signal changes receiver gain and this in turn amplitude modulates the wanted signal.

Blocking may be caused by any signals entering the first stages of the receiver, so the narrower the front-end bandwidth, the fewer signals will cause problems. RF preselectors were fitted to receivers for this reason, and the more modern receivers with wide band-pass filters need input stages capable of handling much higher signal levels to offer the same performance.

FILTER LEAKAGE can cause loss of sensitivity in a receiver when strong unwanted signals produce gain reduction by AGC action. The effect is quite common in receivers which rely on one or two simple crystal or ceramic filters for their selectivity, since the stop-band attenuation is then often quite poor. Even receivers with expensive filters can suffer due to signals 'creeping around' the filters when there is inadequate screening.

RECIPROCAL MIXING is an effect that can often be confused with filter leakage or poor filter selectivity. Its effects are quite similar, but the mechanism by which receiver performance is reduced is different.

In a superheterodyne receiver, the wanted signal from the antenna is mixed with the local oscillator within the receiver to produce an intermediate frequency (IF) which is filtered and amplified. The intermediate frequency is generally constant, and the receiver is tuned by varying the frequency of the local oscillator. Unwanted signals will be converted to a frequency different to the IF and will be rejected by the IF filter.

In practice, however, the local oscillator does not give a totally pure signal, and noise exists as sidebands on this signal. A strong, unwanted signal from the antenna can mix with these sidebands to produce a signal within the passband of the IF filter, which will be reproduced by the receiver as noise. This effect is reciprocal mixing (RM).

The extent of reciprocal mixing depends on the purity of the local oscillator signal. Many older receivers using the crystal and VFO as tuning elements suffer very little with reciprocal mixing, but in many modern, synthesised receivers the effect dominates both filter leakage and blocking.

All the effects described worsen the receiver's sensitivity in the presence of a strong, off-tune signal. To compare receiver performance, it is useful to define the dynamic range of a receiver as the difference in signal levels between the wanted and unwanted signals when they produce an equal effect at the receiver's output. The frequency difference between the two signals is important, so dynamic range should be quoted as a signal power ratio (in decibels) at a given signal separation.

What dynamic range can be achieved? Receivers operating in SSB mode with 2.4 kHz filters should manage 70 dB at 10 kHz signal separation, and 90 dB at 50 kHz separation. Amateur band only receivers will normally give better performance than general coverage receivers in a similar price range, indeed the dynamic range can often be about 10 dB better. Modern, top-end amateur general coverage receivers can achieve a dynamic range of 90 dB at 10 kHz, rising to 110 dB at 50 kHz. For comparison, the classic Collins KWM-2A gives 105 dB at 10 kHz.

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IC-735, The Complete HF Radio

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

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

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

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

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

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Polite Notice: this service is strictly for Amateurs and we regret that NO dealer or other enquiries will be processed via this special free link. Thank you

IC-290D/290E Mobile

290D is the state of the art 2 meter mobile, it has 5 memories and VFO's to store your favourite repeaters and a priority channel to check your most important frequency automatically. Programmable offsets are included for odd repeater splits, tuning is 5kHz or 1kHz (25kHz option).

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

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

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ICOM ICOM

IC-02E, IC-04E Handheld

The direct entry microprocessor controlled IC-02E is a 2 meter handheld, features include: scanning, 10 memories, duplex offset storage in memory and odd offsets also stored in memory. Internal Lithium battery backup and repeater tone are included. Keyboard entry is made through the 16 button pad allowing easy access to frequencies, duplex, memories, memory scan and priority.

The IC-02E has an LCD readout indicating frequency, memory channel, signal strength, transmitter output and scanning functions.

HS-10 Headset also available, with earphone and boom microphone, which operates with either of the following:- HS 10-SB Switch box with pre-amplifier giving biased toggle on, off and continuous transmit. HS 10-SA Voice operated switch box, with pre-amplifier, mic gain, vox gain and delay. The IC-2E and 4E continue to be available.

Authorised Icom dealers in the UK

Alyntronics, Newcastle, 0632-761002.
Amateur Radio Exchange, London (Ealing), 01-992 5765.
Amcomm, London (S. Harrow), 01-422 9585.
A.R.E. Comms, Earlestown, Merseyside, 09252-29881.
Arrow Electronics Ltd., Chelmsford, Essex, 0245-381673/26.
Beamrite, Cardiff, 0222-486884.
Booth Holding (Bath) Ltd., Bristol, 02217-2402.
Bredhurst Electronics Ltd., W. Sussex, 0444-400786.
Dressler (UK) Ltd., London (Leyton), 01-558 0854.
D.W. Electronics, Widnes, Cheshire, 051-420 2559.
Hobbytronics, Knutsford, Cheshire, 0565-4040. Until 10pm daily.
Poole Logic, Poole, Dorset, 0202 683093.
Photo Acoustics Ltd., Buckinghamshire, 0908-610625.
Radcomm Electronics, Co. Cork, Ireland, 01035321-632725.
Radio Shack Ltd., London NW6, 01-624 7174.
Ray Withers Comms. Warley, West Midlands, 021-421 8201.
Scotcomms, Edinburgh, 031-657 2430.
Tyrone Amateur Electronics, Co. Tyrone, N. Ireland, 0662-2043.
Reg Ward & Co. Ltd., S.W. England, 0279-34918.
Waters & Stanton Electronics, Hockley, Essex, 0702-206835.

Listed here are just some of the authorised dealers who can demonstrate ICOM equipment all year round. This list covers most areas of the U.K., but if you have difficulty finding a dealer near you, contact Thanet Electronics and we will be able to help you.

IC-27E Mobile

This must be the smallest, 2M, FM mobile available today, measuring only 38mm H x 144mm W x 177mm D. It has all the features that you probably require included in this microprocessor controlled unit. In addition, if you feel lonely and can't find anybody on the band, just press "speech" and the optional built in speech synthesizer will tell you the frequency you are tuned to. This is a boon to the blind operator or to those that tuck their rigs out of sight.

Brief features:- 25/1 Watt output, green LED readout, scanning (memories and programmable limit band scan), priority scan, programmable duplex splits, 25 and 5Khz tuning steps, 10 memory channels with lithium back up cell, normal and reverse repeater switch, dual VFO, internal speaker and optional speech synthesizer.

You can get what you want just by picking up the telephone. Our mail-order dept. offers you: free, same-day despatch whenever possible, instant credit, interest-free H.P., telephone Barclaycard and Access facility and a 24 hour answering service.

Please note that we have a retail branch at 95, Mortimer Street, Herne Bay, Kent. Tel: 369464. Give it a visit, BCNU.

STOP PRESS» Contact us regarding 50MHz equipment for new issued band!

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ICS

AMT-2

AMTOR/RTTY/CW/ASCII TERMINAL UNIT

The ultimate way of getting on the air with all popular data communication modes.

Use it in conjunction with your home computer; electric typewriter/terminal, or surplus VDU —in fact, you can use anything with a 300 Baud, full duplex, serial interface.

Now proven in thousands of installations worldwide; including use with the International Red Cross, oil prospectors in Australia. The AMT-2 is a proven reliable product.

British designed and manufactured, the AMT-2 has a built-in frequency analyser type tuning indicator; full front panel status indication and both wide/narrow filter selection and tone invert front panel switches. Interfacing to any commercial transceiver is easy: Just connect to the Microphone, PTT and Speaker lines.

For most popular personal computers, we can offer very user friendly software together with ready made connection cables.

With thousands of AMT series terminal units in use world wide, there are now plenty of people to work on AMTOR. Once you have tried the mode, you will be as inclined to go back to RTTY as you would be to move from SSB back to AM!!

The AMT-2 is the definitive implementation of the mode with which all other implementations are compared.

Price: £245.00 inc VAT P&P: £2.50

OTHER ITEMS AVAILABLE FROM ICS:

		Retail Price inc VAT p&p
AMT-2/VIC-20	Applications Software, cable	**£51.75** £1.00
AMT-2/CBM-64	Applications Software, cable	**£51.75** £1.00
AMT-2/BBC-B	Applications Software, cable	**£44.85** £1.00
AMT-2/Apple II	Applications Software, cable	**£35.00** £1.00
AMT-2/IBM-PC	Applications Software, cable	**£23.00** £1.00
Mk II Board (1 only)	AMTOR PC board (Assembled and tested)	**£90.00** £2.50
CP-1/CBM-64	RTTY/ASCII/CW Software, cable	**£39.00** £1.00
CP-1/VIC-20	RTTY/ASCII/CW Software, cable	**£39.00** £1.00
CP-1/BBC-B	RTTY/CW Software, cable	**£39.00** £1.00
CP-1/Apple II	RTTY/ASCII/CW Software, cable	**£51.75** £1.00
CP-1/IBM-PC	RTTY/ASCII/CW Software on disc. Requires RS232 option for CP-1	**£51.75** £1.00 **£32.95** £1.00
MBA-TOR-64	AMTOR/RTTY/CW/ASCII Software, cable for CP-1 and CBM-64	**£69.00** £1.00
MBA-TOR-20	AMTOR/RTTY/CW/ASCII Software, cable for CP-1 and VIC-20	**£69.00** £1.00
	£10 off any software ordered with any terminal unit	

		Retail Price inc VAT p&p
RM-1	Low cost AMTOR/RTTY/CW/ASCII Modem	**£69.00** £2.50
RM-1 Software: CP-1	As for CP-1 RTTY/CW/ASCII/AMTOR Terminal Unit	**£215.50** £2.50
PKT-1	Packet Radio TNC (Complete, assembled)	**£629.00** £2.50
MP-20	"Micropatch" RTTY/CW/ASCII Terminal Unit, Software for VIC-20	**£159.85** £2.50
MP-64	As above, for Commodore 64. Note: MBA-TOR can be used with MP-64	**£159.85** £2.50
DDX-64	DOCTOR DX morse contester	**£104.95** £2.50
MARSTEXT 20 MARSTEXT 64	Cartridge and cable for VIC-20 or CBM-64 (Military affiliate package). Incl keyboard overlays	**£69.00** £1.00 **£69.00** £1.00
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Access

Callers by appointment
All prices include VAT at 15%

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PO Box 2, Arundel, West Sussex
BN18 0NX,
Telephone (024 365) 590

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12 months warranty

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A.R.E. Communications Ltd.

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38 BRIDGE ST., EARLESTOWN,
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Following Brenda and Bernie's recent visit to Japan, we are pleased to be able to offer the following new items:

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12 VOLT–55AMP
£295

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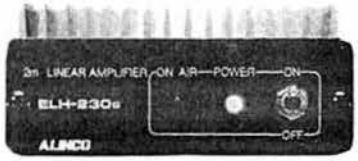
£148

12 VOLT–11AMP
£95

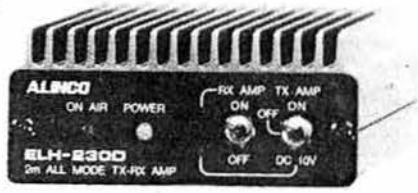
12 VOLT–6AMP
£69

This superb range of power supplies will be arriving this month, they are extremely robust as well as being good to look at, fully stabilised and crowbar protected.

ALINCO RF AMPLIFIERS



ELH230G
3 Watts in
30 Watts out
£49.00



ELH230D
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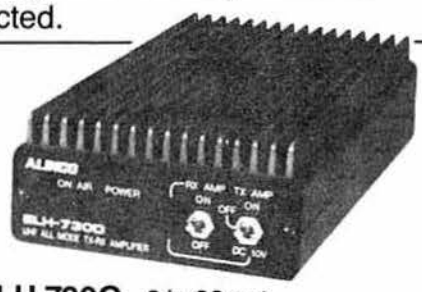
30 Watts out
with Pre-Amp
£59.00

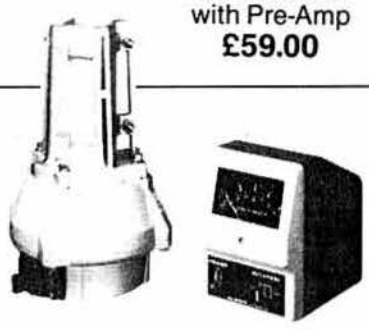


ELH 730G –3 in 30 out
ELH 730D –3 in 30 out Pre-Amp

with 1 Watt in 15 out
ELH 730G– £89 without Pre-Amp
ELH730D–£119 with Pre-Amp

ALINCO ROTATORS

Well tried and tested, the now famous Alinco EMR400 Rotator will soon be available — similar in specification to the KR400 **£89.00**



And now the ELH200 Rotator suitable for light weight antenna up to 5 ele. Beams can also be modified for use as an elevator rotator.

£49.00

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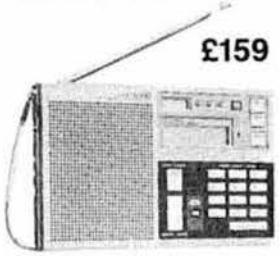

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OSCAR 2-10m

The SMC Oscar Two 10 Metre, was a 40 channel 27MHz, FM, CB, transceiver, designed to satisfy the stringent Government specifications of MPT1320. It has now been successfully modified to cater for the equally demanding requirements of the Amateur Radio service worldwide. Join the many others who have found that operating 10M FM can be a pleasant alternative to the overcrowded 2M band. The SMC Oscar 2 10M gives you 40 channels, channel 1 being 29.310 MHz and channel 40 29.7 MHz, a power o/p of approximately 4 watts and a receive sensitivity of better than 0.3μV for 12db sinad. Also for your enjoyment when the band opens up, we have incorporated a −100kHz repeater shift (by using the original panel Hi/Low power switch), so from the car or at home you can enjoy 10M FM at a remarkable price!

ONLY £65 inc

FT726R(2) £775 inc VAT

The Yaesu FT726R has been designed and built for the discerning VHF and UHF operator. Up to three modules can be simultaneously installed giving pushbutton band selection. Choose between 6M, 2M, 70cm and 10, 12, 15M.

SSB (with fully adjustable speech processor), FM and CW (optional 600Hz CW filter available) are standard. The CW filter combined with Yaesu's excellent IF shift/width system enables optimum receive performance despite today's crowded bands.

An 8-bit NMOS microprocessor offers a level of control hitherto unsurpassed, dual VFOs-20Hz step tuning, standard repeater shifts including reverse, pushbutton band selection and 25/12·5kHz FM channel tuning knob.

The eleven memory channels store mode as well as frequency and can be scanned for, busy or clear, stop or pause, even on different bands. Programmable limited band scan between memories is provided as well as priority channel checking. All the memories and both VFOs are protected against power failure by a lithium cell.

With the optional 'Plug-in' satellite IF unit installed, full crossband duplex capability is available with independent tuning and mode selection, as well as full metering of both transmit and receive parameters. (Power O/P and signal strength.)

An LED display plus two digit clarifier display are provided with large digits for easy reading at any angle. Standard features also include selectable AGC and Noise Blanker, all mode squelch and RF gain and continuously adjustable transmitter output power.

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SMC 11V11S11	G/fibre ground plane, 27-30MHz, 2·6M	£35.15
SMC GP27	Vert ground plane, 27-30MHz, 5·5M	£29.00
SMC VA27	Vert ½ wave, no radials, 5·5M	£29.00
SMC GDXA	Discone 100-440MHz, 3·0dB ¼	£41.85
SMC GDX1	Discone 80-480MHz, 3·0dB ¼	£49.50
SMC GDX2	Discone 50-480MHz, 3·0dB ¼	£62.85
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SMC GP23	Colinear 2M 3 × 5/8 wave	£49.95
SMC GP144W	Colinear 2M 2 × 5/8 wave	£33.95
SMC GP2M	Ground plane 2M 5/8 wave	£22.95
SMC SQ144	2M Swiss quad, vert polarised	£67.95
SMC GP432X	Colinear 70cm 3 × 5/8 wave	£36.95
SMC GP714	Colinear 70cm, 14 step coaxial	£88.20
SMC 70N2V	Colinear 2M and 70cm, 2·8dB ¼ and 5·7dB ¼	£36.80

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SMC 70N2FG	144/432MHz, 2M ½ wave 2·8dB, 70cm 2 × 5/8 wave 5·7dB, 1·2M	£41.40
SMC 358FG	432MHz 3 × 5/8 wave 1·7M	£49.05
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FT757GX
£739 inc VAT

The FT757GX is the latest in a long line of superb HF transceivers from Yaesu. The transceiver covers all the amateur bands with a full 0·5-30MHz continuous coverage receiver. Dual VFOs and eight memories all controlled by three microprocessors allow quick and accurate control of all the main functions.

All modes SSB, CW, AM and FM are included as standard along with a 600Hz CW filter, iambic keyer with dot-dash memory, 25kHz marker, noise blanker, AF speech processor and IF shift/width filters. Top panel switch selectable semi-break in or QSK is available for CW operation.

The Yaesu CAT (computer aided transceiver) system is fitted to enable external control of VFO frequency and memory functions from a personal computer via an interface unit for customised band scanning and control of the memories and VFOs.

The remarkable new heatsink design includes a quiet cooling fan with a new duct-flow cooling system incorporating the heatsink into the body of the radio. This gives forced air circulation allowing 100W PEP continuous output at 100% duty cycle in all modes.

The high performance General Coverage Receiver with Yaesu's unsurpassed IF shift/width system, switchable AGC and 20dB attenuator, combined with the switchable, RF preamp provides the FT757GX with a dynamic range in excess of 100dB in CW narrow.

All the presettable controls and connectors are conveniently located on the transceiver rear panel including VOX gain, anti-trip and delay, AM carrier and SSB processor levels, 25kHz marker switch, ext spkr and Hi Z AF outputs, patch input and external ALC, remote controller I/O port and band data for optional microprocessor automatic ATU.

The optional FC757AT is a fully microprocessor controlled antenna tuner which gives fast, reliable automatic tuning of a broad range of SWRs, with manual override for that particularly 'difficult' aerial. Also included is a dummy load, automatic SWR calculating system and meter and a dual range RF Wattmeter.

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NEW

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SMC 2N6M	50/144MHz 6M $\frac{1}{4}$ wave 0dB, 2M $\frac{5}{8}$ wave 3dB 1·15M	£9.60

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BARGAIN PAGE

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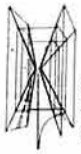

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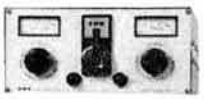

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EDITORIAL

ELECTION OF MEMBERS TO THE 1986 COUNCIL

Distributed with this issue of *Radio Communication* are the ballot forms for the election of new members to the 1986 Council. With so much propaganda flying around the place, it is more necessary than ever for members to consider their choices most carefully when deciding for which candidates, if any, they will vote. Here are some do's and dont's you might like to bear in mind:

DO recognize that the RSGB is now a large, very complicated institution. It is involved with every aspect of the technical, educational, commercial, licensing and legal sides of amateur radio that you can think of (and a lot more!), and is so at every level ranging from the individual amateur to clubs, and to the national and international scale; and it is getting more complicated every day.

DO look closely at the qualification of each candidate. Is he (or she) "big" enough and does he have all the experience necessary to make a useful contribution: and within the timescale of his term of office? How familiar is he with the tasks which the RSGB faces? Will he respond constructively to the challenge? If the answers tend to be negative, he may if elected be keeping out someone better qualified.

DO consider carefully those who are nominating him. How well are **THEY** qualified to judge the candidate's ability? How long have they known him? Do the nominators all come from one locality, or does the candidate have a wide reputation?

DO ask the opinions of others you can trust if you do not know the candidate.

DO NOT vote for any candidate unless you are sure that your vote is well placed. It seems to make more sense not to vote at all than to risk voting for someone unsuitable.

DO take as much care as you can—the future of your Society depends so much on continuing to get the right people to lead it.

David Evans, G3OUF

Amateur Radio News

More problems in Belgium

It would appear that the situation regarding amateur vhf and uhf allocations in Belgium is again deteriorating. Radio amateurs in Belgium were initially threatened with the loss of some uhf and shf bands, together with some drastic amendments to power levels in other bands, in 1983 (see *Rad Com* Sept 1983, p 775).

After a good deal of lobbying from the Belgian society UBA, and intensive pressure from radio amateurs in Europe, it appeared that the proposals had been abandoned by the Belgian PTT. However, a revised version of the original plans has now surfaced, and the latest proposals appear to be as follows:

144–146MHz: power limit 50W output (not erp).
430–440MHz: the loss of the allocation below 434MHz to Syledis and a power limit of 50W in what remains.
1,245–1,300MHz: allocation to become 1,296—1,300MHz only, power limit of 1W output (not erp).
2,300–2,450MHz: allocation to become 2,400–2,450MHz only, power limit of 1W output (not erp).
5,650–5,850MHz; allocation abolished.
10GHz and above: plans unknown.

As we went to press the latest developments in this worrying situation were not known. All that can be said at this stage is a reiteration of what we said in 1983: "The Society is not aware of any facts which would suggest that the experience of Belgian amateurs is likely to be repeated in other European countries or indeed in the UK. It does seem that what has taken place in Belgium is an internal affair, as opposed to the thin end of a European wedge, but nevertheless the Society remains extremely concerned by its implications".

More information will be given as available via GB2RS and the Headline News Service.

Class B morse feedback

At the end of September 1985, the Class B morse experiment had been running for six months. Direct feedback, good or bad, is required from the membership, and should be addressed to: The Secretary (Morse) at RSGB HQ.

29MHz fm speech repeaters

The HF Committee and the Repeater Management Group have agreed a specification for a limited experiment with 29MHz fm speech repeaters, subject to agreement with the DTI. A small number of licences will be applied for, and the experiment will run for a period of one year. The units will be chosen on the following criteria:

1. Good geographical distribution.
2. Likely amount of use.
3. The technical merit of the proposal.

Two of the units chosen will be fairly close together so that co-channel interference effects can be investigated.

A number of tentative proposals are already with the RMG, and the groups concerned will be contacted in due course. The deadline for complete proposals will be 1 December 1985. Further information, including a copy of the specification, can be obtained from the secretary of the RMG: G4AFJ, QTHR.

QSL Bureau news

The sub-manager for the G4JAA-JZZ and G4SAA-SZZ callsign groups has changed. He is now Mr J A Towle, G4PJZ, 63 Digby Avenue, Mapperley, Nottingham NG3 6DS.

Sub-managers have been appointed for the G0IAA-IZZ and G0JAA-JZZ callsign groups. They are, respectively, Mr C J Webb, G4JFF, and Mr J A Towle, G4PJZ.

More power supply problems

Several members have recently informed the Society of a potentially highly-dangerous wiring configuration which has been encountered in imported low-voltage power supply units intended originally for the cb market. Although the supply to the primary of the mains transformer is fused, in accordance with good practice, the fuse is placed in the neutral side of the supply rather than the live (phase) side. This practice is dangerous because even though the fuse may blow in the event of a fault, much of the power supply's internal wiring will still be at "live" potential if it is still plugged in. The unwary who remove the cover prior to investigation of the cause of the blown fuse could still receive a nasty and possibly fatal shock by touching terminals etc.

The Society strongly recommends that owners of this type of power supply, or those who have built similar units, check carefully that the supply is fed via a double-pole mains switch and that a properly rated fuse is fitted in the live (phase) side of the supply feed to the primary winding of the mains transformer. It is worth mentioning that some imported equipment does not employ the British wire colour coding of brown for phase and blue for neutral: also, there have been several cases where these wires have been reversed in manufacture. A check with a neon "mains tester" screwdriver to establish which is phase and which is neutral is well worth while, in case either the wires are reversed or the wiring in the plug itself is incorrect.

In cases where the equipment contains a conventional mains transformer and there is no "soft starting" arrangement on the primary side, the fuse should always be of the anti-surge type with as small a current rating as possible consistent with its not blowing when the equipment is powered. It is also good practice to provide some form of "mains on" visual indicator, which is arranged not to illuminate if the fuse goes open-circuit.

Another potential problem with this type of unit is the ripple current rating of the reservoir capacitor. Many imported cb-type power supplies are said by the manufacturer to be rated for output currents of between 10 and 20A; taking the usual rule-of-thumb that with full-wave rectification the ripple current in the reservoir capacitor will be around 1·3 times the load current, this implies components rated at 13–26A ripple current. Unfortunately, several which have been seen by the Society appear to come nowhere near this rating, and the point is worth checking before buying or building power supplies of this type. Reservoir capacitors carrying continuous ripple current much in excess of their rated figure are liable to catastrophic failure, which is usually explosive.

As the Royal Air Force continues to stress to its personnel, "safety is no accident."

Are you insured?

A member recently informed the Society that the "small print" in his motor insurance policy excluded "...use with a two-way radio or telephone". The member pointed out that this appears to imply not only amateur radio but cellular mobile telephones and standard pmr. The Society advises members who use mobile equipment in their car to check carefully the wording of their insurance policies.

Sceptre 100 telephone

Members possessing this type of telephone may like to know that it can be severely disrupted if a badly-matched feeder carrying transmitted rf comes anywhere near the incoming line. The internal microprocessor "crashes" and all internal functions such as pre-programmed number directory, call timer and clock are lost. The solution is apparently to disconnect the telephone from the wall socket, take out the batteries and re-assemble the unit; it can then be re-programmed. Alternatively, the instrument can be disconnected during transmissions.

IARU news

The Kuwaiti Amateur Radio Society and the Brunei Amateur Radio Transmitting Society have been elected to membership of the IARU.

The latest edition of the *IARU Calendar* contains the following item concerning the 10MHz band:

"From time to time there is discussion of the use of the 10MHz band and the restrictions on its use which have been suggested by IARU. We think it is important to emphasize that the restrictions (the use of narrowband emissions only and the avoidance of competitive activities) were adopted not to infringe upon the rights of any individual member-society but to protect the 10MHz band not only now but in the future. Remember, please, that 10MHz is a very narrow allocation and that the amateur radio service is secondary—that is, the amateur radio service must not cause interference to the primary service.

"During our preparations for WARC 79, we were able to make a good argument for additional amateur allocations at 10, 18 and 24MHz. These

goals, among others, were adopted by IARU worldwide, and by the time WARC 79 had commenced in Geneva, a number of countries had included those bands in their pre-conference position papers. Not an overwhelming number of countries, by any means, but enough to bring the subject up for serious discussion at the conference.

"We finally got a 10MHz allocation from the conference, but only by the narrowest of margins. A single vote made the difference between victory and defeat for that allocation. Those of us at the conference literally held our breath as the 10MHz proposal made its way through the various committees to the final plenary session.

"After WARC 79, prior to actual implementation of the conference decision, there was considerable IARU debate about the projected use of that new band at 10MHz. It was a special case. It was only 50kHz wide. It was shared internationally with the fixed service, which includes both civilian and military users of many countries. Amateur use was to be secondary, and on the basis that no interference was caused to primary users. For these reasons, IARU asked itself, 'should there be any voluntary restrictions on the amateur service?'.

" 'Yes', the members of IARU decided. Because of the limited width of the band, only narrowband modes should be used; ie. cw and rtty. No phone. Similarly, because the amateur service was secondary and was not to cause harmful interference to the primary user, the members of IARU agreed, by majority decision, that they should not encourage any sort of operation that was competitive in nature. Thus, at the very least, no contests on 10MHz.

"Do these voluntary, mutually-agreed restrictions please everyone? No, of course not. There has been pressure for ssb operation on the band, and for a relaxing of the competitive ban. But IARU's position, as established at several regional IARU conferences, is still that the practical realities of our allocation at 10MHz are such that to permit phone operation and/or to permit competitive activities on that band might eventually either jeopardize our existing allocation or make it more difficult to get expanded allocations at a future ITU conference. It is encouraging to note that a majority of the 125-odd members of IARU have adhered to these voluntary restrictions.

"Some time in the next decade, perhaps as soon as 1991, there will be another General World Administrative Radio Conference, and the members of ITU will take another look at the frequency allocation table. It is quite likely that one of the IARU goals for that conference will be expanded privileges at 10MHz; maybe a wider band, maybe an exclusive allocation internationally, maybe both. We think that we will be in a better position to achieve those expanded privileges if, in the meantime, we have done nothing to violate the terms under which we occupy the band, terms that clearly specify in the International Radio Regulations that we occupy it on a secondary basis and that we are not to cause interference to the primary services."

Cheaper planning

In response to comments from the Society and others, the Department of the Environment has now taken account of the anomaly affecting the fee for the renewal of temporary planning permission. As of 26 August the fee was reduced from £47 to £27.

Clubs become twins

Certificates were recently exchanged between the Cornish Radio Amateur Club and the Southern Eire Amateur Radio Group to commemorate the setting up of "twinning" links between the two clubs. It is thought that this is the first formal twinning between two radio clubs in two countries in an effort to further the spirit of amateur radio. Originally a twinning between a Cornish club and one in France or Italy was suggested, but it was felt that the Class B licensee would not benefit very much if this took place: since 144MHz contacts across the Irish Sea from Cornwall are common, the arrangement mentioned above was the one which took place. Informal exchanges are now to take place between individual operators in both countries and a regular net takes place. (See photo on p880—*Ed*)

Got any pictures?

George Jessop, G6JP, is researching a new book which will be a pictorial guide to the technical history of amateur radio. Many very rare pictures of early amateur stations are likely to be published, and will be thereby saved from oblivion. Although George already has an extensive library of photographs, he would be pleased to hear from any old-timer who has pictures of pre-1939 amateur equipment and material which would enable captions to be produced. His address is 32 North View, Pinner, Middlesex HA5 1PE.

We dare you . . .

Now that the homebrewing season is upon us, how about a little challenge? The following letter was sent to us by Mr J B Stringer, G4ZDS, of BSL Express Service Ltd:

"This company has a large quantity of CV466 valves which are surplus to requirements: essentially these are small-signal pentodes with wired B8D "pin-outs" and their limiting values are Va 300V, Vg2 300V, Ik max 14mA and Pa max 1·5W. Are you a man or a switch flicker with manicured fingers caressing a Japanese black box? Here is a little fun problem for those who are not afraid to get their fingers wet! Take 10 valves, available from us for £5. Add Rs, Cs and a quantity of diodes etc to taste. Mix well with a liberal amount of brains and develop, produce or hack up a device —tx, rx, test gear or whatever. Entries in by 31 July 1986, and there will be a nice prize for the best device."

The valves and a data sheet can be obtained from J B Stringer, BSL Express Service Ltd, Handrail House, Maygrove Road, London NW6 2EG.

RSGB committee at exhibition

The following item was submitted by D J Bradford, G3LCK, of the Society's Education Committee:

"One of the first things you discover if you mention amateur radio to a group of non-amateur folk engaged in education is a great deal of confusion concerning the hobby—not to say antipathy. 'Oh yes, that's cb isn't it?' is a fairly typical (and blood pressure-raising) comment.

"Thanks to support by the Society, and in particular its Education Committee, the writer (very well assisted by G4JOV and G4TQB) was able to put on a two-part exhibit at the 1985 Association for Science Education annual meeting at Keele University. G3LCK and G4JOV set up and manned a stand in the Special Exhibition section, while G4TQB, Dr Peter Grannell of the Department of Physics at Keele, and members of the University Radio and Electronics Club provided demonstrations in the Physics Dept. Despite grim radio conditions GB2ASE managed quite a number of contacts, and special interest was shown in the amateur radio/microprocessor activities. A number of visitors were radio amateurs of long standing, but a remarkable number had no idea that our hobby existed—let alone that it could have educational connotations!

"At a time when a great deal is being said by society at large about the need for technical and scientific competence and an understanding of, or a feeling for, this important field of human endeavour, it seems to the writer that our hobby has much to offer as an educational resource. It is a catalyst for teaching effort as well as an excellent hobby in its own right.

"With that in view, and with the support of the Education Committee, the writer and others will be making every effort to reactivate GB2ASE at York University in January 1986."

Sideband

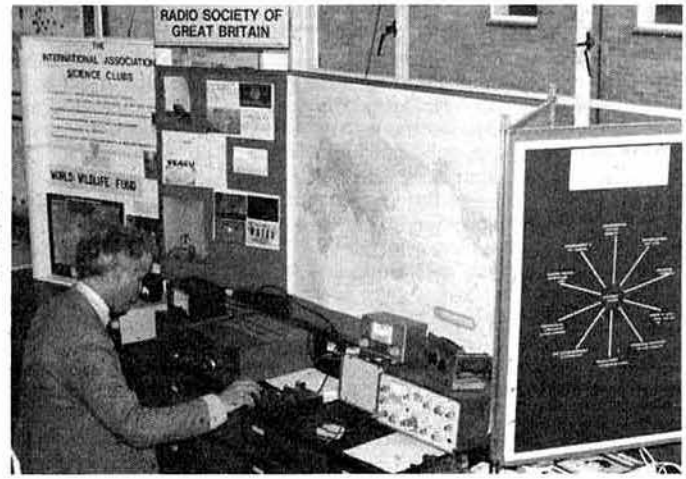
RSGB member Ray Barnes, VK4BK, has been given an old Panda Explorer 1 transceiver which he wants to restore—he'd greatly appreciate a circuit diagram and any technical advice. Write to him at 3 Park Street, Bayview Heights, Cairns, Queensland 4870.

A new General Development Order permitting dbs antennas of up to 90cm diameter to be mounted on houses without planning permission has been proposed by the Department of the Environment.

Stolen equipment

On 9 August from car in Newport, Gwent: TR7500, serial No 661959. Information to Newport Police, tel 0633 62292.

On 27 September from vehicle in Huyton, Merseyside: Sommerkamp FT290R, serial No 3C260876, marked L40 2QS with security pen. Information to Merseyside Police or G6ZWZ, QTHR.



Mr D J Bradford, G3LCK, with part of the exhibit mounted at the 1985 Association for Science Education annual meeting at Keele University

Special Event Stations

All information for inclusion in this column must be sent to the editor, not to RSGB HQ.

11-25 November, GB2ACC
Dunfermline RS will celebrate the 150th anniversary of Andrew Carnegie's birth, operating on hf and vhf, cw, ssb and rtty. Skeds welcomed. Special QSL cards. Details GM4WYR, tel 0383 736401.

23, 24 November, GB4CIN
On the occasion of the annual BBC Children in Need appeal this sponsored station will operate for 24hrs beginning at 12pm, 23 November. The station will be operated by members of the Fanny Hill Radio Club from Cudham, Kent, on 144MHz and hf bands. All proceeds will be donated to the appeal. Details G4MDG.

29 (or 22) December, GB4OLD, GB8OLD, GB4NEW, G8NEW
Radio amateurs throughout Europe (and the rest of the world!) are invited to join in the Lutterworth New Year celebration. Active on as many bands as possible, GB4OLD and GB8OLD will be used until midnight on New Year's Eve, and GB4NEW and G8NEW after midnight. The stations will operate from St Mary's Church, Lutterworth, Leicestershire. Details G6ZZE, tel 0533 768181.

13-14 March, 1986, GB4PHT
Operating from the Portland Heritage Trust during Portland Carnival, operation will be on 3·5, 14 and 144MHz ssb, cw, rtty, Amtor. A special effort will be made to contact amateurs in the other Portlands worldwide. Details G4RAK, tel 0305 822753.

Other Events

All information for inclusion in this column must be sent to the editor, not to RSGB HQ.

7 December
RSGB AGM, IEE, Savoy Place, London.

16 March 1986
RSGB National VHF Convention; Sandown Racecourse.

Mobile Rallies Calendar

All information for inclusion in this column must be sent to the editor, not to RSGB HQ.

2 November
The Fifth North Devon Radio Rally, Bradworthy Memorial Hall (near Holsworthy). Talk-in on 144MHz (S22). Open 10.30am-5pm. Details G8MXI.

24 November
Carmarthen ARS Rally. St Peter's Civic Hall, Nott Square, Carmarthen. Open 10.30am-5pm. Admission £1. Talk-in on S22. Free parking. Details from A F Dowling, The Old Farmhouse, Pant yr Athro, Llanstephan, Dyfed SA33 5AJ, tel 026 783 460.

24 November
West Manchester RC Mobile Rally, Pembroke Halls, Walkden, Worsley, Gtr Manchester. Details G6YIO, West Manchester RC, Astley & Tyldesley Miners Welfare, Meanley Road, Gin Pit Village, Astley, Tyldesley, Manchester.

1 December
The St Albans (Verulam) Christmas Rally, The City Hall, St Albans. Opens 11am. Talk-in on 144MHz and 432MHz. Entrance 50p. Enquiries to G4JKS, tel 59318.

2 March 1986
Doncaster & District Raynet Group amateur radio rally, Adwick Leisure Centre, Welfare Road, Woodlands, Doncaster. Talk-in on vhf and uhf. Open 11am (disabled 10.30am). Details G8XTU, tel Doncaster 531365 home, or 539446, ext 38 work.

2 March 1986
Welsh Amateur Radio Rally, Barry Leisure Centre, Barry, South Glamorgan. Organized by the Barry College of FE Radio Society. Enquiries GW4FOM, tel 0222 565656.

16 March 1986
Pontefract & DARS Components Fair, 11am-4.30pm, Carleton Community Centre, Pontefract, mid-way between Pontefract and Darrington on the A1.

16 March 1986
South Essex ARS Mobile Rally, Paddocks Community Centre, Canvey Island, Essex. Open 10.30am. Talk-in on S22. Details G4FMK, tel 0268 683805.

18 May 1986
The 29th Northern Mobile Rally, Great Yorkshire Showground, Harrogate. Details G3CQQ, tel 0943 602118.

8 June 1986
Elvaston Castle Mobile Radio Rally, Elvaston Castle Country Park, five miles south-east of Derby on B5010. Talk-in by GB2ECR on 144MHz and 432MHz. Morse tests available. Details from G4PZY, tel 0332 767994 or G4CTZ, tel 0332 799452. Trade enquiries to G4HIJ, tel Ashbourne 43241.

13 July 1986
Sussex Mobile Rally, Brighton Racecourse. Opens 10.30am. Talk-in via GB2SMR on 145·550MHz and 3·5MHz. Details from G8JVE or G4HUJ.

3 August 1986
Rolls-Royce ARC Mobile Rally, Rolls-Royce Sports and Social club, Barnoldswick, Skipton. Access from A59 and A56. Open 11am. Morse tests available. Enquiries to G4ILG, tel 0282 813271 ext 337, daytime, or 0282 812288 evenings.

10 August 1986
Hamfest '86 at the Flight Refuelling Sports and Social Club grounds, Merley, Nr Wimborne, Dorset. Details I Galpin, 19 Palmer Road, Oakdale, Poole, Dorset BH15 3TR.

7 September 1986
Lincoln Hamfest, Lincolnshire Showground. Further details to be published at a later date.

OBITUARIES

The Society records with regret the deaths of the following radio amateurs:

Mr W W Barnes, G2FI
Bill Barnes died on 12 August. A life-time cw operator, including a professional spell as a seagoing "sparks", he served in the newly-formed RAF at the end of WW1 and again throughout WW2. Although severely handicapped during the last 10 years, he remained QRV.

Mr H Bedford, G8MRH
Harold Bedford died on 19 August. Although only occasionally heard on the air, he regularly attended meetings of the Reigate Amateur Transmitting Society, of which he was also a past committee member. His constructional projects were invariably meticulously executed and often featured at constructional contests.

Mr E Bigg, G4MHP
Ernie Bigg died on 1 September 1985. He was treasurer of Taunton & District ARC for many years and would always go out of his way to make new club members feel welcome.

Mr F Burns, G3ABK
Fred Burns died in Swaziland on 3 September aged 65. He was first licensed in the late 'forties and will be best remembered for his activities with the Worked All Britain group. From 1979-83 Fred undertook production of WAB record books and also revived the WAB newsletter as editor. For his tremendous efforts he was the first recipient of the WAB Founders Trophy and served as WAB President 1982-83. From April 1983 to March 1984 he operated as 7P8CT and was 3D6BG until his death.

Mr R Canning CEng, MIEE, G6YJ
Richard Canning, who died recently, was licensed in 1929 and was a keen cw operator who could normally be heard on the dx bands. As a member of the lecturing staff at Brighton College of Technology he ran RAE courses with great success; on retirement he continued in this capacity at the mid-Sussex RC.

Mr E Fish, GM2HCZ
Ed Fish died in July aged 87 having been a regional representative of the RSGB for many years. He was an active member of the British Rail ARS, but preferred cw to phone.

Dr R Hair, GM0ABX
Ross Hair died on 22 September aged 71. He had come late in life to amateur radio after a long and distinguished career in medicine. Although only partially sighted he successfully tackled the RAE and morse test, thanks largely, he said, to the help he received from the RAIBC. He rapidly built up a very wide circle of friends on vhf and hf.

Mr F C Hart, RS85259
Mr Hart, who died on 23 March, was an enthusiastic member of the Colchester RC. His interest in radio spanned 40 years and his retirement last year meant more time for indulgence in his hobby.

Mr C Kidman, G8JOT
Colin Kidman died on 30 August. He was an able technician and although severely handicapped in recent years, he was never happier than when helping other amateurs to sort out their equipment problems. A member of the Surrey Radio Contact Club for many years, his main interests were home construction and circuit development.

Mr S Kelly, G3COZ
Stan Kelly died in August 1984, active until shortly before his death. He joined the Royal Corps of Signals in 1930 and during WW2 trained underground operators in morse.

Mr J T Riley, G3TCS
Trevor Riley died on 29 August aged 66, having served in the army since 1939. He was a member of Northern Heights ARS.

Mr S Torkington, G3PY
Sam Torkington died on 10 September aged 67, having been a member of the RSGB for over 40 years. He was first licensed in 1938 and was a founder member of the Glossop Amateur Group. During the war he served with the Royal Signals and was also a member of the Royal Naval ARS. He was well known in the South Manchester area through his work for the Radio Interference Service. His talks to surrounding clubs were always very popular and he was made a life member of Stockport RC because of his work. Home construction featured throughout his amateur life and this allowed him to keep a daily sked with ZS1JJ for many years.

Mr J Wilson, GM6XI
Jack Wilson, who died on 6 September, aged 83 had been an enthusiastic amateur since the 'twenties and was a founder member of the Lothian RS. For many years he was active on 3·5MHz, and had many regular contacts there. In his last few years ill-health confined him to bed but he stayed very active on 144MHz and 3·5MHz and was always ready to give advice.

Also
Mr F W V Buckland, G3DIR, on 6 July
Mr R Conway, G3INE, on 14 August
Mr J G Flaherty, G6LIM, on 28 August
Mr A E T Furze, RS44929
Mr H H C Graepel, EI1DA, on 31 October 1984
Mr F N Harrison, G6DEW, on 19 July
Mr G B Kirkup, G6ZBR, on 6 August
Mr C V Knight, G2AZW
Mr G E Little, G8XAV, on 3 September.
Mr J F McCoy, ZS6JM, on 19 July
Mr G P McGuire, GW4XKJ, on 30 May
Mr R McWilliam, G3XUG, on 22 August
Mr A Morris, G3EUZ, on 24 January
Mr W C Muller, G2CJY, on 3 February
Mr G A Newman, RS39157, on 3 September
Mr J B C Robinson, VE3BMZ, on 22 June
Mr J Sharp, GM4ROW, on 19 August
Mr W J A Whyte, GI3CGO, on 27 June
Mr C D Willment, G4TYX, on 2 September
Mr T Wills, G2BXA
Mr P A C Wood, GW3GNT, on 30 October 1984

Members' Mailbag

MORSE TESTS

Sir—I wish to complain about the cw tests at the Woburn Rally. Although I passed, some people didn't, and if they wrote in people would put it down to bad sportsmanship and bitterness because they failed.

The first problem was the western music outside the morse tent; not ideal, but the tests could be taken with it in the background.

The second problem was the public address system; it was so loud it interrupted the test every time. This meant stopping, and either continuing or starting passages again. This didn't do wonders for the nerves or anything else. It ruined concentration. It interrupted the sending as well! We didn't care if you were paging TTW or telling the music to stop, as it interrupted us, and the music didn't stop anyway.

Third, people kept on shouting "ooh, morse tests; hey look, morse!" and coming in to talk.

A rally is unsuitable for morse tests because of all the noise and interruptions, and headphones were not supplied. Although rallies are convenient places to hold the tests, unless the location is changed, and headphones provided so less outside noise is audible, they become pointless because of all the noise and interruptions. Mr Williams tried his best under difficult circumstances, but it seems a rally is unsuitable.

M Zatman, G0CNO ex-G1OGI

This is the only complaint we have received about morse testing at rallies. Any other comments?

A CAUTIONARY TALE

Sir—In July 1985 I purchased a regulated psu from a recently-opened cb shop for what was a give-away price and ideal for powering my converted cb-to-10fm rig. Eight months later the psu developed a fault, and the retailer refused to honour the guarantee.

Despite numerous visits by an officer from the local, and most helpful, Consumer Advice Centre, the retailer refused to compromise. It was then I initiated legal action in the Small Claims Court. As the legal process does not move very fast, and because the retailer in question stalled along every step of the way, and even ignored the court on more than one occasion (!), it has not been till now that I have received cash compensation.

Yes the law is there and does work, but it takes a very long time for results to come through. In future I'll pay the going rate of bargain prices if I can find them, but only from reputable establishments. I urge all to learn from my mistakes and do likewise.

K Ruiz, G4SGF (ZB2MD)

There have also been technical problems with some of these psus—see "Amateur Radio News" this month—Ed

EVEN MORE ON QSL CARDS

Sir—May I make further comment on the thorny subject of QSL cards and their requirement for various awards.

During the course of a year, I send out some 200-300 QSL cards, some direct with saes enclosed, but the majority via the QSL Bureau. The returns vary from 25 to 70 per cent, usually depending on the percentage content of early to late callsigns in the batches sent out. The lowest returns are from the earlier callsigns, eg G2 and G3s, to the highest rate of returns from the G0 and G1s. This despite all the promises made during the QSO.

Also, as the request for a QSL card is usually to confirm a county or locator square etc—if so, I always mention this when sending out my own card—quite a number of cards are received where this information is completely or partially missed off the card. In view of this, the difficulty in working towards any of the RSGB awards for the vhf/uhf bands is not in the ability to make a contact with a station in a particular country, county or locator square, but to work a station in the required location who will actually send a QSL card to confirm the contact.

With regard to obtaining a QSL card from a rarer location, then the dxpedition station is undoubtedly the best chance; to date I have received 100 per cent returns from dxpedition stations, to whom I am most grateful. On the other hand, contest stations who go to the rarer locations with an obvious view to attract as many calls as possible to increase their chances in a contest, show a very poor return in response to the request for a QSL card.

Special event stations generally are very good in the return of QSL cards; in fact I have on occasion received a QSL card from a special event station before I have sent mine out in a batch to the bureau. But there have been a couple who even after being sent a card via the bureau and one direct have not replied.

I do not send out QSL cards to every station I contact, only when I require something confirmed or the other station requests confirmation from me either during the QSO or subsequently on a QSL card. All QSL cards received by me, whether from an swl or a licensed station, will always be sent one of my own QSL cards, irrespective of whether I require any confirmation from them.

D J Hudson, G6OVO

LOC, OLD OR NEW

Sir—As a newcomer to vhf (but not to amateur radio) I certainly enjoyed my first six months of chasing dx and squares—there was an element of excitement in hearing somebody say "DELTA-DELTA" square. Then came January 1985, and I found (much to my dislike) all new numbers.

It seems to me the European vhf community should stick with the old system; it appears to have done very well over the years, and I for one can see no advantage in the change.

Robert W Ainge G4XEK/W5MJQ, ZM0IH

CLASS B LICENCES AND CW OPERATION . . .

Sir—To suggest, as Mr Butcher did (*Rad Com* August, p608), that the Class B licence is an intermediate licence seems unfair on those who hold such licences. Of course, we all hope that the B licensees will go on to become A licensees, but there are many B licence holders who get much pleasure out of our hobby and develop great expertise in the vhf field.

To tag on a 5wpm morse requirement seems to make little sense to the B licence holder as a useful means of communication, and it could do much harm to the future of an aspiring telegraphist. Operating at this speed makes the sender lose all sense of the correct character spacing and dot-dash length, and the receiver will tend to "count out" the individual dots and dashes.

What is so wrong with the idea of learning to send and receive morse code on closed-circuit arrangements? It is dull and boring you will hear. Perhaps this is an indictment of some of us who have achieved expertise in telegraphy to make the learning process more interesting at club and society level. Much has been done but there is more to do.

Those starting to learn morse telegraphy should be taken through the process of learning the alphabet, figures and special marks as rapidly as possible, and then present the student with morse characters at about 6-7wpm with about twice the normal spacing. In a remarkably short time the student will recognize morse characters as letters etc. The same is true for sending morse characters etc. As the student approaches about 10wpm the learning process is one of refining techniques already acquired. This refining process should consciously strive to keep one or more characters behind the sender in making the copy and, likewise, when sending keep one or more characters behind the text or extempore material as read. Proficiency in morse telegraphy is akin to learning shorthand or pianoforte; success is directly proportional to commitment.

The point I wish to make is that a morse speed of not less than 10wpm should be specified for an intermediate certificate if such an arrangement is really necessary. Having got so far, 12wpm is no great forward leap.

The writer spent five years training telegraphists for the PMG Certificates of Proficiency. The basic course lasted for two terms out of which 150h were allocated to telegraphy and commercial working.

R G N Soper, G3VJZ

. . . AND NOVICE LICENCES

Sir—Throughout the last months many comments have been made about novice licences and morse for Class B licensees. May I put forward a few comments to try and solve the arguments.

1. I am of the opinion that it would, with the very limited exception of cb, be wrong to let anybody on the air without any restriction and regulation.

2. With the present arrangements for morse for Class B licensees, standards could vary from absolute beginner to test standard. It is for that reason that they have to identify themselves by phone and therefore restrict themselves to the all-mode section of the vhf/uhf bands.

3. Regardless of the above points, it must be remembered that amateur radio is about self-training, and to deny unlicensed radio enthusiasts from taking any active part in amateur radio (other than swling) and Class B licensees from learning morse the practical way contradicts the self-training principle.

The following plan could provide a solution.

a. The present B licence to be relegated to a C licence with the present B licence conditions, ie phone only.

b. A new B licence created; this would be a half-way house between the A licence and B licence. The requirement for this licence would be a morse test at 6wpm. This speed is only just faster than the rate attained when the alphabet is just learned. Also at 6wpm the amateur is competent to send his own callsign. Thus he could use cw sections of vhf/uhf bands.

In addition, in the 14 and 28MHz bands certain parts of them could be open to him; for example, 14,075-14,100kHz cw only, 14,100-14,300kHz phone only, 28,150-28,200kHz cw only, 28,200-28,500kHz phone only.

c. The 6wpm cw exam could be organized by the RSGB and could have an emphasis on practical communication rather than plain text etc.

d. For the encouragement of those wishing to obtain their "ticket", the radio examination can be taken in two stages. The first stage exam to incorporate the old Part 1 plus questions relating to operating practices and procedures and valid for, say, 2·5 years. Only one obtaining a first stage pass will be able to apply for an operating permit. This permit would enable the bearer to use a club station under supervision of an A licence holder. This would be a more realistic alternative to a novice licence.

I hope the above comments provide a solution rather than create more problems.

R M Boss, G4ZDE

Sir—As an overseas member of the Society, I feel compelled to comment on some of the recent correspondence regarding the proposed novice class licence, even though I obviously would not directly benefit.

The claims of some of your correspondents that a novice class licence would lower the quality of the licensees is, of course, correct on the face of the claim. But that is not the point. The new licensees do **not** remain at the level of competence demonstrated in passing the examination. Rather, those that stay with amateur radio learn, and keep on learning. And **that** is the point of a novice licence. There is no better learning experience in amateur radio than the hands-on approach that a novice licence offers.

A few facts from the American experience with a novice licence, established in the

'fifties, are worthy of note. For one, in excess of 90 per cent of the amateurs today under the age of 50 started out in amateur radio with a novice licence. This includes the substantial majority of Extra Class licensees, the highest class of licence in the USA. Obviously, most novices move up the American licence ladder, even though the Novice licence is good for five years, and is renewable.

Certainly, the fear of novices creating interference problems are largely groundless. Novices, like most other amateurs today, start with manufactured equipment, rather than homebrew. Such equipment is designed to avoid generating out-of-band signals. And novices, well aware of their limitations, are typically especially careful to not cause problems on the bands available to them. And, with no more vhf tv in the UK, novice problems with tvi would appear to be a virtual impossibility.

I am convinced that a novice licence class in the UK would greatly increase the number of amateurs there, as it has in the USA, and would certainly yield a stronger Society. Could it be that some of those opposed to a novice licence class fear just those eventualities?

R C Locher Jr, W9KNI

As a well-known author and dx operator, Bob's views merit publication. However, it should be added that the licensing system in the USA is somewhat different from that in the UK, insofar as Britain has no incentive licensing system. It would be interesting to know what percentage of people taking out a USA Novice licence fail to renew it or to graduate to a higher licence class: it is understood that a fair percentage of new UK amateur licences are not renewed after a couple of years. Equally, the RSGB strongly suspects that a surprisingly high proportion of UK amateur radio licence holders are not active amateurs.

EMERGENCY SERVICE

Sir—Readers will, I believe, be as surprised as I that BARTG should support the proposal by G3GJW of an emergency register of their members.

The established licensed amateur emergency body—Raynet—is fully supported by the RSGB, and its value is recognized by the authorized user services. The creation of a separate register can only be regarded as divisive and is to be deplored.

Raynet members are covered by adequate insurance when on duty. The possession of the ID card which is recognized by the emergency authorities, including the police, is of great importance.

Most Raynet groups are equipped with rtty equipment and would welcome any amateurs with that specialization to their ranks.

There is a role for licensed amateurs using rtty in emergency communications—but to be effective I would urge BARTG members to exercise their expertise through the established channel, ie Raynet.

Charles Bottoms, G4PIP

PROPAGATION AT 50MHz

Sir—I have seen the growing interest in propagation at 50MHz, and I would like to throw into the ring the idea that it is possible that the ionized track of a lightning stroke can act as a vertical conductor several miles high and explain some of the reported phenomena.

The survey by Quentin Campbell covers existing established modes, but not the ones reported in earlier issues when paths adjacent to storm areas gave substantial enhancement in particular directions, or the report of reception during a storm in the September issue of *Radio Communication*.

I recently installed a wideband 50MHz antenna and tv receiver to monitor tv dx to see what could be done, and as expected found that signals were occasionally adequate to lock the picture but far more often were either non-existent or only just visible well down in the noise.

On many occasions, however, the image would suddenly rise from the noise and lock solid with virtually no noise on the screen and then fade out. The point I would make is that in far too many cases to be coincidence, this jump in signal synchronized with a "crack" in the sound which I can only associate with lightning. The period of signal from a fraction of a frame to about 1s is virtually identical with the duration of the ionized path before it is dispersed physically.

Do lightning and thunderstorms in the Alps explain my reception of short bursts of signal from stations in Austria, Italy and Spain? Have we to add lightning to the other signal enhancement causes. I am inclined to think so. A single stroke of less than 1s is unlikely to assist in a normal contact, but a storm could. Any comments?

Charles Walshe, G1BMV

SHUTTLE COMMUNICATIONS

Sir—The recent historical experiments carried out by the space shuttle *Challenger*, and previously by *Columbia*, gave me a very satisfying experience.

My QTH is situated in probably one of the worst locations one could imagine. I live in a valley surrounded by hills in a very tight circle, so that vhf/uhf contacts are largely local, except in one or two directions where the hills are slightly lower.

However, the signals from the spacecraft came in really loud and clear. I am sure that had I been equipped for sstv I would have received excellent pictures from *Challenger*.

The voice transmissions were absolutely first class, though of course only of short duration. The report I felt compelled to send to Nasa earned me a QSL card from *Columbia* which I treasure very much.

My theory is that the bowl of hills represent a dish, and the signals are concentrated on to my antenna by virtue of this awful terrain.

G Green, G6TQD

Whatever its other virtues, headquarters is far from being a prime vhf/uhf site, so GB3RS found its excellent reception of pictures from Challenger *very satisfying too!*

CB GEAR

Sir—You ask for comments on Mr Dyke's letter (September 1985): I hasten to oblige you. I quite affectionately recall that a few years ago I had a thing called a Multimode-2, as could be then obtained for (a fair amount of) money, a valid receipt being given, across and above counters in Glasgow and doubtless elsewhere; it could receive all modes from below 27 to somewhere above 28MHz (say around 11 metres, from the *Admiralty Handbook* or write a computer program) by a confusing combination of channel switching and "clarifier". It did seem possible that with a microphone connected it might transmit too and subsequently between this notion, having a nice new B licence, being quite unable to learn morse and not at the time knowing that the Society is not anti-cb, I deemed one day that it might be as well to dispose of it. Only one method seemed practicable and, to cut a long story short, it passed for a very nominal sum to an amiable character known to the world by the curious soubriquet (or "handle") of the "Dog's Dinner".

It now occurs to me (some of my most profound thoughts arise in hindsight) that "Canine Sustenance", whose practical ability in non-free electron electronics far exceeded that of at least one candidate accorded "distinctions" in the RAE, could and may have achieved naughty things with that device, on one band or another; whereas, had I been able to communicate with a person of assured goodness—indeed, such a one as Mr Dyke—through your distinguished journal, I might have rested content that it had passed to a better fate, in a higher sphere.

Sir, there may yet remain brands to be snatched.

Alex L Dick, GM6KKP

READ THE SMALL PRINT

Sir—I am sure that all your readers will be interested and horrified to learn that when forwarding any radio equipment via Securicor, they should be aware of the small print in the Securicor Company's Liability and Indemnity: "a sum not exceeding £50 in respect of any one consignment".

A recent case of a two-year-old FT101ZD sent to the dealer for repair via Securicor, had been dropped from a great height in spite of the parcel being securely packed, second hand value £450. Securicor can only re-imburse up to £50, the charge for the parcel was £11, the return fare by train £6.90, and for a senior citizen £4.60. Hindsight says, take the parcel personally or take out a separate insurance, but whatever you do look carefully at the small print in your Securicor agreement.

W H Bradshaw, G4SKS

RIS AND THE LICENCE FEE

Sir—The so-called "free" Radio Investigation Service is to be paid for in future, presumably by the owners of television receivers, and so it is logical that we should all have a **reduction** in the cost of the amateur licence!

Why? Because we have always been told, especially when the licence fee was about to be raised, that a large proportion of it went towards the cost of running the RIS. In 1983-4, this was stated to be £8·9 million, of which £7·1 million went on remedying interference, and £800,000 on enforcement. With such staggering figures saved, surely our licence fee should be halved at the very least!

Written with tongue very much in cheek!

Douglas Byrne, G3KPO

At the present time the Society is actually trying to find out what the proportion was!

CALL BOOK COMMENTS

Sir—Six weeks before my amateur licence ran out I telephoned the Radio Amateur Licencing Unit to ask why I hadn't had a licence reminder; the yl on the other end of the phone said, "Oh, your licence was cancelled in January". Who cancelled my licence I don't know, but she apologised and said she would send a reminder. Three weeks went by and still no reminder, so I phoned again; the yl then said she would post me the reminder first class post. Another two weeks went by, so I posted £12 with a letter for a new licence. Two days later my cheque was returned with a form saying that because my licence had now run out it had been cancelled, and that in order to regain my callsign I should submit a new application form with a CGLI pass slip and morse slip.

Has anyone else had any problems with the RALU? My callsign has not been printed in the *RSGB Call Book* because someone seems to have lost my records at the licensing unit.

A Booth, G4YQQ

Sir—A perusal of the latest *RSGB Amateur Radio Call Book* revealed that both my old Class B callsign (G1HGH) and my current callsign (G0AOZ) are reproduced. I have written to Chetwynd House to advise them of this point. Do many other radio amateurs have the distinction(?) of having two callsigns printed in the *Call Book* I wonder?!

Roger D Powell, G0AOZ

Sir—I fear to walk on quicksands, and I shrink from treading upon sensitive toes: I realize that what follows may do both.

The *RSGB Amateur Radio Callbook* is a comfort to us all but, sadly, it is an alphanumerical nonsense. How, in haste, is one expected to use efficiently a publication where, for example, G3ZZ is listed before G3AAA?

This quaint taxonomy may please some of the mandarins—but it makes the book difficult to use. Do the G + two-letter licensees *really* want public recognition of their seniority, or was this thrust upon them by the early compilers of the book and perpetuated by their successors?

I would like to see a 1986 *Callbook* which is practical rather than archaic. What, I wonder, do other members think?

Gordon C Moore, G3MCY, ex-ZC4GM

We wonder what other members think about this, since we have received frequent comments in the course of lectures and correspondence that the new system is precisely what was always required and why didn't we do it years ago! As a matter of fact, most other amateur radio callbooks in the world use the alpha-numeric layout employed in the current RSGB Call Book *as does the large* International Call Book *published in the USA.*

Discovering 28MHz

John Petters, G3YPZ*

FOR MANY AMATEURS the 28MHz band is that switch position on the transceiver that is only useful for a few years in every sunspot cycle. The purpose of this article is to dispel such notions, and to attempt to prove that this band holds many unexpected gems that can prove to be both exciting and innovative. Positioned just below the dividing line between hf and vhf, 28MHz shares the characteristics of ionospheric propagation as well as the tropospheric, auroral, meteor scatter, sporadic-E and "spacewave" more usually associated with vhf.

It is to the detriment of the amateur fraternity that this 1·7MHz bandwidth is left empty for so much of the time. Indeed, the old adage "use or lose" is one that is particularly relevant to 28MHz. Our 27MHz bedfellows, forced to tolerate high interference levels on the crowded cb band, see our empty spectrum as fair game; indeed, several minicab firms are conducting an efficient business in the cw portion of our band. The amateur movement has always prided itself on its ability to discover and enlarge the field of knowledge in the art of radio communication, but I would venture to suggest that a fair amount of propagation traits have been stumbled upon by illicit cb stations operating on 27MHz rather than by licensed amateurs operating on 28MHz.

28MHz fm

Due to the available bandwidth, the 28MHz band—alone in the hf spectrum—allows such wide-band modes as fm or a.m. to be used without being antisocial. During the last cycle, a worldwide movement using fm sprang up at the top end of the band, largely promoted by USA stations using converted pmr or cb rigs. A network of repeaters appeared all over the North American continent, most of which were co-sited using a uhf or vhf link between transmitter and receiver. Many American amateurs set up remote 28MHz base stations in good locations and accessed them via 144MHz mobile or handheld rigs. It was quite novel to contact a W2 station who was walking around New York city using a walkie-talkie into his remote base, which was providing a fully-quieting signal into the UK.

In 1981 the first multimode hf rigs had provided some fm activity on a worldwide basis, and contacts were being made between G stations and all other continents. Between 1978 and 1982 G3YPZ had worked all American call areas as well as many South American, African, Asian and Australian amateurs from the mobile installation running between 1W and 100W. FM activity on the 28MHz band is centred around the 29·600MHz calling channel. Frequencies below 29·550MHz should be avoided, as this is the satellite portion of the band. Most fm activity is vertically polarized. The use of half-wave end-fed or 5λ/8 groundplanes at a nominal 20ft should provide good communications over a 30-mile path on 4W, depending of course on terrain. Mobile to mobile using helically-loaded cb antennas should give at least 20 miles for the same power. When the band is open, the world becomes your oyster!

Possibly the one redeeming factor of legal 27MHz cb in the UK is the availability of low-priced rigs and antennas that can be converted quite simply to operate on 28MHz. This has resulted in a growing spate of activity all over Britain within the last few years. It has also brought an air of experimentation back into the hobby, allowing enthusiasts to adapt and modify equipment without fear of invalidating the warranty or resell value of an expensive Japanese black box. With the cost of ready-to-go rigs offered by some companies at around £60 28MHz fm is by far the cheapest way to get on the air and provides a viable alternative to the crowded 144MHz band.

F-layer propagation

Ionospheric reflections are the most-commonly documented phenomena on the 28MHz band. Due to its high frequency the band suffers greatly from the decline of the sunspot cycle, and is only usable on this mode for about five years out of every 11. During the minimum years the band behaves totally as a vhf band, with no F-layer skip in evidence. Ionospheric signals on 28MHz rely on the F2 layer which, being the highest, also gives the longest single hop. It is a band that changes drastically with the seasons, giving good openings on the east-west path during the months from September to April, but providing paths only to the southern hemisphere during our summer months. At the height of the cycle, 28MHz offers the possibility of intercontinental dx with extremely low power on all modes, including fm. It is also the last band to open and the first band to close for dx traffic, and gives its best results in the hours of daylight.

John Petters, who was licensed in 1969, and has been active on 28MHz since 1970, and on fm since 1978. After some years in the domestic electronics service trade, he is now a professional jazz musician/band leader. Photo: G4GHU

Morning time brings excellent conditions to the Far East, the Pacific and Australia. As the day progresses, the path swings around to envelope the continent of Africa, and then on to the Americas. At certain times it is possible to work stations simultaneously in every direction. Unfortunately, at the time of writing, the band is at the depths of its decline, and thus will not provide reliable F-layer skip for another few years.

Back-scatter propagation, which allows contacts inter-G and inter-Europe outside the normal "spacewave" range, relies on signals being reflected back from the F-layer in the direction from which they came. Scatter signals on 28MHz can often be distinguished by flutter and a phase distorted sound. The distortion renders this mode unsuitable for fm contacts. Being F-layer dependent, scatter propagation only occurs during good sunspot years.

Spacewave propagation

This is often confused with groundwave propagation as experienced on the lower frequency bands. The mode used on 28MHz for inter-G communications under flat conditions is the same line-of-sight direct propagation used on 144MHz and is subject to the same properties. The

*301 Willowfield Tower, Harlow, Essex CM18 6SD.

28MHz BEACONS

Frequency	Callsign	Location	Lat/Long	ERPW	Antenna	ASL(m)	Beam direction	Mode	Status
28,175	VE3TEN	Ottawa		0		0			
28,202	ZS5VHF	Durban	29°44'S, 30°50'E	10	Inverted-V	678		A1	
28,205	DL0IGI	Mt Predigtstuhl	47°42'N, 12°53'E	100	Dipole	1,650	N-S	F1	
28,207	W4	Florida		0		0			Freq reserved
28,210	3B8MS	Mauritius		0	Groundplane	0			Operational
28,212	ZD9GI	Gough Island	40°21'S, 09°52'W	0		0			
28,215	GB3RAL	Slough, Berks		14	Vertical monopole	20	30°	F1A	Not yet lic
28,215	GB3SX	Crowborough	51°02'N, 00°08'E	10	Dipole	167	N-S	F1A	
28,217	VE2TEN	Chicoutimi, Que		4		0		A1	
28,220	5B4CY	GU14G	34°45'N, 33°19'E	20	Groundplane	20	Omni	F1A	
28,222	HG2BHA	Tapolca		10	Groundplane	280	Omni	F1	
28,225	VE8AA			0		0			Non-op
28,228	EA6AU	BZ45A	39°29', 48°35'	10	GP 5/8 dipole	149		A1	
28,230	ZL2MHF	Mt Climie	41°09'S, 175°09'E	50	Vertical dipole	890	Omni	F1	
28,235	VP9BA	Bermuda		0		0		F1	
28,237	LA5TEN	Oslo		2	Omni	0		A1	
28,237	ZS3HL	Tsumeb		6	5/8	0		F1	Temp non-op
28,240	OA4CK	Lima, Peru		10		0			Non-op
28,242	ZS1CTB	Cape Town		20	1/4 vertical	0	Omni	FST	
28,245	A92C	Bahrain	26°09'N, 50°28'E	0	Dipole	0	NW-SE	F1A	
28,250	Z21ANB	Bulawayo		40	2-el quad	0	N	F1A	
28,252	OH2			0		0			
28,252	VE7TEN	Vancouver, BC		4		0			Non-op
28,257	DK0TE	EH26C Konstanz		40	Groundplane	440	Omni	F1	
28,260	VK5WI	Adelaide		100	.64 vertical	0	Omni	A1	
28,262	VK2RSY	Dural		25	Vertical halfwave	240		A1A	
28,264	VK6RWA	Perth		0		300		A1	
28,265	VK			0		0			
28,266	VK6RTW			0		0			
28,270	VK			0		0			
28,270	ZS6PW			0		0			Tep expl stn
28,272	9L1FTN	Freetown		0		0			Operational
28,275	VE3TEN			0		0			Freq reserved
28,277	DF0AAB	Kiel	54°19'N, 10°33'E	15	Groundplane	163	Omni	F1A	
28,280	YV5AYV	Caracas		20	TH6	0	EU,W,VK, in 24h	F1	Not known
28,282	W9			0		0			
28,284	KA1YEB	Henrietta, NY	43°02'N, 77°41'W	4	Vertical dipole	212	Omni	A1A	
28,285	VP8ADE	Adelaide Island	67°34'S, 68°08'W	0	V-beam	0	To UK		
28,287	H44SI	Solomon Islands		0		0			Proposed
28,287	W8OMV	Tuckasegee, NC		15	Groundplane	0	Omni	A1	Non-op
28,290	VS6TEN	Mount Matilda		10	Vertical	300	Omni	A1	
28,292	JA2	Mount Asama	34°27'N, 136°47'E	0		0		F1	Not yet op
28,295	VU2BCN	New Delhi		0		0			
28,296	W3VD	Laurel, MD		10	Vertical dipole	130			
28,300	PY2AMI	Sao Paulo	22°45'S, 47°16'W	0	Groundplane	0			
28,302	ZS1STB	Still Bay, SA	34°23'S, 21°24'E	5	Dipole	15	N-S	F1	
28,312	ZS6DN			0		0			Irregular
28,315	ZS6DN	Transvaal		100	Groundplane	1280	Omni	CW	
28,888	W6IRT	N Hollywood	34°12N, 118°28'W	7	Groundplane	0	Omni	A1	Non-op
28,894	WD9GOE			0		0			Non-op
28,992	DL0NF	FJ47A		1	Delta loop	630	E-W	A1	Not ibp

polarization of the antennas must be matched if a usable signal-strength is to be obtained over any reasonable distance. Indeed, cross-polarization will result in path losses in the order of 20dB or more. A low radiation angle from the antenna is of great importance if good range is to be achieved.

Unlike 144MHz, the 28MHz band does not suffer to any great extent by adverse terrain. It is often possible to work from valley to valley on 28MHz where no path would be present on 144MHz. The signals on 28MHz are refracted considerably, and thus tend to follow the curvature of the earth for longer distances. This gives a greater range than is possible on 144 MHz. Tests carried out over the past few years would indicate that a nominal simplex mobile-to-mobile range of 10 miles on 144MHz can be doubled on 28MHz for an equivalent power. Another important difference is the apparent reduction of mobile flutter on 28MHz. Due to the greater wavelength, the peaks and nulls are much slower on 28 than on 144MHz and therefore appear as slow fades rather than the fast choppy flutter. Aircraft flutter will also be noticed on spacewave signals as reflections from the craft add to and subtract from the direct path.

Spacewave propagation is reliable and not subject to seasonal or sunspot variations, and for this reason the band is ideally suited to local inter-G contacts within an 80-mile radius—assuming 100W ssb or cw and matched polarized antennas.

Tropospheric ducting

The vhf operator, mindful of the barometric pressure, knows when to expect a lift in conditions. The 28MHz band displays similar lift characteristics during periods of high pressure and on foggy days. Temperature inversions frequently refract 28MHz signals over distances from 30 to over 200 miles. Signals assisted in this way are subject to deep, slow and often complete fades. The area of refraction can be quite selective, with stations a few miles apart being outside the refracted distance. Unlike F or E propagated signals, tropospheric signals are often less inclined to the phase distortion experienced with the ionospheric modes—indeed, on many long-haul inter-G signals no such distortion has been apparent. It would appear that there is some degree of lift present most of the time on 28MHz, but a lack of activity on the ssb and cw modes allows slight lifts to go un-noticed. The RSGB Cumulative Contest in autumn 1984 proved that considerable distances could be worked when stations actually used the band. Contacts between Harlow and Yorkshire, Hampshire, Nottingham, and South Wales were all made on ssb during one evening's activity using an assisted path. There is much research that could be done into this fascinating mode—perhaps a series of vertically-polarized beacons could be set up across the country to study the phenomena.

Sporadic-E

The summer months on 28MHz provide a rich variety of contacts with European and even North African stations via sporadic reflections from the E-layer. Distances ranging from a few hundred to about 2,000 miles are typical. The conditions are totally variable with signals over S9 vanishing into the noise within a few minutes. The usual E-season starts around April and can last until September, and is not affected by the sunspot cycle. However, E-propagation can occur at any time of the day or night and at any time of the year. Several openings have been worked by G3YPZ in mid-winter at times approaching midnight where an unexpected QSO with a GM, an LA or SM has been completed on a so-called dead band. The DL0IGI beacon has been heard as late as 0400gmt on some occasions.

Aurora and meteor scatter

Auroral disturbances completely disrupt F-layer skip on all of the hf bands, but on 28MHz, as on vhf, this can be an interesting phenomenon. During an aurora, signals from G and European stations can be worked, but with the rough distortion associated with this mode. An example occurred at 0130gmt 21 April 1985, which brought an unexpected ssb/cw contact with GM4PSF whose raspy signal reached quite a considerable strength at the

(Continued on page 859)

3·5 | 7 | 10 | 14 | 18 | 21 | 24·5 | 28 | 28·5 | 29

ALL BANDS FOR THE MODERN HF TRANSCEIVER

G N FARE, G3OGQ*

(PART 3)

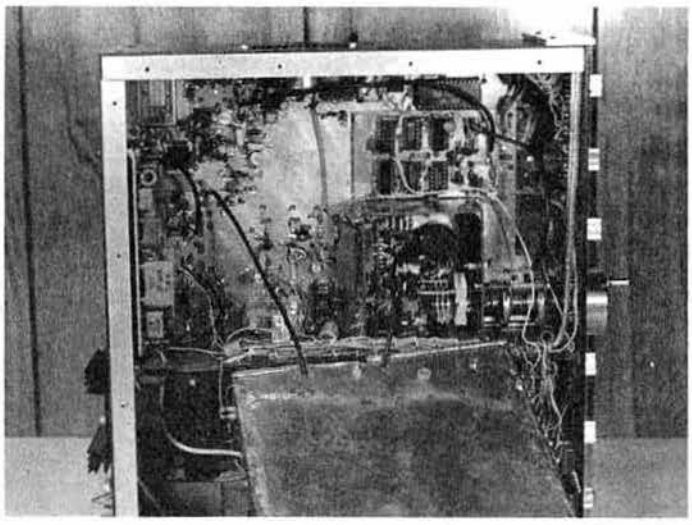
Lowpass filters

The existing bandswitch and lowpass filters are disconnected and removed, together with the box. L801 to L804 are reused, as are C801 to C806 on the new filter board. A new box is constructed, overall size 90 by 47 by 100mm. The 3·5, 7 and 10MHz filters are fixed on one side of the box, and the other four filters on the other side. Double-sided pcb should be used for strength. The new bandswitch has one wafer at each inside end of the box and one wafer outside at the front. Assembly is easy, as each filter is constructed using three small pcb pads fixed with instant adhesive, with the components soldered to the pads and ground.

The bandswitch and filters are built as a complete assembly, and the front screen to the pa compartment is cut away to fit the new box which is fixed with an aluminium angle bolted to the front screen and with the side of the box bolted to the central screen (see photograph).

Final assembly

Connect the antenna changeover relay and wattmeter to the lpf by means of miniature coaxial cable, and connect wires from the bandswitch to the bpf and the synthesizer, not forgetting the diodes from the bandswitch on 3·5 and 7MHz to the counter. At this stage it will feel as if you are wiring a complete telephone exchange, but the task can be made easier if you colour code the wiring; a good tip is to use the resistor colour code, for example a brown wire for band 1 etc.



View from above showing the new counter mixer board and the vfo

*Cobblestones, 1 Old Hall Close, Walton, Warrington, Cheshire WA4 6SZ.

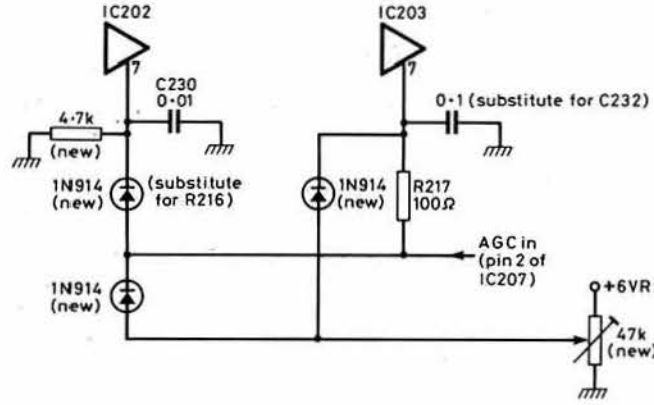
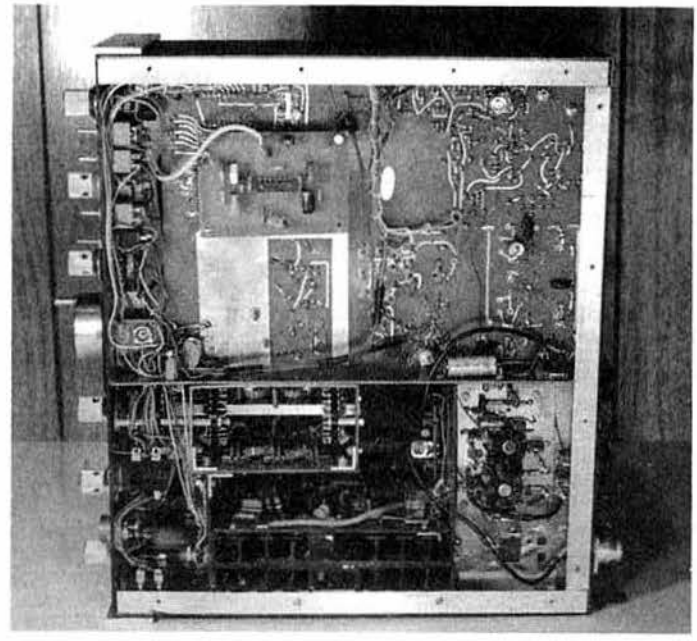
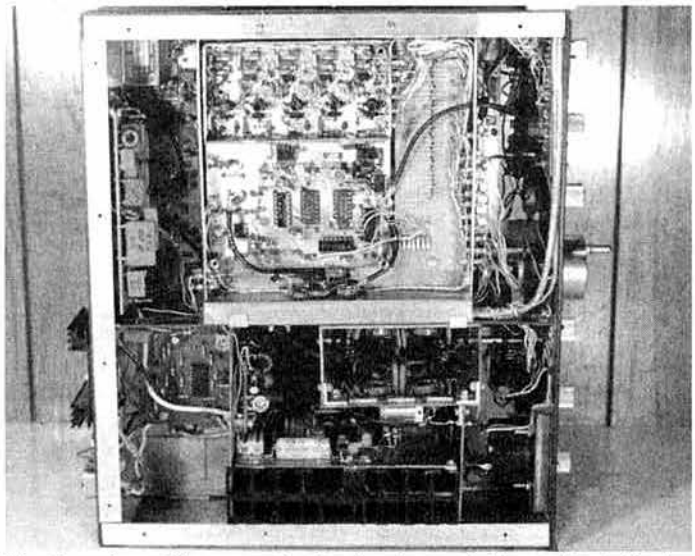


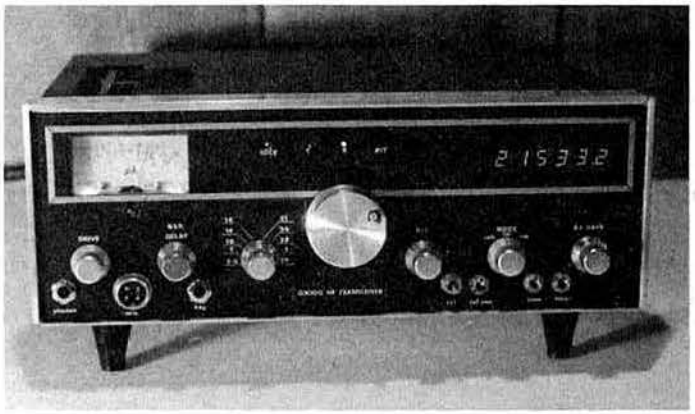
Fig 23. Modifications to agc



View from below showing the new position of the af filter board. Note the amendments around the bandpass filter on the right



View from above. The new synthesizer box is mounted in position in the top centre with the lid removed from the vco to show the construction. To the left of the box is the new bandpass filter board mounted vertically. The new lowpass filter box and antenna changeover relay is below the synthesizer box



Front view of the all-band version of the transceiver. Amendments include new bandswitch markings and l.e.d. synthesizer lock indicator

The front panel should be lettered around the new bandswitch, and the connections to the usb and lsb pins on the main board should be transposed. The "out-of-lock" l.e.d. should be fitted on the front panel in a convenient position.

The operation of the whole transceiver can now be checked. Better operation on 28MHz can be obtained by fitting a 390pF silver mica capacitor across the primary of T703 in the final amplifier. Make sure that there is no instability on any band in the final amplifier. If there is, this can usually be cured by fitting a ferrite bead to the base connections of TR701 and TR702. Any instability is more likely to occur on 3·5MHz than on higher bands due to the increased gain of the final transistors at lower frequencies.

Synthesized vfo

While the modified vfo described above is capable of very good results, it requires a good deal of patience to achieve drift-free performance, and it is possible to improve on this, and in particular to improve the noise performance. Accordingly, a synthesized vfo was designed, the circuit of which is given in Fig 24.

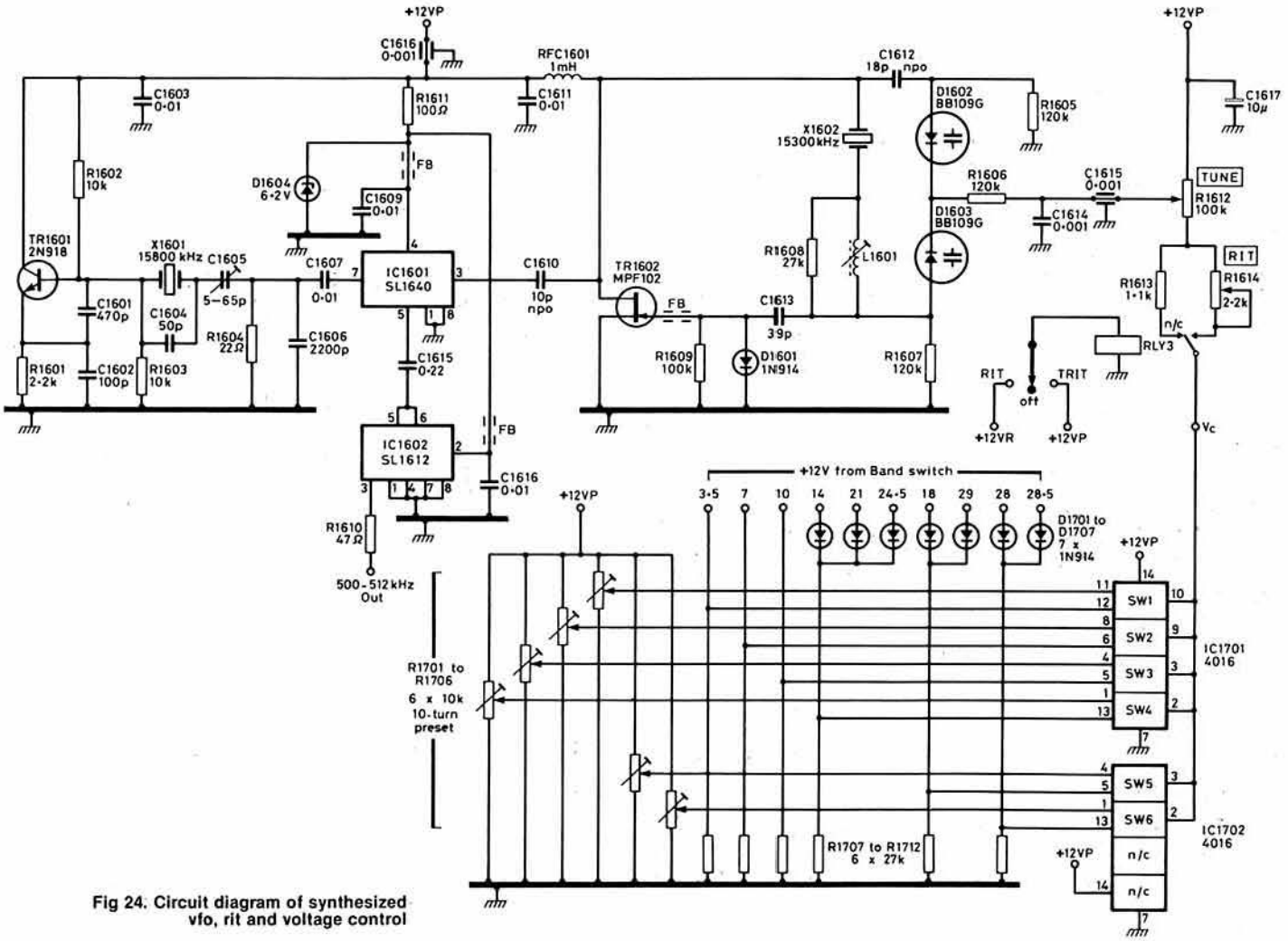


Fig 24. Circuit diagram of synthesized vfo, rit and voltage control

The output of the vfo is 500 to 512kHz, being the difference frequency between the 15,800 and 15,300kHz oscillators. The actual crystal frequencies are not particularly important, so long as the difference between them is 500kHz and they are not on a frequency which will fall within an amateur band or at the i.f. Furthermore, it is easier to achieve the required swing from a higher frequency crystal than from a lower one, hence the choice of 15MHz.

The operation of the circuit is as follows. A fixed crystal oscillator, which is a low noise oscillator from a design by DJ2LR[3], operates at 15,800kHz and is pulled about 1kHz higher by the 50pF capacitor across the crystal. The variable crystal oscillator, operating at 15,300kHz, is based on a design by W1CER[4] which is modified for varicap diode tuning.

An interesting feature is the ability to spread each band over the full tuning range of the potentiometer. This is achieved by switching a different voltage for each band to the potentiometer. This ensures that good bandspread is achieved on each band and overcomes one of the limitations of the original vfo.

The two signals are mixed by IC1601, and the resultant output is amplified to the required level by IC1602. There is no need to filter out the unwanted frequency (f1 + f2) of 31,100kHz, as the SL1612 will not respond to this frequency. In fact, it is better than −80dB.

Reference has already been made to the drift and noise performance. The most damaging form of noise affecting the main synthesizer output is that of spurious signals close to the wanted frequency. Spectrum analysis showed the noise within ±5kHz of the signal to be greater than −95dB. Drift performance was measured against a rubidium frequency standard and showed a drift of 20Hz over a period of 2h. New noise measurements of the complete synthesizer showed a noise level of over −70dB.

Construction

The pcb is exactly the same size as the original vfo and fits in its place. Before building the vfo, check the size of your box to make sure that it will fit. Track layout is shown in Fig 25 and component layout in Fig 26. As previously mentioned, the crystals need not be exactly to the frequencies specified as long as they are 500kHz apart. Mine were obtained from J Birkett, who advertises in this magazine, as surplus items, but if new ones are ordered the 15,300kHz crystal should be AT cut with 0·5in pin spacing, operating at the fundamental.

To align the vfo, put a counter probe on pin 7 of IC1601. Adjust C1605 until the frequency reads about 15,801kHz. If this cannot be achieved, or if the stage does not oscillate, try changing the value of C1604. Apply 12V regulated to the Vc pin. Move the counter probe to pin 3 of IC1601 and adjust the core in L1601 until the frequency reads about 15,300kHz. Moving the probe to pin 3 of IC1602 should give a reading of 500kHz or slightly lower. Change the voltage on the Vc pin from 12V to 0V, when the output should be 512kHz or slightly higher.

One of the problems of tuning a variable crystal oscillator is that the rate of change of frequency increases the more the crystal is pulled. It is therefore necessary to use a tuning potentiometer which is logarithmic. As we need to decrease the crystal oscillator frequency in order to increase the vfo output frequency, this means that an anti-log potentiometer should be used or, failing that, some means of gearing a log potentiometer so that it

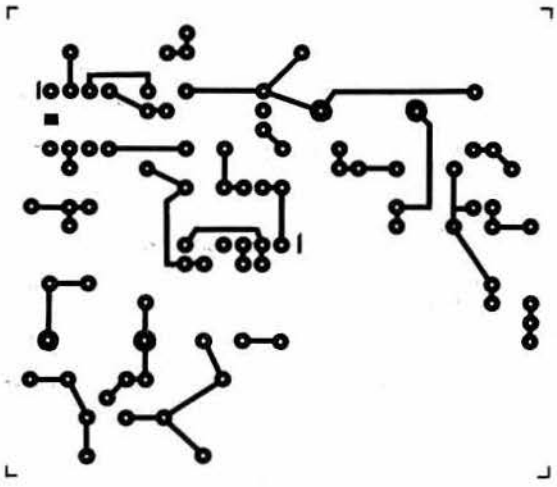


Fig 25. Synthesized vfo track layout, double-sided board. Enlarge holes on groundplane side except where required for grounding

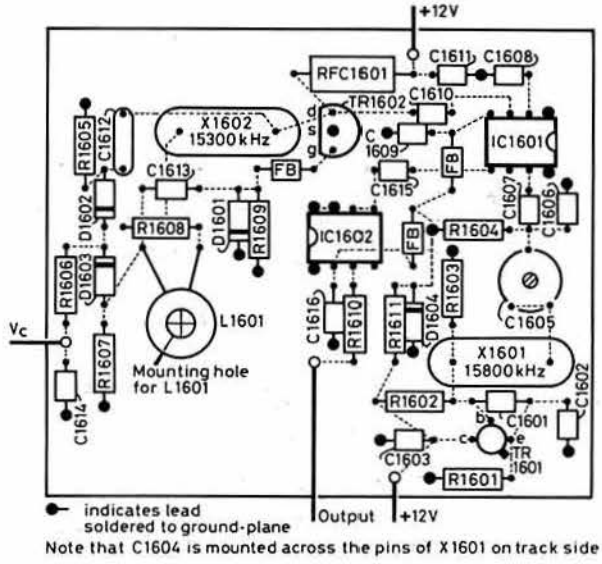


Fig 26. Synthesized vfo components layout

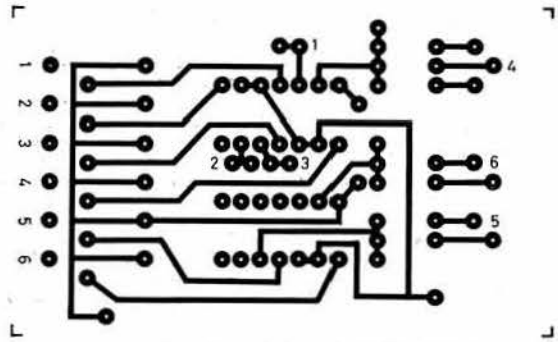


Fig 27. Voltage control board track layout, double-sided board. All holes enlarged on other side except where required for grounding

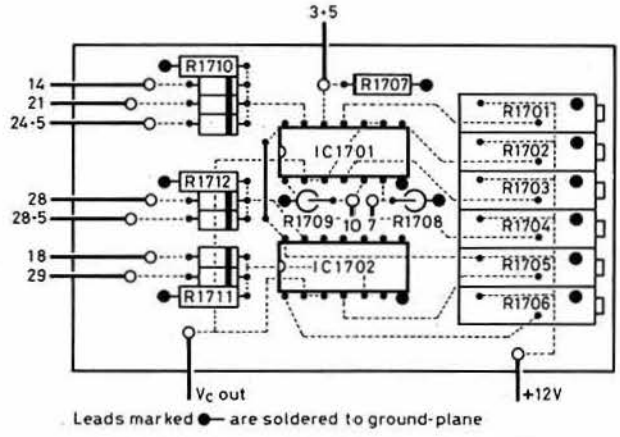


Fig 28. Voltage control board components layout

Table 2. Adjustment of control voltages. With the tuning knob fully clockwise, adjust the appropriate potentiometer for the frequencies shown, with 12V applied to the appropriate control pin.

Control pin	Band (MHz)	Max output frequency (kHz)	Voltage control potentiometer
1	3·5	512·000	R1701
2	7	503·125	R1702
3	10	503·947	R1703
4	14, 21, 24·5	507·608	R1704
5	18, 29	509·260	R1705
6	28, 28·5	506·756	R1706

rotates in the opposite direction to the tuning knob. This will ensure that a clockwise rotation of the tuning knob will increase the output frequency. I was unable to locate a 100kΩ anti-log potentiometer, so the latter method was adopted.

The voltage control board (Figs 27 and 28) is then constructed. This should present no problems. On completion, connect a voltmeter to the output pin and apply 12V to control pin 1. Adjustment of R1701 should give a variable output between 0 and 12V or just below. Check that the output behaves similarly when 12V is applied to the other control pins.

The output is then connected to the tuning potentiometer through a 1·1kΩ resistor, made up of a 100Ω and a 1,000Ω resistor in series. With the potentiometer fully clockwise, as determined by the tuning knob, and 12V applied to pin 1, R1701 is adjusted until the vfo output reads 512kHz. Rotating the tuning knob fully anti-clockwise should give a reading of 500kHz, or just below. L1601 may need to be readjusted at this stage. The remaining bands should now be adjusted as shown in Table 2.

It will be noted that the synthesizer and the bandpass filter as modified need 5V for bandswitching purposes, whereas the vfo control board needs 12V. The simplest way to accomplish this is to insert another wafer in the bandswitch. Another method would be to use switching transistors in a similar fashion to those used for the selection of the vco.

The old vfo should be removed and the new one fitted in its place. A shield 1in high should be fitted below the main board around the new vfo. The voltage control board can be fitted in any convenient position but it is a wise precaution to use screened wire from the output.

The rit circuit may now be fitted, and the existing relay may be used with the existing resistors removed and replaced as shown in the circuit diagram.

Further modification

A number of constructors have complained of improper operation of the agc. This manifests itself as a multiple "plopping" noise accompanied by audio distortion as the signal passes through a certain strength. I discovered that about one in three samples of the SL1621 produce this problem. Careful measurements have confirmed that the problem is not caused, as many people thought, by the presence of rf in the agc circuit, but due to a defect in some samples of the ic.

The problem can be considerably alleviated by raising the agc pedestal. A study of the data sheet reveals that below 2V no attenuation of the signal takes place. The pedestal should therefore be raised to just below this point. A suitable circuit is given in Fig 23. All components can be hard wired around the existing pcb. The potentiometer should be set so that a weak signal just becomes attenuated and then backed off a little. The S-meter will have to be adjusted to read zero in the absence of a signal.

This modification is not always necessary, and the original circuit should be tried first.

Conclusion

The performance overall has exceeded expectations, particularly on the receiver side. This is probably due to the greater drive to the mixer, which improves the cross-modulation performance. Stability is, if anything, better with the synthesizer than with the original vfo.

The cost of the modifications is about £80, if all parts are purchased new, and is well worth the extra time and effort. The pcb will be made available by the author; please send a stamped addressed envelope when asking for a price list. A revised main board will also be available for those wishing to build the all-band version from scratch.

Once again my thanks are due to G5CKZ and G8HLZ of Racal for their advice and for checking the performance of the synthesizer in their laboratory.

References

[1] "A modern hf Transceiver", G N Fare, G3OGQ. *Rad Com* April to July 1983.
[2] "A unique digital mixer", J L Gnass, KH6HJZ. *QST* August 1976.
[3] *Amateur Radio Techniques*, seventh edition, page 115.
[4] *Amateur Radio Techniques*, seventh edition, page 156. □

DISCOVERING 28MHz

(Continued from page 855)

Harlow QTH. The aurora also tends to bring an enhancement in local conditions with signals displaying a tropospheric effect.

Meteor pings are regularly heard on 28MHz, especially when the direct path is very weak or non-existent. Examples of this have been experienced on all modes, with the burst durations lasting up to a couple of seconds. This band could therefore be of great interest to ms devotees.

28MHz antennas

The antenna system is about the most important factor of 28MHz operation. If good results are to be attained, care should be taken when considering which antenna to use. For ionospheric signals the proverbial piece of wet string, the '5RV, the trapped dipole and the multiband vertical will all produce some results. For the serious operator a specifically-designed system is a must. For good omni-directional vertical coverage any cb half-wave end-fed antenna or 5λ/8 groundplane (the latter must have radials) will give excellent results. These antennas need to be cut to resonance on the band, and sometimes the matching coil in the base will need altering to get the vswr down to an acceptable level. The half-wave end-fed must be mounted at least a half-wave above the ground and in free space. The 5λ/8 gp can be ground mounted, but results will be far better if this is erected as high as possible. A centre-fed dipole should only be used if the feeder can be led away at right angles to the antenna and if it is again in free space, ie a half-wave away from its mast.

The unusual Sigma 4 antenna, which is a 3λ/4 gives excellent results—but works electrically like a 5λ/8. Ordinarily 3λ/4 antennas give a very high angle of radiation and are considerably down on a standard quarter-wave gp. HF5s, 12AVQs and the complete range of trapped antennas will give very poor results, as the traps would appear to upset the low angle of radiation. Many operators have had better results sitting in their vehicles outside their home QTHs using mobile cb whips than on base stations using trapped verticals.

Horizontal polarization with a good beam or quad antenna will produce good results over quite considerable distances. Flat conditions should give at least 100 miles range with two well-sited three-element beams. The compromise mini-beam antennas have not proved to be too efficient for serious 28MHz use.

The most important thing to remember for good 28MHz results is *think vhf*!

28MHz receivers

Allowing for the fact that the residual atmospheric noise is higher at 28 than at 144MHz, it is a fact that many current receivers lack the degree of sensitivity for serious low signal working. Weak inter-G dx is often considerably weaker than some of the most challenging satellite signals, hence a receiver with a good low-noise front-end is essential. Most commercial hf rigs, while being adequate for strong ionospheric or local spacewave signal working, are unfortunately not satisfactory for serious 28MHz use. Older transceivers of the KW2000, FT101 and TS520 vintage give very poor results on their top ranges.

Activity

As stated above, there is a growing amount of fm activity throughout the country, and this should continue to flourish, but the ssb and cw modes are very little used during low skip activity. It is the lower end of the band that is most threatened by pirate activities—both in the UK and abroad. In the London area an ssb calling and working frequency of 28,305kHz has been in use for several years. The choice of this spot was deliberate—it happens to be Channel 40 on the illegal multi-mode cb rigs, and is thus commonly abused by this fraternity. The adoption of this or some other frequency as a calling channel would stimulate activity nationwide. Perhaps local clubs or the RSGB could look at an activity night or something similar.

The 28MHz band is an exciting, challenging part of the amateur radio spectrum. There is much to discover about its characteristics, there is plenty of room for all modes, and equipment costs are very reasonable. It would be a tragedy if this allocation were to be taken over by illicit users because the amateur fraternity did not use it. Try 28MHz and persevere with it—the results will be worthwhile! □

Technical Topics *by Pat Hawker, G3VA*

AT A RECENT "Home Entertainment Technology" symposium at the University of Sussex, Dr Alex Stark, of Mullard, forecast that: "By 1990, nearly half of all electronics components used in Europe will be surface-mounted devices (smd)." The elimination of many plated-through holes, the dramatic reduction in size of smd assemblies and the highly-automated processes (see *TT* March 1985) all ensure that surface-mounted technology will become dominant in many forms of electronic equipment.

Components for home-building?

As I attempted to make clear last March, smd and hybrid microelectronics technology is already fast creeping into the all-pervading Japanese amateur radio equipment. Undoubtedly it offers a number of significant advantages, but also—for experimentally-minded amateurs—significant disadvantages. Greater reliability, better value-for-money, consistent performance etc are among the "pros" for those content to buy and use ready-made equipment. But for the others the disadvantages include the virtual impossibility of carrying out any home servicing or any modification of the factory rigs. There is also the problem that as smd technology takes over, components suitable for home-construction and for high-voltage or high-current applications seem likely to become increasingly difficult to obtain, and then only at a cost rising far faster than the rate of inflation.

The vanishing of components suitable for home-construction by those of us who are not professionally involved with electronic design or assembly is nothing new. It merely continues a trend that stretches right back to the days when, in the late 'thirties, it became necessary for the first time to use a soldering iron to build a short-wave receiver! From about 1920 until the start of the second world war, it was possible to obtain virtually all components, valve-holders etc, equipped with screw terminals and intended to be mounted on wooden boards with the aid of a screwdriver. Soldering, metal-working, chassis-bashing etc were all largely later developments!

The phasing-out of home-built broadcast receivers (remember the Scott-Taggart ST series?), the need to tame "hand-capacitance" effects on tuning hf receivers, screening to prevent high-gain i.f. amplifiers from bursting into oscillation, and harmonic suppression to overcome bci and tvi brought about the end of the screw-terminal era and the change from breadboard to metal chassis and the enclosed rack and panel.

Today there is a struggle to convince the newer generations of enthusiasts that perfectly good equipment can still be built by connecting components together with lengths of wire rather than via printed circuit boards. It is perhaps, unfortunate, that the term "ugly" has been appended to non-pcb construction.

It is difficult to foresee any great use of the really tiny smd-type discrete components for home-built equipment—at least by those of us who are already ham-fisted enough with existing small components.

Soldering to Litz wire

One result of the changes in technology has been the loss of some of the old "workshop skills". For example, G H Lucas, G3TWE, writes:

"The other day I came across a youngster attempting to clean Litz wire prior to soldering. He was using fine emery cloth and getting nowhere fast, and it occurs to me that some of the tips from old-time constructors may becoming lost.

"The answer in this case is simple. Fill a small container with methylated spirits (a bottle-cap is ideal) and light it. Place the end one inch or so in the flame to burn off the insulation, remove it and blow the burning insulation out. Next replace the wire in the flame and heat until the wire is red hot, then quench the wire rapidly by immersing it in the unburnt spirits, and remove quickly. The result is clean multi-strands of wire that may be twisted together, tinned and soldered in the conventional manner.

"Finally, don't extinguish the burning methylated spirits by attempting to blow out the flame, or you may end up with burning spirit all over the workbench. Instead, always snuff it out by covering it completely with a lid or other convenient cover."

It occurs to me that there may indeed be many readers who have never even come across Litz wire, comprising multiple strands of very thin insulated wire at one time widely used for high-Q medium- and long-wave coils. The term "Litz" was derived from the German *Litzendraht* (*Litz* strand, *draht* wire) and is correctly applied to conductors which are built up by successive stranding of wires or groups of wires in groups of three, each individual wire being insulated with enamel or silk, although often applied also to what are more-correctly termed "textile-covered bunched enamelled-copper wire conductors". Litz wires were developed for use in rf applications in which "skin effect" (the tendency of the current to flow along only the surface of a conductor) becomes significant. The result of skin effect is that the resistance of a conductor at high frequencies may be much greater than its dc resistance. Skin effect can be reduced by using a large number of small wires, each completely insulated from all the rest, twisted together in such a manner that, throughout its length, an individual wire occupies in turn all possible positions in the winding section.

Make your own pcb

For those projects for which "ugly" construction does not appeal, S Males, G8XEH, emphasizes that even for the uninitiated it is easy to make your own circuit boards, particularly where a full-size track layout diagram is available, as will often be the case with a published constructional project. His suggested procedure is as follows:

(1) Obtain a piece of good quality pcb (preferably glass-fibre) roughly the required size.

(2) Obtain a copy of the pcb layout (copiers are generally available in public libraries, Post Offices etc). Cut out the layout and "Sellotape" it on to the copper side of the pcb. Then, using a small centre punch (or even a hardened nail) and hammer, centre pot as accurately as possible each hole marked on the track layout. Check that no holes are missed and then remove the paper layout. The board must then be thoroughly cleaned to ensure that the copper is shiny and free of grease.

(3) Now comes the "fun bit". Using a special etch-resist pen (available from component suppliers etc) join up the centre pot marks as in the track layout diagram. With care even ic pads can be marked on to the copper. Ensure that no copper shows through the resist. Allow your board to dry and then check very thoroughly for mistakes, omissions etc, if necessary tidying up and scraping away any track bridges, using a scalpel or modeller's knife.

(4) Obtain a supply of ferric chloride either as liquid or granules, water being added if the latter. This is used to etch the unwanted (uncovered) copper away by pouring some of the solution into a plastic tray, and immersing the board until all unwanted copper is etched away. Etching is speeded up if the tray is rocked occasionally. Rinse the board thoroughly under water and then dry. **Note:** ferric chloride is corrosive and must be kept clear of skin and eyes.

(5) With the aid of drills of sizes to suit the component leads (generally 0·8 to 1mm) drill out all centre-potted holes. Finally, clean off the etch-resist with solvent and your board should be ready to use.

Using the low-cost TBA120 ic device

The August *TT* included a summary of ic devices listed by SM6EAN as being of potential interest to amateur constructors. Since then the prolific Jan-Martin Noeding, LA8AK, has sent along information on two specific applications for the Siemens TBA120 device, originally intended as a consumer-device for an fm i.f. amplifier/discriminator. He also has some views on the appearance of good pcb artwork that avoids the "spider's web" appearance that often emerges from the "would-be professional" constructor.

Fig 1 shows what, in effect, is the Mk 3 version of LA8AK's well-known af up-converter for use when recording high-speed meteor scatter signals (see *TT* September 1982 for earlier version).

Fig 2 shows the latest "1497" pcb layout, prepared by LA8AK in conjunction with SM4LLP. This same pcb layout can also be used to build a balanced dsb modulator suitable for an ssb transmitter when used in conjunction with a suitable filter.

For the af up-converter, the limiter section of the TBA120/SN76660N is used with a 7kHz Wien-bridge af oscillator. The signal at pin 6 must be in-phase with pin 14. The balanced modulator section converts an incoming af signal to around 7kHz for tape recording, so that the recording can be played back at a slower tape speed and still provide a convenient audio tone.

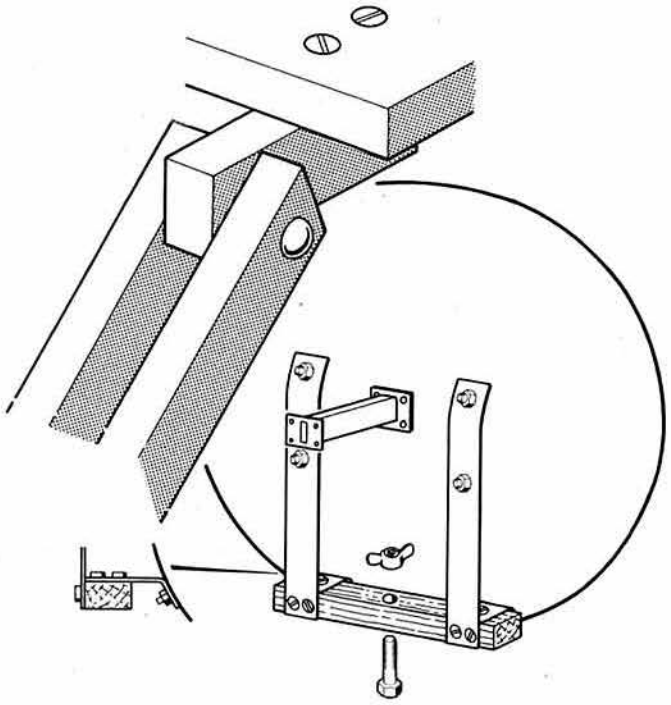


Fig 2. Close-up of the hinge arrangement and the author's dish mounting

Parts list

6 2in (50mm) No 8 countersunk woodscrews
36 0·75in (18·75mm) No 6 woodscrews, countersunk or roundhead
3(6) 3in (75mm) coachbolts, etc (can also be used as pegs) appoximately 0·25in (6·25mm) diameter
3(6) Nuts or wing-nuts for above
— Washers as required
1 Bolt, wing-nut, etc for antenna fixing
9 3ft lengths of 1 by 1·5in softwood, see text
1 3in lengths of 1 by 1·5in softwood, see text
2 4in lengths of 1 by 1·5in softwood, see text
1 1 by 4 by 4in (25 by 100 by 100mm) chipboard, etc
6 1·3 by 2·3in (33 by 58mm) 14 or 16 swg aluminium, two holes for slider plates
6 1·3 by 2·3in (33 by 58mm) 14 or 16 swg aluminium, four holes for spacer plates
3 3in (75mm) peg (see text)

Anyone having difficulty in obtaining any of the materials required should contact the author.

and mark the screw-hole positions through the holes in the platform. A similar technique can be employed to ensure the holes in the sliding leg sections line up with their respective "peg" holes in the outside sections, but this will have to be left until the legs are assembled.

Next, all the wooden parts can be given a light sanding and then varnished; two or three coats should amply seal the wood. Note, that the first coat may take several days to dry, and subsequent coats should be applied as recommended by the manufacturer. When completely dry, the tripod can be assembled, starting with the platform and then the legs. With the legs assembled, but before fitting them to the platform, the holes in the sliding section can be drilled as described above. To allow the sliding leg sections free movement, washers are used to space the plates away from the legs, and also between the fingers and the outside leg sections. Depending on the thickness of washers available, you may only need to use them on one side of each leg, otherwise one (or possibly more) can be used under each plate and on either side of the fingers.

The fixing pegs can be wooden dowelling, aluminium rod or—probably the strongest—bolts, which for convenience could be of the same type as those used for hinging the legs. Finally, the legs are attached to the platform by bolts through the fingers; these are tightened enough to prevent any lateral movement, but not stop the legs from hinging.

The actual mounting of the antenna and equipment will of course depend on the requirements of the individual, but a sketch of my dish mounting arrangement is included as an example. □

Sporadic-E observations in 1985

R A HAM, BRS15744*

Following 12 years of sporadic-E observations, using the same procedures and radio frequencies, my results show that the annual sporadic-E season, falling between 1 May and 31 August, lasts around 100 days, with major events occurring on an average of 42 days, Fig 1.

Although there were several strong bursts of television pictures from broadcast stations in Poland and Germany on ChR1 49·75MHz and ChE2 48·25MHz respectively, early on 2 and 3 May—heralding the start of the 1985 season—the main events, disturbing radio and tv signals between 40 and 80MHz and sometimes extending from 27 to 150MHz, began on 15 May and ended 94 days later on 17 August, some five days longer than the 1984 season. During this period, sporadic-E occurred on 46 days, just above the 12-year average, compared with 26 days in 1984 and 44 days in 1983. The majority of my daily observations were usually made around 0830, 1330 and 1830bst, and any disturbances logged at those times are indicated by the dark squares in Fig 2, under the headings A,B and C respectively.

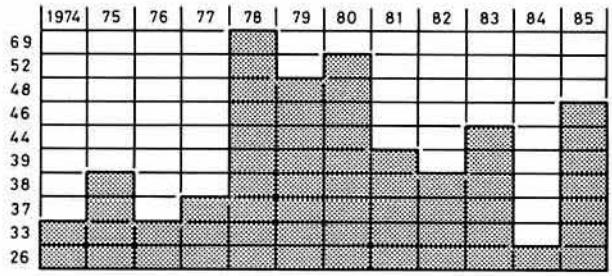


Fig 1. Twelve years of sporadic-E

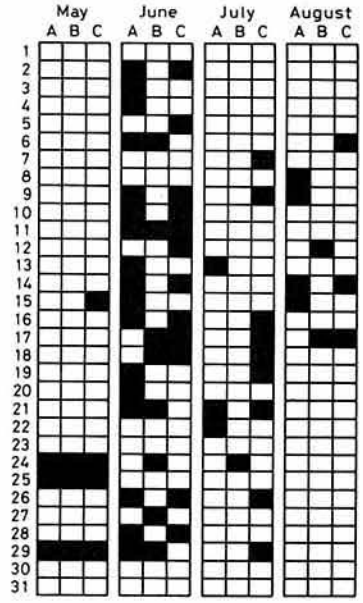


Fig 2. Monthly distribution of sporadic-E during the 1985 season

Equipment

As in previous years, I used a Trio R2000 communication receiver with the frequencies of the 28MHz beacons in Germany (DF0AAB, DK0TEN and DL0IGI) and Norway (LA5TEN), for easy access in the set's memory, an SX200N scan receiver to monitor various sound and vision channels in Band 1, 40 to 68MHz, and an ex-military R216 vhf communication receiver to tune for broadcast dx between 66 and 73MHz. JVC CX610GB and Plustron TVR5D television receivers were used to locate both colour and monochrome, PAL and SECAM, 625-line pictures in Band 1, fed, along with the R216, from a horizontally-mounted combined Bands 1/3 Yagi, and connected to the equipment via an Antiference XS3 distribution amplifier.

*Faraday, Greyfriars, Storrington, Sussex.

resonant antenna system). Dipoles of this type, widely used in the 'thirties, did in fact often have resonant "tops" made possible by the harmonic relationship of the amateur bands of that period. But such antennas were also widely used in professional communications (frequently with twin-wire or multi-wire "cage" horizontal spans) with the same antenna used at virtually any frequency from about 2 to 20MHz. Provided that the whole system was brought into resonance by means of an astu (which often simply took the form of a resonant circuit parallel-tuned for a voltage feedpoint, series-tuned for a current feedpoint) then the antenna would radiate effectively. A resonant top simply meant that it presented a purely resistive feedpoint, but any resonant *system* will radiate all the power that is fed into it other than the usually very small losses arising from the rf resistance of the wire or poor insulation, provided that the atu really is putting power into the antenna and not just creating large circulating currents.

G H Lucas, G3TWE, in setting out to modify a "G5RV" antenna has, in some respects, re-invented the wheel in the form of a loaded centre-fed doublet. Nevertheless he makes a number of useful and valid comments in providing a design which fits into a 70ft span of garden yet performs satisfactorily on all bands from 1·8 to 30MHz. He writes as follows:

"The article by Brian Austin, ZS6BKW, on the "Computer-aided design of a multiband dipole" prompts me to write on modifications to the original G5RV design that I have been working on for several months, and has finally led me to an antenna that is proving to be very effective as a 1·8 and 3·5MHz radiator, loads on all bands up to 28MHz, and above all fits into my garden which is only 70ft long from the eaves of the house to a 10m-high pole at the far end.

"First, why all the effort to get the feed impedance to 50Ω or thereabouts? In his original articles, Louis Varney, G5RV, pointed out that the preferred method was to run the open-wire or 300Ω feeder section all the way into the shack and via a good atu rather than bringing it down to an odd length of 75Ω coaxial cable.

"Second, there is surely nothing to prove that any particular or critical length is better than another. Some lengths are easier to tune/load on some frequencies, and admittedly the radiation patterns become less predictable, but provided that the whole antenna system can be brought to resonance and finally presented to the transceiver as a 50Ω load it will assuredly work.

"Third, for those of us who are not blessed with sufficient real estate to erect a top-band dipole at a height of about a half-wave, the prime object of the whole exercise is to get the current carrying section of the antenna as high and in the clear as possible (true of horizontal spans not necessarily true of vertical sections—*G3VA*).

"My 'G5RV' (Fig 4) has a 65ft top plus two ends of 22ft each which drop vertically down, loaded with identical inductors in the vertical sections. The whole system is brought to resonance (with the aid of a dip meter) in the shack, by adding ferrite rods, salvaged from old transistor broadcast receivers, as cores to the inductors. The chosen resonant frequency was 1·93MHz. At this frequency the swr presented to the transmitter, without an atu, is less than 1·5:1 from 1·90MHz to 1·96MHz. There is nothing magical about the dimensions. I just happened to buy all the wire that remained on a drum, about 200ft, made 32ft of it into open-wire feeder to the top centre insulator, led it out to insulators 3ft from the supporting masts, and then down to end insulators on the garage and garden shed roof. What was left over was wound on to plastic formers of 1·25in diameter, coin tubes from an old fruit machine, 14ft from the ends of the antenna.

"Apart from cutting the original length into halves there are no joins in the feeder/antenna, and it has already survived one winter exposed to the east coast winds at Gorleston-on-Sea, Norfolk, without any breakages. Every effort has been made to preserve symmetry, lengths are identical, similar loading coils (69 turns) and identical amounts of similar ferrite

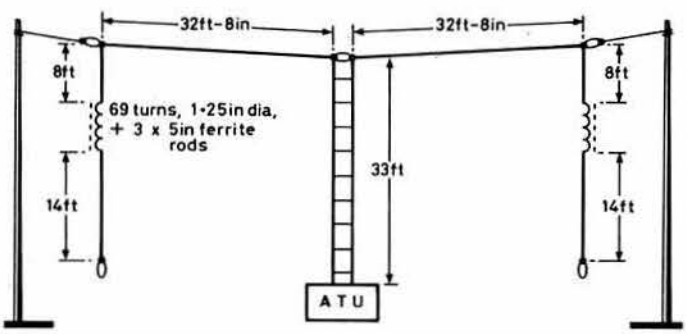
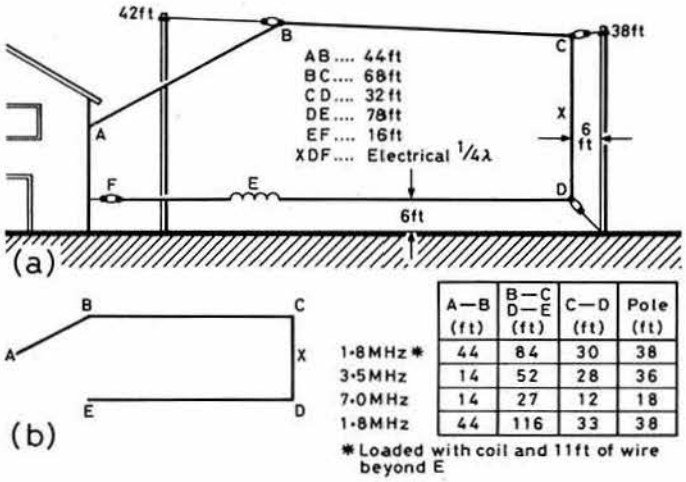


Fig 4. G3TWE's "modified-G5RV" multiband doublet with the open-wire feeder brought through to the atu. The ferrite rods in the loading coils are adjusted to bring resonant frequency to 1·93MHz, equivalent to an effective electrical length of about 242ft but with a top span of less than 66ft



	A—B (ft)	B—C D—E (ft)	C—D (ft)	Pole (ft)
1·8MHz *	44	84	30	38
3·5MHz	14	52	28	36
7·0MHz	14	27	12	18
1·8MHz	44	116	33	38

* Loaded with coil and 11ft of wire beyond E

Fig 5. The "G8ON" multiband antenna as developed by the late Harold Chadwick in order to obtain a maximum vertically-polarized component radiated from the "X" section. Although the dimensions and shape are not unduly critical, the bends should come in approximately the places shown

material used in each coil. The system is fed via a home-built Z-match atu, again much modified, and a 1:1 balun, but any atu providing a balanced output would work. No atu is used when operating between 1·9 and 1·96MHz.

"Among trials carried out, I have increased the amount of ferrite material to provide resonance at 1·6MHz; thus the main current carrying section would be in the top horizontal span on 1·8MHz rather than folded down the feeders. This led to a superb receiving antenna on 1·9 to 10MHz, but signal reports were reduced by about two S-points when transmitting on 3·5 and 7MHz. Perhaps the extra ferrite material was too lossy.

"Another test was to remove all the ferrite material and bring the system to resonance on 1·93MHz by adding 22ft lengths of wire to each end and draping them along the garden fence. This works well but has led to an unacceptably high impedance on 14 and 18MHz, necessitating changing the balun in the atu to a 4:1 type, in order to tune the system, and then it would not load on 7MHz! Perhaps switchable baluns would be the answer. Incidentally the baluns I use are the type described in *HF Antennas for all locations* and in *TT* February 1984 with bifiliar or trifiliar windings on more ferrite rods.

"It is clear that there is much scope for further development, and it will take another winter season to evaluate the system fully on the 1·9 and 3·5MHz bands; but I do not expect to provide one of the really hefty dx signals from a small garden in a residential area.

"Nevertheless the design appears to be very flexible and capable of working well provided the long-established rules are followed: viz
(1) Get the maximum current-carrying section of the system as high and in the clear as possible.
(2) Preserve symmetry.
(3) Use high-efficiency open-wire feeders all the way to the atu.
(4) Use a proven atu of high efficiency, with a balanced output."

I feel that for completeness some further points should be made: *(1)* If the series/parallel form of antenna loading/atu is used with no other form of balun, and if you have no objection to having voltage-fed (high impedance) feeders coming into the shack on some bands, even greater flexibility could be achieved. *(2)* It is arguable whether on 1·8/3·5/7MHz the advice to aim at maximum current in the horizontal span will result in optimum dx performance, since on these bands a vertically-polarized component is desirable (eg slopers, sloping inverted-Vs etc).

If an unbalanced end-fed "long wire" type of antenna is used, again implying a high-voltage, high-impedance feedpoint in the shack, there is much to be said for the "G8ON" type of arrangement (Fig 5) which aims at putting current in the vertical section, with the lower horizontal span, in effect, forming a counterpoise earth. John Heys, G3BDQ, has been heard recently on 1·8MHz extolling the virtues of an inverted-L "long wire" about 40ft high from which, at the far end, he has three identical wires dropping down to buried earth rods, thus putting maximum current in these three vertical wires. The multiple earthing points reduce the earth losses. A "half" trap dipole can also give this effect on 3·5 and 7MHz: Fig 6.

For medium-distance working on 1·8/3·5/7MHz, on the other hand, a low horizontally-polarized system will tend to provide the stronger signals and will usually prove to be virtually omni-directional. It is not always recognized that a dipole or half-wave antenna less than a half-wave above

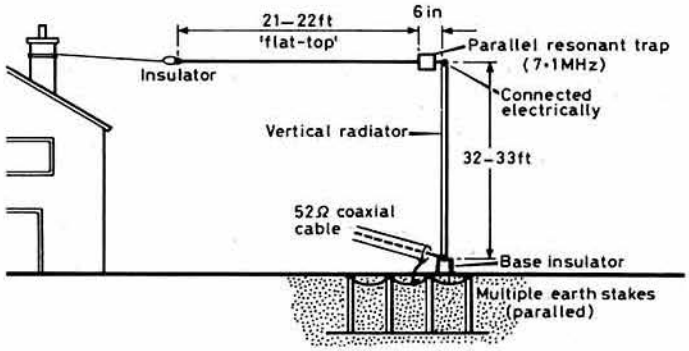


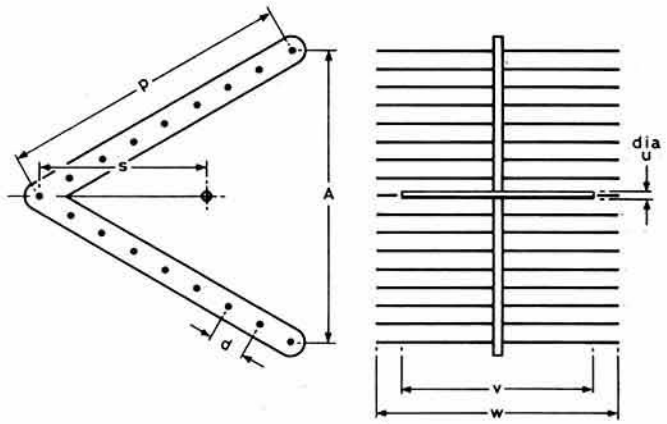
Fig 6. Half-trap antenna as described in *ART* by M R Lee, G3VYF, providing an effective dx antenna on 3·5 and 7MHz. Requires a good earthing system and preferably good earth conductivity for optimum results

earth is most unlikely to show the classic figure-of-eight radiation pattern, but rather will be virtually omni-directional apart from any effects induced by nearby houses etc.

Corner reflector antennas

Antennas in amateur stations seem to follow cycles of fashion, often without any close correlation with their actual merits and demerits. For example, it is only seldom these days that one hears of people making use of the corner reflector first described by Dr John D Kraus, W8JK, in *Proc IRE* November 1940, pp513–19. Yet, at least for vhf/uhf, this remains an antenna system which in a fairly compact structure offers relatively high gain, reasonably broad bandwidth, and is much easier and cheaper to construct than a parabolic reflector, either with a simple dipole feed or, for higher gain, using a line of dipoles. With a suitably large screen it is possible to achieve a very good front-to-back ratio, low sidelobes and good polarization discrimination.

The 5th edition of *Radio Communication Handbook* is one of several handbooks that provide basic design and construction information; it is also described in *The Radio Handbook* and the *ARRL Antenna Book* although not in the RSGB's *VHF-UHF Manual*. *RCH* is perhaps a little off-putting in stressing that as the corner angle is reduced to increase gain, the feed impedance of the dipole radiator falls to a very low value (under 20Ω for an angle of 45°) making matching rather difficult. One should, perhaps, therefore stress that the feed impedance is more manageable for angles of 60° or 90° and with such angles there should be no undue difficulty in achieving a gain of around 10–12dB with a single dipole feed. This is a reasonable figure for what is essentially a non-critical antenna system (far more so than a uhf Yagi array). The corner reflector itself can consist of metal sheets, perforated metal sheets, possibly even chicken wire, or the more usually closely-spaced reflector elements that offer less wind resistance than metal sheets.



Band (MHz)	Dimensions (inches)							
	p	s	d	v	w	A	u	λ
144	100	40	6	38	50	100	0·375	168
432	35	13·25	1·5	12·5	20	35	0·25	27·25
1,296	12	4·5	0·5	4	8	12	0·125	9·125

Fig 7. Design for corner reflector (60° angle) for 144 or 432 or 1,296MHz bands as described in *Radio Communication Handbook*. Gain about 13dB. Feed impedance of dipole element about 75Ω

Fig 7 shows a typical arrangement as described in *RCH5* p13.18, together with some suggested dimensions for 144MHz and for bands for which it seems more suitable, viz 430 and 1,215MHz.

Broadband corner reflector

Corner reflector antennas with a simple dipole feed, as described above, have adequate bandwidth to cover any single amateur band, but it is interesting to note that Jimmy Wong and Howard King, of the American Aerospace Corporation, have recently shown (*IEEE Trans on Antennas and Propagation* Vol AP-33 No 8, August 1985) that the corner reflector technique can also be used to provide a very-wide-band antenna (bandwidth ratio of about 1:1·8) by using an "open-sleeve dipole" as the feed element. They present detailed measurements for two antennas covering 240 to 400MHz, a band used for military avionics. With a 90° corner reflector made from perforated aluminium sheets (48in wide by 41·13in long) the gain varied only from about 12·2dB to 10·5dB throughout the range 250 to 400MHz, with an swr that varied from about 2·2:1 to under 1·5:1.

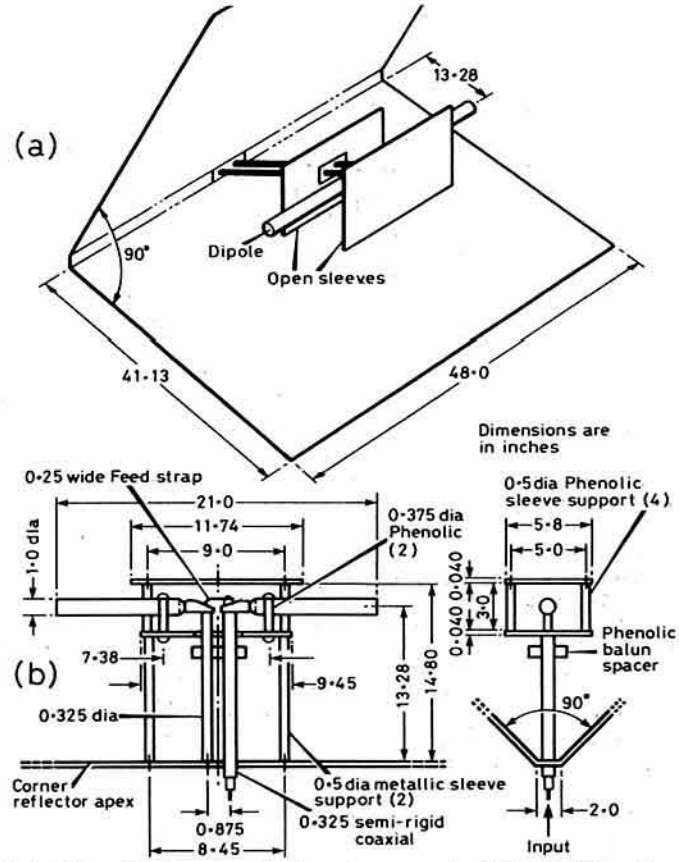


Fig 8. *(a)* Broadband corner reflector antenna covering 250 to 400MHz with a gain varying between about 10·5 and 12·25dB. Made with perforated aluminium sheeting and using the "open-sleeve dipole" system described by J Wong and H King. This technique could be used to broadband other types of antennas using dipole feed elements. *(b)* Details of feed arrangement

The novel feature, the open-sleeve dipole, comprised a conventional dipole element with two closely-spaced parasitic elements of flat sheets of metal closely spaced to the dipole element, as shown in Fig 8. The addition of these "sleeves" (which could consist of large-diameter cylindrical elements) extends the bandwidth of a conventional dipole from about 1·25:1 to 1·8:1, and the same technique could be applied to other antenna systems; it was originally described in *IEEE Trans Ant & Prop* Vol AP-20, pp201–4, March 1972. Measured E- and H-plane patterns at 240, 290 and 400MHz exhibit good front-to-back characteristics, the worst case being about 23dB at the lower edge of the band, ie 240MHz. The on-axis crossed-polarization level was measured at 400MHz, and it was found to be about 35dB.

For amateur applications the main advantage of using an open-sleeve dipole would be to make the system more tolerant. One can imagine, however, that such a system would be particularly attractive for uhf television reception, since a frequency span of 1·8:1 would accommodate virtually the whole of Bands 4 to 5 (470 to 850MHz); many of the existing designs (groups A, B and C/D) show a decided fall-off in performance at one or the other ends of their respective bands.

Plug-in low-cost psu

Recently, while passing a local general-purpose disposals shop, I noticed a large box of small power units in brand-new condition. These were built directly on to a more or less standard (except for a dummy earth pin) 13A three-pin plug, and had apparently been intended for domestic television preamplifiers. The label gave a rating of 18V dc at 170mA, "for indoor use only" but "conforming to BS415". At 50p each it seemed worth investing in one if only to find out just what it consisted of. I had never previously come across this type of plug-in psu.

In fact it comprised a small double-wound mains transformer, mains fuse, two diode rectifiers, 220μF (25V) reservoir capacitor and the output lead and plug: Fig 9(a). I have to confess that after testing that it was working, it went into my junk box awaiting some suitable application. I might have forgotten it altogether had I not come across a *QST* (June 1985, pp36–8) article "Plug in wall transformers—a super bargain" by Doug DeMaw, W1FB. This describes a wide range of American 110V plug-in transformers and dc power units that appear to be stock items in the USA, including some that were basically similar to the British-made unit for 240V supplies that I had chanced upon.

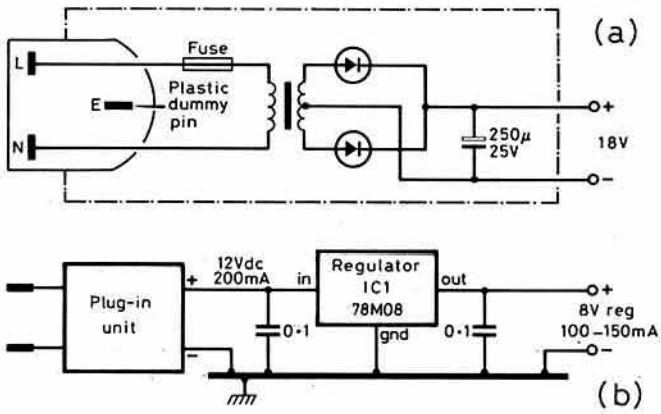


Fig 9. (a) Wall socket power supply unit found in a disposals store. The complete psu is built into an enlarged plug. (b) A method of adding voltage regulation to a dc wall socket power unit as described by W1FB. The two 0·1μF capacitors and three-terminal ic regulator are added externally

W1FB notes that such units tend to have too much ripple and insufficient voltage regulation for the more critical amateur radio applications (eg vfo unit) but with the simple addition of an external ic regulator and two 0·1μF capacitors one can provide a useful, low-cost psu for many applications: Fig 9(b). It must be remembered that several volts must be allowed for the operation of the regulator, so that, for example, to provide 9V regulated dc output, the unit should supply at least 12V. My 18V unit would be suitable for a regulated output of 13V or less with the regulator removing most of the ripple. There must be quite a few such units going for a song, to judge by the number in my local store a few months ago.

Forecasting hf propagation

For many years detailed predictions (such as those on page 875) have been published relating the likely "openings" along specific paths to local time and month. Most operators will have found that while such forecasts give a useful indication of what to expect when averaged over the coming month, unfortunately they cannot provide us with the likely propagation conditions or muf, for specific days or even weeks, or predict the onset of solar storms etc. But in addition, even when averaged over the whole month, like long-term weather forecasting, they are less reliable than one might have hoped after almost 50 years of regular forecasting.

This applies not only to amateurs seeking to take advantage of favourable conditions and working as close as possible to the muf, but also to the higher power commercial services who use the "optimum working frequency" (owf) roughly 15 per cent lower than the predicted muf.

Forecasts are normally based on the anticipated sunspot number index, using as a base the smoothed 12-month number. However, in the past few years, scientists at the Rutherford Appleton Laboratory, including J W King, P A Smith and R Y Liu, have shown fairly convincingly that, for prediction of hf radio propagation conditions six months or more ahead, significantly more accurate forecasts can be derived from figures based on past ionospheric measurements as made by the ionospheric observatories located in many parts of the world. They have estimated that their proposed system provides roughly 15 per cent more accurate f_0F2 predictions at any location, for any month and local time. Similarly, the muf can be predicted more accurately using the ionospheric records although, contrary to the situation when using sunspot numbers, the monthly ionospheric index has been found to provide better results than the 12-month smoothed version.

The RAL scientists have published tables (*Telecommunication Journal* Vol 50, No 8/1983) showing how the f_0F2 figures in various parts of the world differ (linear regression equations to obtain local effective sunspot number from measured median f_0F2 values) together with the statistics of what they define as the "global effective sunspot number" (gessn) over the period July 1943 to June 1981 (both monthly values and 12-month running mean values). It would presumably be possible for an experienced computer programmer to write the software for a prediction program which should prove more accurate than with conventional techniques.

Incidentally, taking the 12-month running mean values of the gessn, it can be seen clearly that new phases of the solar cycles begin around the middle of the year; past maxima include 1958, 1970 and 1980; past minima 1955, 1964 and 1976. Unfortunately, there still seems no reliable method of forecasting the shape or even the dates of maximum and minima of the next cycle. This could have begun in June this year, although there seems little indication that this has happened and it could be 1986 or even 1987. Once the new cycle begins we can hope for a fairly rapid rise in critical frequencies, unless of course the next maximum turns out to be a low one. Using the RAL technique it may prove possible to predict whether this is likely once we are a little way into the new cycle.

Norman Richardson, VK4BHJ, ex-G5HJ, draws attention to the exceptionally poor conditions this year, with the usually reliable 14MHz chordal-hop path to Europe failing except for extremely brief periods. He wonders just what has been happening to the ionosphere—though this may perhaps be just a sign that 1985 represents the end of solar cycle 21.

Using high-current batteries

Despite the popularity of high-current power supply units, the alternative approach of using float-charged vehicle batteries has many attractions when it comes to powering ssb and fm transceivers. However, despite the apparent fool-proof nature of such systems, problems can arise, including the possibility of the charger voltage being accidentally applied to the load equipment and the charger ripple affecting the operation of some equipments (*TT* March, p193) even though in theory such ripple should be much reduced by the battery.

Both of these problems have been raised in a helpful letter from Earl Hornbostel, DU1AE, of Republic Crystal Labs. He writes: "I heartily agree with the view expressed several times in *TT* that the best power supply for a standard 100W hf transceiver is a lead-acid storage battery . . . However, there is one vital condition that is essential when making such an installation. It must be foolproof with regard to the connections of the charger and the load equipment to avoid any possibility of the charger output being applied to the equipment without the voltage regulating effect of the battery. In other words it needs to be impossible, or virtually so, for the charger to become the source of power for the equipment by itself. Otherwise serious and expensive-to-rectify damage is almost bound to occur.

"There are two ways of preventing this from happening. The first is to use a charger having the voltage limited to approximately 14·2V, with the voltage regulation of the charger arranged to be reliably fail-safe.

"The second method, which I much prefer, is not only simple to implement but also eliminates the need for a special charger. It comprises a method of attaching the battery charger to the battery terminal posts in such a way that the transceiver can *never* receive power directly from the charger.

"The way I do this is to drill a small hole downwards from the top of each terminal post and insert a self-tapping screw. The screws should be solder-coated or terne-plated to minimize contact problems or subsequent corrosion. Then the lead from the transceiver should be taken to the screw, wrapped around it, preferably soldered, and then each screw driven in. This will make tapping-in difficult, unless the battery cable is unplugged or disconnected from the transceiver. The use of a terminal lug should be discouraged and the insulation of the battery cable should extend as close as possible to the soldered point; this is in order to remove the temptation to clip the battery charger on to the transceiver cable lead.

"Instead, the charger leads should be clipped directly on to the battery posts. This arrangement accomplishes two things. It eliminates the possibility of the battery not forming part of the circuit and also greatly reduces the common impedance which gives rise to unwanted ripple being passed to the equipment. With such an arrangement it should be almost impossible to measure any ripple on the leads to the equipment. Common impedance problems can arise in other forms of power supply where it may sometimes be found extremely difficult to achieve a sufficiently low ripple where earth returns of the various main components have not been made

correctly. An altogether too common problem that deserves to be stressed every two or three years in *Radio Communication*, if only to prevent each new generation of constructors from making the same blunders as their predecessors. At the age of 70 years I have been involved in introducing several generations of young engineers to electronic design. I have repeatedly found this type of mistake to be a common one, seldom dealt with in the theoretical studies of university courses."

Fusing a fuse

Paul Essery, G3KFE, noted G8LXG's comments on the differences between fuses and rccbs in the August *TT* but clearly feels that this is a subject in which things are seldom as simple or as straightforward as one might imagine. He writes: "Many years ago, when I was with Belling-Lee, we did a long exercise on fuse-blowing in connection with obtaining standards approval for low-current fuses and meeting airborne requirements for the large 'Airfuse' range. Quite clearly, the conventional statement, I^2t = a constant, was shown *not* to be true in practice.

"The reasons for this seem to be: (1) the end-caps of a cartridge fuse and the fuse-holder clip form a heatsink; (2) when the temperature is reached at which the fuse begins to melt, further energy is required to turn the wire into molten metal (analogous to the boiling or freezing of water); and (3) Ohm's Law. The fuse wire is a resistor (and to some degree an inductor). A 1A fuse hit by a 'prospective current' of 1,000A will not in practice pass 1,000A even for a short time: its resistance would be too high. It is also worth noting that fuses have memories; if you apply the same test to a 'virgin' fuse and to one that has already been subjected to its rated current for, say, 5s, you will get different results. In our trials, over several months, we subjected 144 fuses to 5s of current at their rated value each day, photographing the meters and time clock to prove this had been done. Producing 144 whole-plate prints with 12 rolls of film every day put me off photography for years!

"In effect, when we put a very high current into a fuse we never saw it blow in much under, if my memory serves me right, about 10ms. This is why, as many have found out, a transistor is usually quicker than a fuse! The minimum blowing time of a fuse did not seem to vary greatly, whether a small domestic fuse or the large Airfuses.

"We also did some work on the behaviour of fuses at their rated currents and slightly above. In practice, at its rated current a fuse would last nicely; at twice this figure it would blow nicely; but at about 1·5 times rated current there existed a situation where one specimen would blow smartly but the next one would last for more than 2h (the limit of our test). However, when a fuse that had lasted for 2h was switched off, removing the fuse could be very difficult because the solder would have melted and soldered the fuse into its holder; for this reason we changed over to open-type holders.

"Back in the 'fifties test gear was cruder than today, but it is interesting to recall that we could obtain 7,000A-prospective out of our collection of car batteries and breakers in dc mode, or 200A at 500V dc, or 250A ac—though we always carried out the later test in the lunch break for fear of tripping off the main circuit-breakers and closing down the whole factory. Incidentally, a bit of multicore solder subjected to 7,000A-prospective can be quite spectacular!

"To revert to G8LXG's letter, we could assume that the fuse would have gone in about 10ms and the rccb in 15–30ms; but we should add the rider that a fuse is in essence a short-circuit protection. Were his assumptions correct, we would never be able to switch our rigs on as the initial surge would take the fuse straight out every time! The reason why a 1A or 5A fuse, rather than a standard 13A fuse, tends to be used in the power plugs of our equipment is, presumably, the hope that we can protect the equipment better. In practice, as noted above, even a low-rated fuse in the primary of a psu is likely to hold on long enough to do the circuit on the secondary of the transformer a severe mischief, as most old-timers will have found out from painful experience. For a small overload, modern electronic protection is both quicker and more reliable. There is little need to worry about whether to use a 1A or 2A fuse when you are legislating against a short-circuit on the mains-lead! It all amounts to the old story of engineers tending to forget the basic laws of physics and Nature, I fear."

More on nicad dc-dc converters

In the August *TT* I drew attention to the informative series of articles by Rod Cooper in *Electronics & Wireless World* on improving the reliability of nicad cells and batteries. My notes were based on only the first two articles, "Avoiding failure of sealed nickel-cadmium cells" in the May and June issues. Since then two further articles by the same author have appeared: July pp32–6 "Recharging system for NiCd cells" and September p73 "NiCd cells—part 4". These have described in detail the design and construction of a practical charger designed to avoid some of the pitfalls

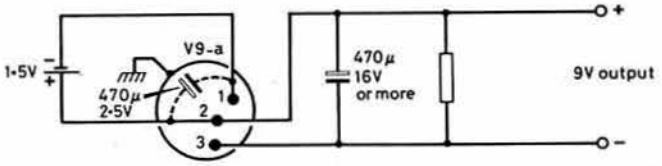


Fig 10. The Verkon V9—a high-efficiency dc-dc converter device allows a 9V battery to be replaced by a single alkaline or nicad cell

outlined in the first two articles and so help to obtain reliable performance from nicad cells. This is quite a complex unit incorporating timer, low-temperature cut-out, automatic turn-on and turn-off etc, having as a prime objective the avoidance of premature failure of cells due to dendrites forming between the plates, as described in the August *TT* notes.

I have also received a letter from Rod Cooper saying how glad he was to see the *TT* comments on the advisability of using (and subsequently recharging) *single* cells rather than cells connected in series to form batteries. He clearly feels strongly that this is a message that needs to get through to more nicad users.

However, he takes me to task for having reproduced his diagram of a simple ic dc-dc converter using the Texas TL496 to raise the voltage of a single cell to the necessary working voltage (my Fig 2(c)) without pointing out that in his text he had stressed his preference for the Verkon range of dc-dc converter devices which can provide "far superior" performance. He writes:

"The TL496 is really at its best with two cells, not one, although as indicated it will work from a single cell with reduced performance figures. Indeed, I use two of these devices myself in a couple of pieces of portable test gear, with single Type D nicad cells, but the converters are then only about 50 per cent efficient. For sheer efficiency, I prefer the Verkon V9a and single nicad cell."

He enclosed detailed information on the Verkon V12 dc-dc converter device providing a nominal 12V output (or 9V with an ic regulator) at up to about 50mA, and also the V9-a (Fig 10) which provides a nominal 9V over the recommended operating range of 1 to 80mA.

Both these Verkon devices are available in the UK from J Biles Engineering, 120 Castle Lane, Solihull, West Midlands B92 8RN, at about £5.25 each. Verkon have a useful introductory leaflet *A cost-saving alternative to batteries* which shows that their original application was to allow small batteries such as the alkaline PP3 to be replaced by a single (larger) alkaline "D" cell (eg Duracell MN1300) which provides about three times the electrical energy at half the cost, so soon saves the cost of the dc-dc converter. Rod Cooper's suggestion of using one of these devices powered by a rechargeable nicad would prove even more economical to anyone making regular and frequent use of battery-powered equipment although, as mentioned in the August *TT*, the devices would not be really suitable for providing the "transmit" currents for the majority of handheld transceivers, except the lowest power units.

RF and medical electronics

In the September *TT* ("Radiation wrongly blamed?", p708) I noted the letter from J Seager (*The Lancet* 11 May 1985) which suggested that the statistical environmental hazard seemingly affecting radio amateurs, electronic assemblers and radio and tv servicing technicians (but not other occupations in electronics) was most unlikely to have anything to do with electromagnetic fields, and that a more likely cause was to be found in the fluxes and tin/lead alloys used in soldering, the fumes from synthetic materials when overheated (or the very toxic pcb compounds found in large transformers, high-voltage capacitors and dummy antenna loads manufactured until the danger was recognized in the late 'seventies).

Ned Rew, G8GZZ, has brought to my attention further letters in *The Lancet* (29 June and 13 July) on this topic. The one on 29 June was from the members of the ARRL Electromagnetic Compatibility (emc) Committee attacking certain aspects of the statistical study carried out by Dr Milham on amateur mortality in California and Washington. This provoked a strongly critical comment from Michael Coleman, of the ICRF Cancer Epidemiology and Clinical Trials Unit at Radcliffe Infirmary, Oxford, who, in turn, found fault with the ARRL's comments on the use of "proportional mortality ratios", and suggested it was most unlikely that the study by Dr Milham was far wrong in this respect, although of course this does not mean that electromagnetic radiation is accepted as necessarily the culprit.

In view of the almost never-ending controversy surrounding the possible health hazards of ionized and non-ionized electromagnetic radiation, it was refreshing to read a detailed paper by R E Sharpe and N B Hornback, of the Indiana University School of Medicine ("The friendly fields of rf" *IEEE Spectrum* June 1985, pp64–9) showing how valuable use is now being

made, particularly in the USA, of electromagnetic fields for fusing fractured bones that have otherwise proved extremely difficult to heal (this application uses pulsed low-frequency, low-power waveforms), and also their use for healing wounds and for inducing local or whole-body heating (hyperthermia) to disperse malignant tumours, a subject that surfaced in *TT* in 1977 when Reg Patrick, G2BBX, reported on a 14MHz cure effected on his pet goose! Robert Colson, G4GYN, brought the value of low-frequency, low-level electromagnetic radiation to my attention in 1981. Some 60,000 difficult fractures are reported to have been healed in this way in the USA.

This does not mean that we should regard non-ionized electromagnetic radiation as necessarily benign, but at least it is good to be reminded that very many thousands of people already have reason to be grateful for its "friendly" nature when correctly administered. It is perhaps a great pity that in the UK there are relatively few medical specialists (other than those who are also radio amateurs) who are equally at home with medicine and rf generators.

Mobile radio and the frequency spectrum

The rapid growth over the years of emergency service and private mobile radio (pmr), and more recently 900MHz computerized cellular radio systems, has gobbled up large sections of the vhf/uhf spectrum—to the extent where, in the UK, broadcasting has been ousted (except for some ancillary services) from Band 1 (41–68MHz) and Band 3 (172–216MHz). This once again raises the spectre of the UK being out of step with the rest of the world, with all the problems that that involves. Yes, I know that, as amateurs, we will benefit greatly by gaining access to 50·0 to 50·5MHz, but I still think it would be a far happier situation if we could harmonize frequency allocations throughout Europe.

The problem that unilateral declarations of independence in frequency matters can give rise to has been underlined throughout the many years in which UK emergency services have squatted in a large part of the Band 2 broadcasting band, with the result that not only has vhf fm broadcasting been unduly restricted but, perhaps more importantly, the criminal fraternity has been furnished with low-cost "look-out" receivers to ensure that they are alerted to any "suspects on premises" messages!

Then again, to complicate the mobile scene, the pmr services in different countries have traditionally adopted different allocations and different channelling: 30, 25, 15 and 12·5kHz, just to list a few! In the UK 25kHz channelling for ±5kHz deviation fm has become the accepted standard for amateur mobile/repeater operation, in general providing only four channels per 100kHz, though with some use of split channels representing 12·5kHz channels.

Over the past 10 years there have been many efforts to develop a commercial ssb system for pmr that would be as easy to use and with equally good speech quality as fm, yet would require only 5kHz channelling. A number of firms, including Pye, developed prototypes for the Wolfson Project centred initially on Swansea university. However, by about 1980 it became clear that the effects of fading were making it very difficult to develop ssb equipment that could seriously compete with fm in overall performance and cost.

On the other hand, it was shown that the basic problem of frequency stability, including that posed by doppler shift on mobile signals, can be overcome by using a "pilot carrier" (ie not suppressing the carrier to the 40dB or so normally found in amateur ssb, but only by about 6 to 12dB) to facilitate the use of a phase-lock-loop demodulator that can cope with frequency changes of about ±150Hz without significant change in speech quality.

Fading and mobiles

William C Y Lee's paper "Estimate of local average power of a mobile radio signal" (*IEEE Trans on Vehicular Technology* Vol VT-34, No 1, February 1985) provides a useful introduction to the basic problem of the severe fading invariably occurring during mobile vhf/uhf operation. He writes:

"A mobile radio signal envelope is composed of a fast-fading signal superimposed on a slow-fading signal. . . . Severe fading always occurs when the mobile unit is in motion. The cause of this severe fading is due to two factors: *(1)* The multipath phenomenon—in the mobile radio environment, the unique situation is such that the mobile antennas are always lower than the surrounding structures such as houses, buildings etc. Thus the signal transmitted from the base station is usually blocked by the surrounding structures, and many reflected waves are generated, as shown in Fig 11. Summing all the multipath waves at the mobile unit results in a fast variation in the received signal, called short-term fading. *(2)* The path-loss fluctuation (local mean), that is the variation of the average signal power as the vehicle travels, is called the path-loss fluctuation of the signal; this is due to the different terrain configurations affecting direct-line propagation between the base station and a moving mobile unit. This is long-term fading, since the location of the vehicle, and hence the path loss, varies relatively slowly: Fig 11 (b)."

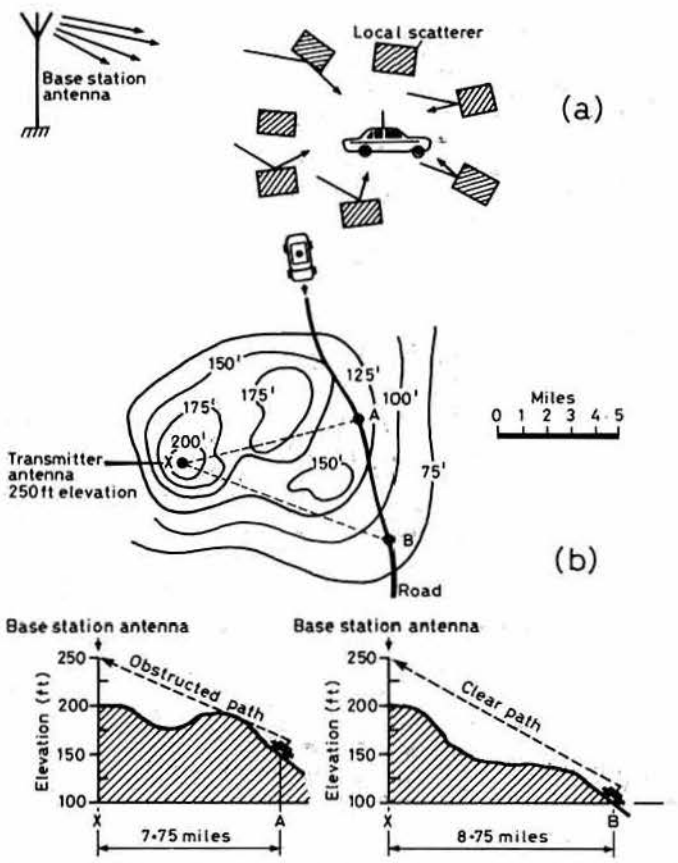
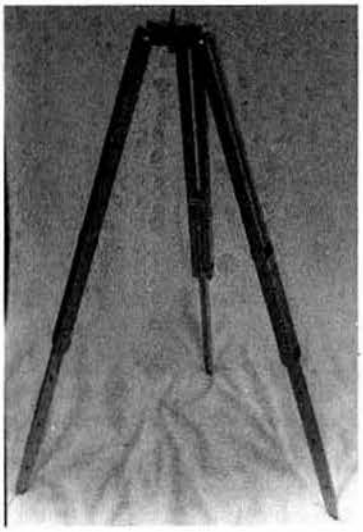


Fig 11. *(a)* Fast fading in mobile vhf/uhf operation results from the constantly changing summation of many signals reflected from buildings etc. *(b)* The changing path loss due to hills and other major obstructions result in pronounced but slower, long-term fading. The receiver needs to be able to cope effectively with the superimposition of fast fading on a slower fading signal

This combination of fast and slow fading is thus inherent in mobile operation on vhf or uhf, and the only practical way of combating the serious effects that it has on ssb reception lies in the development of improved agc systems. A good deal of work has been done on this problem both in Europe and the USA, with some very promising results achieved in the UK at the University of Bath by a team under Dr Joseph McGeehan (now University of Bristol) using a technique called "feed-forward signal regeneration" (ffsr). A paper discussing the application of ffsr and a new optimized form of ssb called "phase-locked transparent tone-in-band" (ttib) has been published recently ("Speech and data communications over 942MHz TAB and TTIB single-sideband mobile radio systems incorporating feed-forward signal regeneration", *IEEE Trans on Vehicular Technology* Vol VT-34, No 1, February 1985).

The paper presents preliminary results for both speech and data communication at 992MHz, and shows that the quality of the speech, compared to 25kHz fm, and the low error rates for data, "clearly demonstrate that pilot tone companded ssb should be considered as a suitable modulation form for mobile radio over all operational frequency bands up to 1GHz. The improvement in speech quality over 25kHz fm may amount to as much as one point on the (five-point) CCIR scale for all signal strengths". The preliminary trials also encompassed 12·5kHz channelling fm, but this was so markedly inferior to the 5kHz channelling ssb system that further trials were confined to comparisons with 25kHz fm.

It will be noted by amateurs that the thrust of this work is to obtain as good or better performance in 5kHz channels (right up to 1GHz) as can be obtained with 25kHz channelling: it is not primarily to extend range. However, the basic feed-forward signal regeneration technique with companded pilot-tone ssb may well prove to have applications other than for mobile operation. It would seem to be a technique that, as amateurs, we should keep an eye on. □



A HOME-MADE TRIPOD FOR MICROWAVE OPERATION

C H Ousbey, G0CHO*

Clive Ousbey joined the electronics company where he still works, as a pcb designer, on leaving school in 1978. He was licensed as G6DCL in 1981, and more recently became G0CHO. Apart from microwaves, his interests include home-construction, and he is a committee member of Stratford-upon-Avon & D ARC.

ON THE higher microwave bands (ie 10GHz) operation is usually portable from hilltops etc, and a convenient method of mounting the antenna, be it dish or horn, is to use a tripod. The most readily available are the photographic variety, but these are not ideal for the purpose for several reasons:

1. The cheaper models will probably be too flimsy for the loading, not necessarily due to weight but to wind.

2. The legs are usually limited as to how widely they can be spread; obviously, the wider they are spread the less chance of the gear blowing over.

3. If the original camera platform is retained and used, the locking mechanisms must be secure enough to prevent the antenna from turning or tilting unintentionally.

4. Cost. A good photographic tripod would probably cost over £25, whereas the design presented here should cost under £10 to make.

The design to be described is based on the wooden tripods such as are used for surveying equipment etc, but which are hard to come by and probably expensive.

*Ormond Lodge, Newbold-on-Stour, Stratford-upon-Avon, Warwickshire CV37 8TS.

Materials and tools required

The materials used should be available from most hardware/diy shops, with the exception perhaps of the aluminium for the leg spacer and slider plates.

The legs are made of 1 by 1·5in (25 by 37mm) pine or similar softwood; the size is nominal, and in fact is slightly less due to planing. Usually this wood is sold in 6ft (1·8m) lengths, and five such lengths are needed to make the 3ft (0·91m) leg sections and the platform/hingeplate "fingers". The platform/hingeplate is 4 by 4 by 1in (100 by 100 by 25mm), but the size is not critical as long as the fingers can be fixed securely to it; board or chipboard can be used, and because of its small size, a suitable "offcut" could probably be obtained. Varnish, paint or similar product will be required to seal and protect the wood.

The following tools are required: saw, screwdriver, spanner, drill and drill bits, sandpaper, and a file or Surform to shape the "feet" if necessary.

After cutting all the pieces, they can be marked out for drilling. When marking out the screw holes for the fixed leg plates, make sure the outside sections are spaced far enough apart to allow the sliding leg section to move freely. To pre-drill the screw holes in the fingers, first mark out and drill the holes in the platform, then position the fingers in their final locations (leaving enough room in the middle to allow the fixing bolt to pass through)

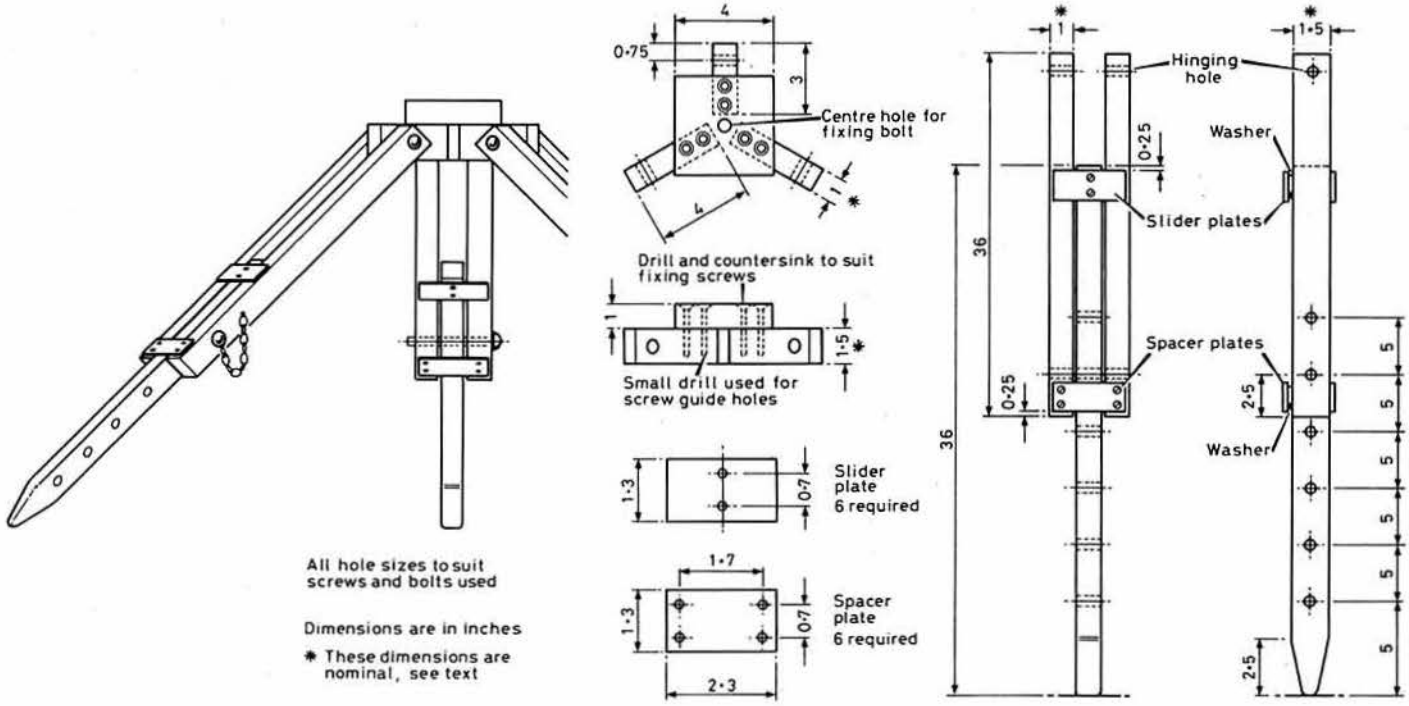


Fig 1. Dimensional drawings of the main parts of the tripod

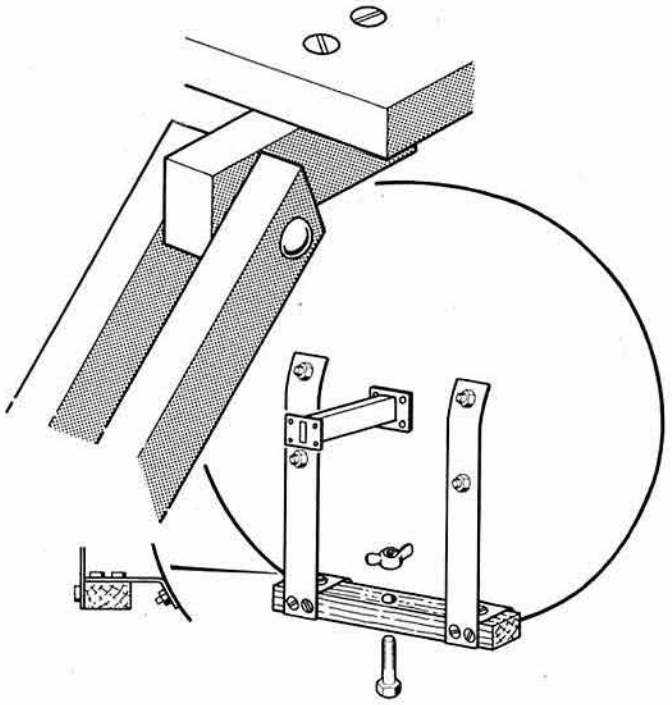


Fig 2. Close-up of the hinge arrangement and the author's dish mounting

Parts list

6 2in (50mm) No 8 countersunk woodscrews
36 0·75in (18·75mm) No 6 woodscrews, countersunk or roundhead
3(6) 3in (75mm) coachbolts, etc (can also be used as pegs) appoximately 0·25in (6·25mm) diameter
3(6) Nuts or wing-nuts for above
— Washers as required
1 Bolt, wing-nut, etc for antenna fixing
9 3ft lengths of 1 by 1·5in softwood, see text
1 3in lengths of 1 by 1·5in softwood, see text
2 4in lengths of 1 by 1·5in softwood, see text
1 1 by 4 by 4in (25 by 100 by 100mm) chipboard, etc
6 1·3 by 2·3in (33 by 58mm) 14 or 16 swg aluminium, two holes for slider plates
6 1·3 by 2·3in (33 by 58mm) 14 or 16 swg aluminium, four holes for spacer plates
3 3in (75mm) peg (see text)

Anyone having difficulty in obtaining any of the materials required should contact the author.

and mark the screw-hole positions through the holes in the platform. A similar technique can be employed to ensure the holes in the sliding leg sections line up with their respective "peg" holes in the outside sections, but this will have to be left until the legs are assembled.

Next, all the wooden parts can be given a light sanding and then varnished; two or three coats should amply seal the wood. Note, that the first coat may take several days to dry, and subsequent coats should be applied as recommended by the manufacturer. When completely dry, the tripod can be assembled, starting with the platform and then the legs. With the legs assembled, but before fitting them to the platform, the holes in the sliding section can be drilled as described above. To allow the sliding leg sections free movement, washers are used to space the plates away from the legs, and also between the fingers and the outside leg sections. Depending on the thickness of washers available, you may only need to use them on one side of each leg, otherwise one (or possibly more) can be used under each plate and on either side of the fingers.

The fixing pegs can be wooden dowelling, aluminium rod or—probably the strongest—bolts, which for convenience could be of the same type as those used for hinging the legs. Finally, the legs are attached to the platform by bolts through the fingers; these are tightened enough to prevent any lateral movement, but not stop the legs from hinging.

The actual mounting of the antenna and equipment will of course depend on the requirements of the individual, but a sketch of my dish mounting arrangement is included as an example. □

Sporadic-E observations in 1985

R A HAM, BRS15744*

Following 12 years of sporadic-E observations, using the same procedures and radio frequencies, my results show that the annual sporadic-E season, falling between 1 May and 31 August, lasts around 100 days, with major events occurring on an average of 42 days, Fig 1.

Although there were several strong bursts of television pictures from broadcast stations in Poland and Germany on ChR1 49·75MHz and ChE2 48·25MHz respectively, early on 2 and 3 May—heralding the start of the 1985 season—the main events, disturbing radio and tv signals between 40 and 80MHz and sometimes extending from 27 to 150MHz, began on 15 May and ended 94 days later on 17 August, some five days longer than the 1984 season. During this period, sporadic-E occurred on 46 days, just above the 12-year average, compared with 26 days in 1984 and 44 days in 1983. The majority of my daily observations were usually made around 0830, 1330 and 1830bst, and any disturbances logged at those times are indicated by the dark squares in Fig 2, under the headings A,B and C respectively.

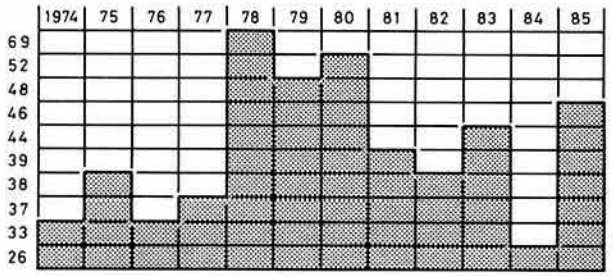


Fig 1. Twelve years of sporadic-E

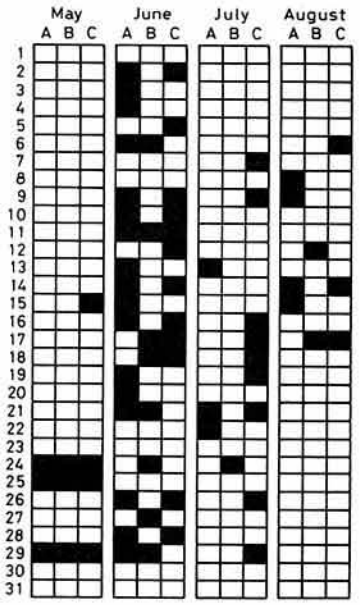


Fig 2. Monthly distribution of sporadic-E during the 1985 season

Equipment

As in previous years, I used a Trio R2000 communication receiver with the frequencies of the 28MHz beacons in Germany (DF0AAB, DK0TEN and DL0IGI) and Norway (LA5TEN), for easy access in the set's memory, an SX200N scan receiver to monitor various sound and vision channels in Band 1, 40 to 68MHz, and an ex-military R216 vhf communication receiver to tune for broadcast dx between 66 and 73MHz. JVC CX610GB and Plustron TVR5D television receivers were used to locate both colour and monochrome, PAL and SECAM, 625-line pictures in Band 1, fed, along with the R216, from a horizontally-mounted combined Bands 1/3 Yagi, and connected to the equipment via an Antiference XS3 distribution amplifier.

*Faraday, Greyfriars, Storrington, Sussex.

Early warning

The German beacon DL0IGI, and the television synchronizing pulses transmitted by stations in Czechoslovakia, Hungary, Poland and the USSR on ChR1, were used for early warning of sporadic-E and, although the pulses on ChR1 were the most reliable, both of these signals were among the first to appear and the last to fade away when sporadic-E was about. Most disturbances last between 2 and 4h, but because the 50MHz region is so sensitive to sporadic-E, these pulses can alert an observer to the short-life events, often less than 15min, but time enough for a dx "quicky" on the 50MHz band, and very useful during the winter period when sporadic-E conditions are sparse. With the 28MHz band being generally quiet throughout much of 1985, the German beacons proved invaluable as an indicator for periods of short-skip propagation.

Band 1 television

Reference to Fig 2 will show that June had the lion's share of sporadic-E openings during the season and within that month television dxers in the UK received pictures in Band 1 from at least 18 countries, including Austria, Bulgaria, Czechoslovakia, Denmark, Finland, Germany, Hungary, Iceland, Italy, Norway, Poland, Portugal, Rumania, Spain, Sweden, Switzerland, USSR and Yugoslavia.

Solar activity

Throughout 1985 I continued my midday observation of the sun at 143MHz and recorded only a few bursts of noise on five days (12, 13, 14 May and 9 and 10 August) during the Sporadic-E season, compared with 19 days for the same period in 1984 and 25 days in 1983. Once again there is no positive evidence to connect the "active" sun to the on-set of sporadic-E.

Continental broadcasting stations

During the life of all the disturbances listed in Fig 2, very strong fm signals were received in many parts of the UK from a variety of limited-range, eastern-European broadcast stations which operate daily between 66 and 73MHz. The number of times such stations were logged and their frequency distribution between each megahertz, is illustrated in Fig 3(a). As expected, the number of stations received increased with the number of events, but their frequency distribution remained similar to that in 1984 and, as previously observed, most of these signals were subject to deep and sharp fading at the beginning and towards the end of each event.

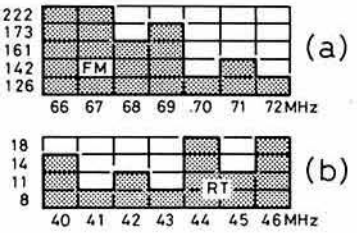


Fig 3. (a) East-European fm stations logged. (b) radiotelephone stations

European radiotelephone stations

During the lifetime of many of the disturbances, listed in Fig 2, a number of European radiotelephone type signals were received between 40 and 46MHz, depending on the intensity of the event. The frequency distribution of the 88 such signals, which I counted during the 1985 season, is shown in Fig 3(b), which compares with 39 in 1984 and 76 in 1983. □

4-2-70

*by Ken Willis, G8VR**

The locator controversy

The request in the September *4-2-70* for comments on Maidenhead v "European" locator systems brought forth so much in the way of response that it must be aired here again, since there is clearly a polarization developing between those very opposed to the change and others who take the view that in the longer term we shall all become accustomed to the new system.

The discontent which was simmering under the surface among those "against" was brought into the open by comments from Claus Neie, DL7QY, in *Dubus* 3/85 and reported in *Rad Com* September. Claus has since written to say that he had just returned from a vhf-uhf-shf convention in Weinheim where he collected some 200 signatures from "active vhf-shf-ers" who were in favour of retaining the old system. He has sent a photo-copy of the list, which includes many well-known calls in D, F, LX, LA, OE, HB9 and EA. To underline his own views, Claus closes by saying "best 73 es dx from FJ61e"!

By almost the same post came another list from Reg Woolley, GW8VHI (Port Talbot), who has obtained 30 to 40 signatures to a petition to the RSGB suggesting that Maidenhead be dropped. The list includes G, GJ, GW and ON stations, but in addition Reg sent cards received from numerous German and Dutch stations, plus notes from SM, OH, EA and I in support of his campaign to have the old system restored. Many make the point that they do not want the Maidenhead system used "inside Europe". SM3BIU said that the decision to adopt it was taken "against the ham majority . . . in Europe". Reg says also that he has worked many USA stations via the satellites, and most of them do not know their full "grid" identification and use only the first four digits.

Regional representative G3LP (Gloucester), visited the Cheltenham ARA to discuss various RSGB matters, and when the subject of locators was raised the discussion became so heated that the chairman took a vote, with the result that 22 members voted against Maidenhead, none voted in favour, and two abstained. Later the matter was raised at the Gloucester club, where opinions there were divided, several asking "why use squares at all". G3LP himself takes this view, preferring to give his location simply as Gloucester "just as on hf", so he is in favour of scrapping squares altogether. I suspect that those of us who like to chase the dx on vhf will want to see one system or the other retained—life would become rather dull if you couldn't bore others with the description of the "one that got away"!

Also from Cheltenham, Tim Kirby, G4VXE, who is a member of the Square Bashers Expedition Group, Sheppy Contest Group and Cheltenham ARA, is one of the "anti-Maidenhead lobby", and quotes a lost QSO with a UT5 due to the longer locator being misinterpreted. Tim agrees that Maidenhead may have its points for satellite or eme contacts, and indeed for hf work, but can only recall one hf-band contact when the other station gave his locator, which seems to support G3LP's view of the lack of interest in squares on the lower frequency bands. G4VXE suggests that we use the old system for all tropo and "normal" contacts on vhf, and the WW system only for inter-continental contacts. Also, that we follow the Dutch example and dispose of the WW system in all contests. In a recent contest Tim says he worked "certain members of the VHF Committee who were using the öld system".

From the Cambridge area Brian Armstrong, G3EDD, a well-known vhf callsign, finds it difficult to become accustomed to the new system, but he "certainly would not go back to the old one". In a dig at the comment that most of the UK is in prefix IO, he mentions that the Scillies have not yet seceded from the British Isles, and they are in IN. Brian is another to comment that there was just as much argument when the "old" system was first mooted, and in those early days he found, from a study of his log, that he only recorded the square notation for contest contacts, and in those days "10k north of Bremen" was much more meaningful than "EN something or other". Brian finds Maidenhead technically superior, avoids ambiguity and "is at least logical".

Jonathan Naylor, G4KLX (Derbys), supports the earlier system and finds Maidenhead "more cumbersome for normal operation". He says that hearing someone call "CQ from IO square" is analogous to someone calling "from Europe". He is another who takes the view that the amateur fraternity, particularly those who are active weak-signal operators on vhf, were not sufficiently consulted before the new system was introduced.

John Matthews, G3WZT, is no stranger to dx contacts on 144MHz, and he "has no doubts which he likes best—QRA!". He feels that the ambiguities in the old system are minimal when the square is linked to a callsign (ie SV in LZ square is clearly not just south of the Arctic Circle) and up to 3,000km the QRA system is best, though when working the USA on 50MHz there might be a case for Maidenhead.

Gordon Pheasant, G4BPY, likes Maidenhead and makes the point that with ever-increasing distances being worked on vhf it is a necessity. If the Atlantic is ever bridged on 144MHz it will come into its own; Gordon has also worked several USA stations on 50MHz, so his comments are quite pertinent.

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This subject is obviously causing much interest among active amateurs. Since it was approved at the last IARU Region 1 conference in Cefalu, it is not something which can be swept under the mat.

Those who have valid points to raise should contact the RSGB vhf manager, Keith Fisher, G3WSN, since he will want this sort of input for the VHF Managers Conference early in 1986. Meanwhile you can use either system or none at all since, as I said before, the licence conditions do not require you to use any form of shorthand notation to identify your location.

The VHF Committee will be co-ordinating members views for a paper on this subject to be presented early next year to the VHF Managers Conference, and all input on the subject which has come to *4-2-70* will be passed to the committee in due course.

Beacon notes

Apologies for my slip-up in referring to the antenna of the RSGB headquarters 50MHz beacon GB3NHQ as "a tiny vertical". Tiny, maybe, compared with some antennas, though it did put a signal into Washington State. But definitely not vertical!

Brian Bowyer, G3COJ, reports that beacon GB3SUT is likely to be re-established soon on its original site and using a pair of Jaybeam eight-element Yagis. GB3REB is still not operational from its new site in the Medway Towns.

Some technical details for the Rosemarkie beacon GB3RMK on 50·060MHz are: location, IO77UO (XR39a); ngr, NH638581; antenna, dipole at 190m asl; erp 20W; and keying, F1A. There are plans afoot to increase the height of the antenna and to use one with more gain which, if fulfilled, will be of great interest since many operators are already reporting long-distance reception of the beacon, especially by meteor scatter.

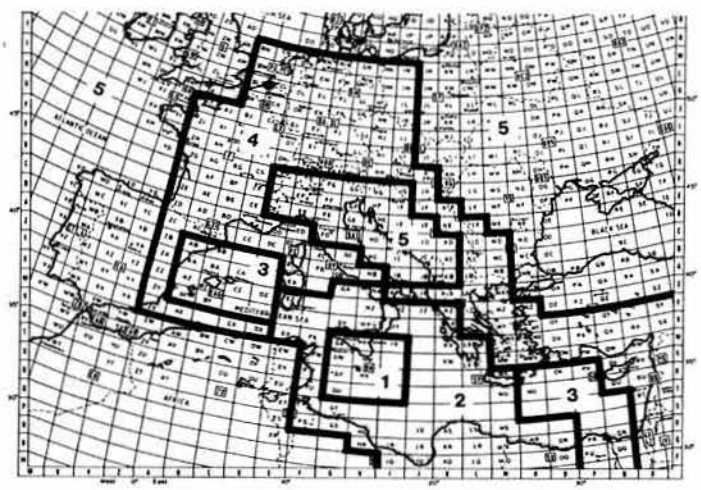
There is a chance that a Norwegian 50MHz beacon will come into operation if present negotiations in that country come to fruition.

Lars Melin, SM0KAX, is a regular *4-2-70* reader and it was good to hear from him. He says that OH6VHF has been QRT for some time, but when he last heard it, it was in its "old 10W-1W-0·1W mode". He finds it hard to agree with UA3MBJ (see *4-2-70* June 1985) that this beacon drops 4-10dB in auroras instead of the expected 3dB, and so disputes the "non-linear auroral propagation theory". Lars also reports on his local beacons; SK4MPI was recently off the air or on very low power for a few days but is now fully operational. It provides very good auroral warning for Lars. SK1VHF is functioning normally, but Lars says that according to SM2MPP, SK2VHF is off the air, presumably for maintenance.

A new award

In a recent letter, Henry, 9H1CD, sent both the results of the 9H Falcon Contest, which is held every year in June to coincide with probable sporadic-E openings to this country (and others!), and news of a new award sponsored by the 9H VHF/UHF/SHF Group whose address is PO Box 31, Valletta, Malta.

The interesting thing about the Falcon Contest results was the fact that 15 countries provided entrants, showing the spread of Es throughout Europe on 144MHz and also giving a useful list of active vhf stations in exotic squares or countries. For example, 4X4MH was the outright winner, with another, 4X4IF, in eighth place. Some of the older 144MHz dx chasers will recall that G3VYF worked 4X4 on that band a few years ago to create a distance record. Some SV stations also figured among the leaders, notably SV1OE and SV1AB; this year's Es openings provided contacts with SV for numerous UK amateurs, so what was once a rare country to work is now well equipped with 144MHz stations and operators to increase the chances of working it when conditions are right. The Falcon results show a good sprinkling of SP, EA and I stations, as well as some nearer European countries, and considering the distances involved, the presence of two UK stations in the first 50 is a great credit to those concerned. G8TGM (Bognor Regis) was placed 40th with 32,263 points, while G6ECM (Herne Bay) was in the No 42 spot with 20,536 points. Both are seaside locations, you will note; having just moved to such a QTH myself I await next year's Es with considerable interest!



Zones defined for the new 9H Award

For the new award which many UK operators will be able to claim, Europe is divided into five zones, and the requirement is to work a minimum number of 9H stations from your own zone; we are in Zone 5, so we need only to provide proof of having worked four 9H stations according to the following schedule:

Zone 1	20 stations	Zone 3	12 stations	Zone 5	4 stations
Zone 2	16 stations	Zone 4	8 stations		

The illustration shows the way in which the zones are defined, which itself is interesting since it appears to take account of mountainous regions north of Malta (part of Zone 5) which would make contacts difficult.

To qualify for the award, send a signed log sheet indicating the different 9H stations worked with date, time and reports exchanged, together with the equivalent of US $3 (about £2.25 on current rates of exchange) to: The Awards Manager, c/o 9H VHF/UHF/SHF Group, PO Box 31, Valletta, Malta.

From here and there

Writing from the Netherlands, Andy McClelland, G1FKU/PE, reports that he recently received a letter from the postal authorities in Gibraltar stating that they are now prepared to grant visitors' licences to holders of British B licences. They were previously restricted to A licence holders only. No charge is made for such a licence. We have long needed some 144MHz activity from ZB2 during the Es season or in major meteor showers, since this country is within range of the UK. This is no criticism of its main vhf exponent, ZB2BL, who is much engaged in maintaining beacon services and providing contacts with the UK on 50 and 70MHz. Maybe some enterprising group will mount an expedition there next summer—just across the border is La Linea, where from first-hand knowledge I can confirm the beverages are not exactly costly.

Geoff Brown, GJ4ICD, is now planning to concentrate on 430 and 1,296MHz and 2·3GHz rather than on 144MHz where he has, to put it mildly, appeared to have done it all. He worked over 1,100 stations in the September 144MHz contest, gaining 16,885 points.

The RSGB has produced a useful information sheet on the status of amateurs at 50MHz which stresses that UK amateurs have no international rights to use this part of the spectrum, so the efforts of the Society which led to the proposed allocation on 50MHz are all the more creditable.

David Dodds, GM4WLL, makes a plea for more 70MHz operation, since he says there are more stations equipped for this band than for 50MHz, but operation is unco-ordinated. He thinks that the success of the 50MHz experiment is due in part to operators being forced to work outside tv hours, which brings a large proportion of permit holders on to the band at specified times. David suggests reviving the earlier "Wednesday night on Four", and to encourage activity he plans to be on every Wednesday evening, either from his home in Dumfermline or from the University in Glasgow.

Brian, G3EDD, often visits Cornwall, taking equipment with him. He finds 144MHz ssb activity in that area "abysmal" and says that in winter it is not unusual for nothing to be heard on the calling channel (did I hear someone say "what bliss?"). On 70MHz it is just as bad, or worse, with G3YJX (Wadebridge) the only active operator. Brian has a "smashing site for working from southwest through west to northwest". With this experience, Brian was delighted during the IARU contest to find 144MHz ssb at last open, and his first 12 contacts raised 10 countries, five of them for the first time after two years of occasional operating in that area. EA1RCA/P in IN63 (WD) was mostly at S9 plus, but best dx was F/DK0GR in IN38, a distance of 899km, and this in the worst direction with a local hill half a mile distant.

The Radio Investigation Service is changing its policy with regard to domestic tv and radio reception problems. In future it will encourage people to carry out their own investigations, and a booklet has been prepared to enable simple and safe diagnoses to be made. A new standard BS905 has been drawn up for tv receivers, and it will soon be an offence to sell, manufacture or import sets which do not meet the standard. If the RIS has to make a call to diagnose a domestic interference problem, a call-out charge of £21 will be levied, so there is obviously a case for doing

as much ground work as possible yourself in cases of tvi. The explanatory booklet should be available from main post offices by the time this appears in print.

Our hard-working vhf awards manager, Jack Hum, G5UM, suffered a heart-attack on 6 August but fortunately is now out and about again. I am sure that vhf/uhf operators all over the UK, if not Europe, will wish to convey their wishes to Jack for a speedy return to full health. Jack has sent me some correspondence and other papers related to the Monday-night 432MHz award which seems to be going well. More on this in a later issue of *4-2-70*.

Cliff Ranft, BRS1418, who records precise satellite aos and los timings (*4-2-70* June 1985) also notes meteor hourly counts using various signals as the source. For the period 11–27 June between 0400 and 0500gmt, counts per hour varied between 92 and 198 and were "extraordinarily variable day to day". He has also had some interesting sessions on the 22MHz marine band, getting pings and bursts from stations PCH, OST, HEB, OXZ, YSM and FFL to give a countries heard total on ms of 10. He thinks these observations indicate the value of "a bit of power" on ms, since the stations copied have inputs in the "several kilowatts" region. He also finds the BBC World Service on 25,650kHz very interesting, with up to 50dB enhancement every few seconds due, he suggests, from backscatter. Cliff makes the interesting observation that when E or Es propagation is taking place, meteor counts go to or close to zero.

Peter John, DL7YS (Berlin), says that it will not be possible for the DL0SP team to visit Monaco this year as they had hoped, it being "impossible to find a suitable location in this tiny country". John, by the way, is building a converter for 70MHz and will want crossband skeds soon.

John Branegan, GM4IHJ, refers to "a dearth of auroras" recently but sent some information which it is hoped to reproduce next month. Dave Newman, G4GLT, reports a crossband contact between G3JVL (70MHz) and VE2AIO (50MHz) at 0110gmt on 8 August 1985. Dave monitored another opening on 50MHz to W1,2,3 and 4 on 6 August 1985, and says that this indicates that late openings do occur. He has some proposals for co-ordinated transatlantic tests, which will be described next month.

My thanks to all contributors this month and apologies to those whose input is not mentioned. With such a large mailbag during fairly quiet vhf conditions, we shall burst at the seams if things liven up!

Repeater news

Early in October the Repeater Management Group submitted paperwork to the licensing authority in respect of the following repeater proposals, all 430MHz conventional systems:

GB3HL West London	GH Gloucester	WS Scunthorpe
BV Hemel Hempstead	DD Dundee	RE Chatham

Documentation for GB3GM, the rtty/data repeater for Glasgow, was also included in this batch.

Agreement has been reached to move the experimental ssb repeater GB3SF to the same site as GB3HH without change of channel. SF has now completed its first year of operation, and Tony Whittaker, G3RKL, is preparing a full-length article on the experiences gained during this period. The article will also contain technical details of the system requirements and the hardware developed for this, the world's first amateur pilot ssb repeater. Despite a poor site, the repeater has proved to have better coverage than the nearby GB3US and mobile performance has been better than anticipated, the receiver holding lock when audio was down in the noise. About 20 stations have had at least one successful contact through the repeater, and most of them have then not used it again. Tony attributes this lack of activity to the fact that there is a total absence on the market of any commercially available pssb equipment, and most operators are unwilling to make even minor modifications to their equipment to make it suitable for this mode.

Expedition round-up

The summer of 1985 will no doubt go into the record books with rain and gales lashing the country, particularly in the north. On the west coast of Eire the worst weather in August for 120 years not only put paid to the transatlantic 144MHz tests by West Kent ARS, but many other expeditions suffered similarly.

"At the drop of a hat", David, G4DHF, support by Julian, G4YHF, and Ian, G1DXI, decided to operate from Skye (WR47j) between 10 and 16 August. After a 13h journey they arrived to be greeted by horizontal driving rain which persisted throughout their stay. Due to the short notice in arranging this trip, they had planned to operate under canvas, but it was so wet that Julian and David opted to sleep in their cars—after five nights in the front of a Mini Metro, David was suffering near-spinal damage. Despite all of this, results on meteor scatter were impressive—"a most civilised way of operating, and most efficient" as they reported it—but

Manchester University ARS expedition in Scotland. Sandy, GM3BCL, delivering a fast QSL by hand to Martin, G6BZD, with Tom, G4TUA, in background, and Tim, G6RFX, on the left. *Photo:* G6ZGP

part of the success was due to the fact that they operated *two* stations simultaneously (GM4DHF/P and GM4YHF/P, the former with 4×9 elements and the latter with 2×11 elements). In four-and-a-half days they completed with over 40 stations and had a success rate of about 55 per cent. From their location in the northwest part of the island they made some good tropo contacts too, despite the awful weather, working down into YN and ZN, but nothing further south than that. However, during the contact with a station in ZN they also worked HB9RDB (DG) on what appeared to be a long meteor burst (Perseids shower at this time). The highlight of the trip was an aurora on the evening of 12 August when they worked as far down as F6DWG (BJ) and G4XDZ (AL). The aurora was visible to them, stretching some 180° from west to east with mobile "curtain effects" at the zenith. David pays tribute to the fantastic dedication of the team members on such an expedition, and particularly in this case to Ian who "did much to keep body and soul together".

Manchester University ARS went to Scotland towards the end of August and operated from Mongour at 1,000ft asl (some 10 miles southwest of Aberdeen). This team also experienced bad weather, from the moment they got the antennas up to the time they took them down. The ground became waterlogged and water seeped up through the groundsheet in the tent. The antennas were a nine-element on 144MHz and a 19-element on 430MHz with 100W and 10W respectively. Callsign was GB2MU. Things were very quiet during the contest weekend (28/29 August), but they did work GW6WMB/P in XQ over an obstructed path, the Cairngorms at a mere 3,000ft being in the way. They were apparently called by several Midlands stations but could not hear them, though sea paths to the north were good with the Shetlands and Orkney being worked on 144MHz. The best 430MHz contact was with G6BIA (South Shields). On 30 August they worked LA2AB on 144MHz in an auroral event but signal levels were very low. Like so many operators from south of the border, the team came back full of praise for the hospitality of Scottish amateurs and resolved to turn their beams north more often in future—a very good practice for all of us.

Michel Monteil, F/G6WDK, writing from Egletons, France, tells of yet more bad weather during his expedition to the Isles of Scilly between 10 and 25 August. In this period he logged "only" 105 contacts on 144MHz. Ceaseless gales and rain plagued his visit, but he managed to work six countries, the best dx being eight EAs during an opening to northern Spain on 17–18 August. EA1 and EA2 stations at an average distance of 700km were worked at S9 both ways via tropo. These sea paths do seem particularly good, even when weather conditions are unfavourable. However, Michel was chagrined to learn that while talking with the EA1s he had missed EA8XS who was on the lookout for him. Best overland dx was into Lancashire (G1KDF). Michel said he did not believe in meteor scatter until he tried it, but worked F9HS by this mode exchanging reports of 27 and 38. He found the Perseids "quite something" and heard YU7CW and OE3ODL using a nine-element and an unmodified IC202. He closes by wishing to thank all who called him and for the cards received (send either to G6WDK or to F8UM if you need one). In particular he wants to express appreciation to Colin, G0AEA, the "only resident ham on the Scillies regularly active on 144MHz". Colin made Michel feel at home and would call in when the band was dead to have a chat. Michel listened on 50MHz at times but heard nothing; and there was no Es about during his stay. □

SWL News

*by Bob Treacher, BRS 32525**

MOVING QTH had meant that other matters had to take priority, but enough time was found to pen this. Will all contributors ensure that mail is correctly addressed from now on.

W0ORE/Challenger

Philip Lancaster, BRS85124, sent in a report of the signals which he heard from the space shuttle *Challenger* on four occasions, using a Yaesu receiver and a MET six-element XY beam at 40ft agl; he is located 200ft asl. The first signals heard from W0ORE were on 2 August at 1725–1730 while *Challenger* was on Orbit 62. Philip copies this from the QSO with GW6GW: "Having a really fine time"; "Just send high resolution to you"; "OK, how copy that?"; and "Well very soon, GW6GW W0ORE standing by for final". Philip also copied signals at 1904–1906 (Orbit 63) on 2 August, and again at 1742–46 (Orbit 78) and 1914–20 (Orbit 79) on 3 August. This latter logging being while *Challenger* was in communication with GB3RS at RSGB HQ. Most of what was heard was recorded, but Philip must wait until he gets some sstv gear to see the pictures he taped—unless someone can offer him the use of their equipment in the meantime.

Not satisfied with his current success, Philip's next challenge is to receive weather satellite pictures on 137MHz from the NOAA series. The signals are clear using a scanning receiver and a discone, but he is hopeful of purchasing a secondhand Rank Xerox Telecopier 400 fax machine to produce the pictures. If any reader can help, Philip can be reached at 55 Bideford Road, Ruislip, Middx HA4 0UE.

VHF news

Mick Toms, BRS31976, reported better conditions on 144MHz. At the end of August, stations to the south were copied, including EA1OD (XD), F1ADT (ZE), F1COW/P (ZF), F1GTR (ZG) and F6ECI (AF). EA1CYE in YD was particularly good copy. Earlier in August, Mick had a fairly useful session in the Perseids shower. He heard Y41YL (HL), SP6AZT/6 (JL) and OK3CBU (JI). Others logged included YU, DL, HA, I, LA, OE, F and GM4KGC/P (YU). Fifteen squares were logged on ssb and cw. Unfortunately, Mick's 'sixties Ferrograph is feeling its age, and slowing down the high speed cw to a readable rate was not as successful as he had hoped. His "gotaways" during the Perseids were particularly frustrating. He heard short bursts from an RB5 and a UA6, but the bursts were not long enough to copy the entire callsigns. A logging stint at G8XBF/P meant no swl entry to the September Open from Mick this year. He will be particularly disappointed, as conditions were very good.

With the poor summer and very few tropospheric openings it was something of a surprise that the contest coincided with perhaps the best dx opening of the year. HB9s were rolling into London at 59+. Sixteen different HB9s were logged at my old QTH, together with over 50 French stations including some in the south. Some of the more interesting callsigns were F1EWP/P (JN06), FC1GYA/P (JN15), F1VP (JN16), F6BUL/P (JN35), F6DUI/P (JN25), HB9s D, G, AEN/P, MMM/P, LC/P, PXT/P, CIU/P, LF/P, SAX/P and MKV/P all in either JN36 or 37, HB9/OE8KVK/P (JN37), F3TE/P (JN93) and EA1CYE (IN83). BRS62088 also got in on the act by logging a few HB9s. Dave Whitaker, BRS25429, however, was not blessed with such good conditions, and his log showed only seven French stations no lower than the JN18 area. With the superb conditions on 144MHz, it was tempting to look at 432MHz, but trying to win contests always takes precedence over collecting new squares!

At the time of writing, Michel, FE8957, was in the Isles of Scilly operatng as G6WDK/P. Conditions during the first few days of his expedition were poor, but he was hoping that conditions would improve. All QSLs for this operation should go via FE8957 or F8UM. While at home in JN15, he heard his first sporadic-E on 5 and 6 June. Stations heard were SW2PK, YU1PRV, YU1PTD, YU1AFS, YU1PSF, YU1UN, YO7CJI and LZ1ZB. These stations were around JN93, KN03 and KN13 squares. On tropo, HB9RHV, HB9SAX, IW1AHH and 12FAK were heard.

Martin Parry mentioned more Es, this time on 13 July. He heard EA7CPW (YX12F) and EA7BHO (IM87EA).

For Mick Toms, BRS31976, the tropo at the end of May/beginning of June produced 55 DLs, four OZs—almost all of these being in EO or FO squares. The LA beacon in DS square was audible for three days (59 at times), yet not a single LA was heard! The big tropo opening for Mick was on 23 July when, with stations in Kent and Sussex working into I, HB9, OE and HA, he heard just one Italian, 12FAK, via ms at 2301. Shortly before this the band had been open to the south with strong signals from BE, XC and XD squares. We await Mick's ms report on the Perseids. He has now heard 52 squares, but only 47 have been confirmed; enough, however, for a claim to G5UM.

Dave Whitaker had a good batch of 430MHz QSL cards in the last offering from the bureau, including DL2NP (EN), DB8KJ (DK), DB7YAH (EM), OZ9DT (EQ), PA0GRB (CN) and PA0IJM (DM).

G6CSY, who used his old RS number to enter the hf table, wonders where all the vhf swls have gone. He is very active from a /P site in Kent and often beams north looking for new squares in GM. A few GMs reply, but he has never received a 144MHz swl report from GM.

1985 HF COUNTRIES TABLE

(Updates only)

Station	DXCC	28	21	14	7	3·5	1·8	Total
BRS8841	224	41	125	208	140	148	40	702
BRS25429	202	50	79	165	124	139	70	627
ORS45992	207	61	99	186	96	80	6	528
BRS1066	154	36	82	138	100	73	54	483
BRS20249	115	8	36	92	39	49	8	232
FE8957	—	19	67	51	37	56	0	230

1985 VHF/UHF TABLE

(Updates only)

Station	QTH loc	70MHz Squares	70MHz Countries	144MHz Squares	144MHz Countries	432MHz Squares	432MHz Countries	Total
BRS52543	IO83	19	5	58	20	22	9	133
BRS25429	IO93	0	0	65	18	37	10	130
BRS32525	JO01	0	0	88	24	13	4	129
BRS31976	JO01	7	2	73	25	0	0	107
FE8957	JN15	0	0	66	17	0	0	83
G6WDK/P	IN69	0	0	33	6	0	0	39
BRS62088	JO01	0	0	23	11	2	1	37

HF news

Stan Porter, ORS45992, wrote as dawn was breaking, with Europeans being logged on 7MHz, and VE2QH and CX6BM heard on 3·5MHz. Conditions in 7Q7 have been quite good, with some Europeans logged on 28MHz, including GW4KGR (an old correspondent to this column). The 14MHz band produced 3B9CD, FT8XB, VR6JR, S92LB, SM0DQE/C9 and N7DF/TT8, while 3·5MHz caught TU4BR, VP9LE, HP1XXO, ZB2FK and HB19HB. LU8DPM was a welcome addition on 1·8MHz. Stan requests a DXCC column for the All-time Table—perhaps we will see what we can do for 1986. Does any other reader want such an addition? On the awards front, Stan had applied for the DIG Award for amassing one million points achieved by adding German city zip codes together. It took 189 entries to reach the magical seven figures!

Mike Dawson, BRS44083, was pleased to receive his winner's certificate for the 1984 VK/ZL/Oceania Contest—his first contest success.

Brad Bradbury, BRS1066, found a way to beat the poor hf conditions, he decided to collect Russian oblasts. Going back through his logs, 169 of the 184 have been heard, including 100 on 1·8MHz. This year's tally is 136. Best dx in early August was J28EI on 1·8MHz cw, taking Brad's score this year into the eighties. Paul Crankshaw, BRS48909, is also chasing oblasts and logged UZ0ZWB/U0X for a new one. Otherwise conditions were quite poor, with only HS0A and 9M2RT on 3·5MHz to brighten the horizon.

Malcolm Harrington, BRS20249, reported CR9SI on 3·5MHz and Z21DC on 21MHz. Colin Watson, BRS46598, mentioned VE8MC and XJ3XN on 14MHz, and a QSL card from VK, courtesy of VK5YY.

Robert Small, BRS8841, reported receiving his CE0AA cards (serial Nos 14212–215). They were from his second try, sent registered post to PO Box 700, Santiago, and received within one month of sending his. (Perhaps we all ought to try this route!) The 7MHz band produced VR6JR and J5WAD, together with LU6UO/Z (Antarctica), 9K2EC, CG9XG and IV3FRY/5N4. HC8E was a new one on the band on cw. European openings on 28MHz were still in evidence, and 14MHz provided its usual array of dx in the early mornings, including a 599 signal from BY5HN.

Dave Whitaker took his 7MHz all-time score to 260 thanks to J5WAD and 3D6BQ. A 28MHz opening in early August provided Dave with GM, GI, GW and GJ, together with ON, SM, OH, DL, F, CT7 and a solitary EA8. On the QSL front, LU8DPM and ZP5JCY provided 1·8MHz ssb confirmations very quickly indeed.

Finale

News, views and table scores for the January issue should reach me by 18 November, with late copy by 29 November. □

*93 Elibank Road, Eltham, London SE9 1QJ.

The Month on The Air

*by John Allaway, G3FKM**

NCDXF beacons

Beacon station LU4AA began operation on 3 September as part of the NCDXF's 14·1MHz cw beacon net. LU4AA will key for 1min every 10min in the 0008 time slot following ZS6DN/B. LU4AA is the first S American beacon in the net to become operational. A beacon with the call HK4LR/B has been shipped to LCRA for installation in Medellin, Colombia, and this will key in the 0009 time slot following LU4AA. HK4LR/B is expected to be on the air soon.

Other beacons operating in the net are (in order of keying) 4U1UN/B, W6WX/B, KH6O/B, JA2IGV/B, 4X6TU/B, OH2B, CT3B, ZS6DN/B, plus LU4AA and HK4LR/B. Each beacon station transmits the same 1min cw message, which consists of four 9s dashes at power levels decreasing from 100W to 0·1W.

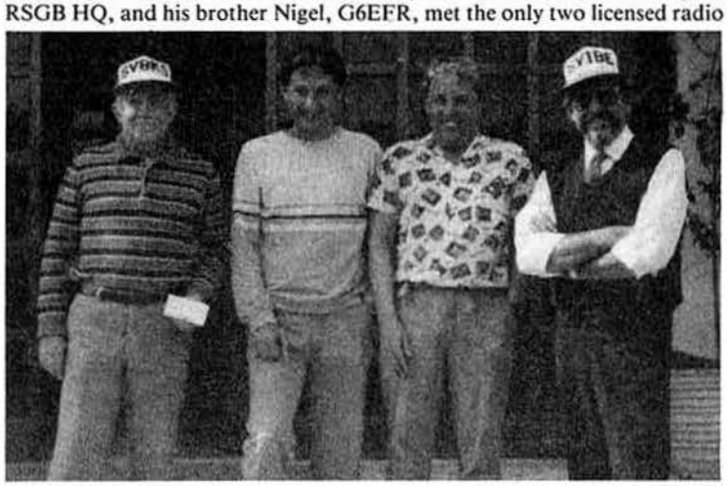
News from overseas

Dave Hardy, G4BXH, VP8HJ etc, has written from Dubai to say he has been there since April but sees no chance of obtaining a licence. He has an R1000 with him and has found conditions poor. He was in Qatar until January 1984, and then moved to Egypt and Saudi Arabia. He will be in Dubai for an extended period and will keep trying.

Andy Matheson, 5B4DN, reports low activity on the bands recently due to the heat in Cyprus (over 80°F for eight weeks). G3ZZX visited Andy for three weeks and operated as G3ZZX/5B4 and was also issued with the temporary call ZC4ZP. It seems that no further temporary ZC4 licences will be issued. 5B4 stations have permission to use 25 in their prefix until the end of 1985 to celebrate the 25th Anniversary of the Republic of Cyprus. 5B25DN is something of a handful on the key—but does create a lot of interest and pile-ups!

G4KJF made his 500th QSO with Mike, VK4BFO, in Mt Isa, Queensland, on 18 August. He has been licensed since October 1980, and first worked Mike on Christmas Day 1980—on 28MHz. Since the decline in the sunspot cycle they have moved to 21MHz, where they attempt a daily schedule at 0800 on 21,364kHz—this often succeeding on an apparently dead band.

During a holiday in Corfu earlier this year, David Gough, G6EFQ, of RSGB HQ, and his brother Nigel, G6EFR, met the only two licensed radio amateurs resident on the island—George Kapsokavadis, SV8KS, and Tony Profantis, SV8BE. David and Nigel were warmly received at both George's and Tony's homes and shown the typical Greek hospitality. George lives in Corfu town and is active on vhf only, enjoying some good dx via tropo. Although he is not active on hf he is an avid listener—often to the BBC World Service. Tony lives 6km out of the town and is active on vhf and hf—particularly around 14,284kHz.



L to r: George, SV8KS; Nigel, G6EFR; David, G6EFQ; and Tony, SV8BE, outside Tony's home in Corfu. SV8KS is holding a QSL card on which is written "Hello G4DR and G3FNJ"!

L to r: John, G4KJF; Ken, G2BVM; Helen, G3UKA (Ken's wife); and Mike, VK4BFO, at John's home in Norfolk

DX news

JW0A is operational at the Polish Research Station on Svalbard. The operator, Jan, SP2FWC, has recently arrived for a 12-months period ending September 1986. QSLs are being handled by SP2HMT. Most mornings there is a Polish net on 14,273kHz where Polish amateurs working overseas—many in third-world countries—and Polish/MM stations meet with stations in Poland. UA3DD/1 is a new station on the air from Franz Josef Land, and he has been heard daily between 14,025 and 14,030kHz from 1100, and near 14,290kHz around 1500. T70A is the callsign of the club station in San Marino and visiting amateurs are normally able to use it, but at present this is not possible because it is in poor condition.

The mystery concerning several stations claiming to be on the air from Mozambique was not solved at the time of writing. According to *DX News Sheet* CT4YN had recently written to the president of Mozambique about amateur radio and had received a reply indicating that "there are not yet the necessary definitions and rules". However it is known that the authorities have recently made enquiries about amateur radio. *Long Island DX Bulletin* goes as far as to say that AB4Y/C9 "finally obtained official permission to operate and that at least four other C9s should be opening". Hopefully the desire to activate the country will not mean any activity which is not fully and properly approved.

INDEXA is reported to be helping two Brazilians to make plans for a 10-14 days expedition to Sao Tome this month. The operation is said to have been approved by the president of Sao Tome.

9L1JW is reported to be active on Tuesdays and Thursdays on 14,290kHz at about 1700.

The operator on the ship which is at present going to Heard Is is VK2BCC. There are reports that he will be on the air mostly to remain in contact with VK, and that he is averse to pile-ups and dx. His callsign will probably be VK0CC or VK0BCC, and he may leave by 4 November.

YB0WR now has a four-element 3·5MHz beam. XU1SS is still being heard and worked in Europe on 14,180kHz around 1200. VS6CT is known to assist when needed. In Bhutan, A51PN is said to have applied for a new licence, but rapid action is not expected. During the SEANET Convention (22 to 24 November) there will be special stations on the air from the Philippines using the callsigns 4D7SEA and DX7SEA.

Zone 19 on 3·5MHz is being activated by UA0QA, who can be found on 3,501kHz or 3,645kHz at 2000. He also goes on 7,045kHz from 2100. ZL7AA was active only on 3·5MHz at the time of writing, but was expecting to come on 7MHz soon. From Tokelau Is ZM7PM has been noted, and there is a rumour that ZL1AMO will be on the air from there until mid-November using a ZK3 call.

Several new YI calls were expected to be heard recently, as the YI1BGD operators were expecting to be given their own callsigns late in September. A station with the callsign A61AA has been heard on 14MHz ssb, but no other information is available. A71AD should now be on 1,825kHz at his sunrise time (around 0300 in early November) and will probably have a good signal. A71AM has been on 14MHz ssb around 1700.

TZ6FE has been working into the UK on 29MHz fm, and often listens for Europeans on 29,600kHz on that mode. N6TJ hopes to be active from

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QTH CORNER

CV0V	CX2CS, PO Box 20063, Montevideo, Uruguay.
D68DX	vis PA0GMM, G van der Berg, Tweeboomln 117, NL-1624 EC, Hoorn, Netherlands.
FP/K1RH	172 Newton Rd, Woodbridge, Conn, 06525, USA.
FY/DA1OP	PO Box 999, Cayenne, French Guyana.
FY5BO	PO Box 856, Cayenne, French Guyana.
J42TIF	via SV2SV, Epbe Club, Box 483, Thessaloniki, Greece.
TZ6FIC	via F6CRS, J Laurent, Bourg Bas, Saint Agne, F-24520 Mauleydier, France.
YASME	Yasme Foundation, Box 2025, Castro Valley Calif, 94546, USA.
9M2RT	via KB6UF, R D Jones, 12136 Lester Ct, Chino, Cal, 91710, USA.
9M8EN	via G4RZQ, K Russell, 13 Ternal Mead, Godshill, Isle of Wight PO38 3LJ.
9M8RH	Box 2870, Kuching, Sarawak, E Malaysia.
9Q5MA	via PA0GAM, Oldenoer 152, 9351 KT Leek, Netherlands.

Cape Verde during the CQWWDX Contest at the end of November, and he will be on ssb before and after the contest.

There will be an amateur station at the HQ of the Council of Europe in Strasbourg next month. It will use the callsign TP2I and it will be operated by F8RU, F6EQG and F6HIX. The director and QSL manager for ssb is F6FQK, and his assistant (and cw QSL manager) is F6EYS.

A group of Uruguayan amateurs will be operating from the Isla de Flores for about two days commencing 2100 6 December. They will use the callsign CV0U. The islands are off the Uruguayan coast, at 34° 57'S, 55° 56'W. Operation will be on 1·8 to 28MHz, cw, ssb and rtty, and anyone working the expedition on three different bands will be able to claim an award if applying to the QSL address and enclosing 10 ircs (see "QTH Corner").

VE1s JI, RM, YX, FH and K2GHV may be on the air from Sable Is for a week from 18 November—if they have not already visited the island during October. Activity will concentrate on 1·8 to 7MHz but all bands will be covered and modes will include rtty and sstv.

Italian amateurs are now permitted to use 10,100-10,110kHz.

Iris and Lloyd Colvin are visiting southern Africa and were expected to be on the air as W6KG/ZS in late October. They were planning three-week stays in ZS3, A2, 7P, 3D6, S8, Z2 and 9J, with equal phone/cw operating time as usual. QSLs go to the YASME Foundation.

Thanksgiving Day link

Commemorative station WA1NPO will be operating, for the fifth year, from the Pilgrim Village at Plimoth Plantation in Plymouth, Mass—the village depicts life as it was in 1627 after the establishment of the first English settlement in the New World. WA1NPO, which will be supported on this side of the Atlantic by GB0UST in Norwich and SM0FQW in Stockholm, will be looking for contacts with UK stations on Thanksgiving Day, 21 November. The schedule should be as follows: 14,275kHz ssb from 1300 to 1700 and from 1900 to 2000; 21,375kHz ssb between 1300 and 1600 and again from 1800 to 2000; and on 10,120kHz cw from 1700 to 1900. An attractive certificate featuring the Mayflower will be available for all confirmed QSOs and listener reports.

WA1NPO on the air from the library at Plimoth Plantation. Jim, WB1CNM (l) operating; Don, N1BVZ, president of the Whitman ARC, logging

DXCC

A news release from the ARRL dated 18 September gave the news that the ARRL Awards Committee met on 17 September to consider the country status of the Pribilof Is. The matter had been referred to it by the DX Advisory Committee which had recommended addition to the DXCC list by a nine to seven vote. However, after many hours of study the Awards Committee voted unanimously (7-0) that the Pribilof Is be not added to the list. They interpreted Rule 2(a) to apply—this says that islands situated off-shore from their governing area must be separated by a minimum of 225 miles of open water. Since the Pribilofs are less than this distance from the Aleutians (which are part of Alaska) the committee failed to see how they could qualify.

Welcome . . .

. . . to the following new members from outside the UK: EI4DZ, IT9JT, PE1ADA, VE1CFL, VE2IB, YC0TG and 5N8ALH. New listener member I Panzieri (I) also joined during August.

Contests

All Austrian Contest

1900 16 November to 0600 17 November

CW only. 1,810-1,850kHz. Exchange RST and serial QSO number (from 001). Each QSO counts one point. The multiplier is two for each Austrian district worked (OE1-OE9) and one for each other prefix. Send logs to OeVSV, "AOEC-1985", PO Box 999, A-1014 Vienna, Austria, no later than 31 December 1985. The winner will be awarded a cup and an award, and the second to the fifth a pennant and award; the leader in each country will receive a diploma.

EA DX Contest

1600 7 December to 1600 8 December

1·8 to 28MHz. CW only. Single- and multi-operator (single-transmitter) sections. Exchange RST and QSO number. Spanish stations will send RST and a two-letter province code (note that Ceuta and Melilla, CE and ML, count as separate provinces). Each QSO for European entrants counts one point, and for others three. The multiplier is the total of Spanish provinces worked on each band added together. Logs should show date, gmt, station worked, numbers sent and received, if new multiplier, and points claimed. A summary sheet must be included showing callsign, name and address, category, operator(s), number of QSOs, multipliers and points claimed on each band and the usual signed declaration. Entries should be posted before 15 January 1986 to URE, PO Box 220, Madrid, Spain. There are trophies and awards for continental leaders, and awards for winners, in each DXCC country. Spanish provinces are: EA1-AV, BU, C, LE, LO, LU, O, OR, P, PO, S, SA, SG, SO, VA, ZA; EA2-BI, HU, NA, SS, TE, VI, Z; EA3-B, GE, L, T; EA4-BA, CC, CR, CU, GU, M, TO; EA5-A, AB, CS, MU, V; EA6-PM; EA7-AL, CA, CO, GR, H, J, MA, SE; EA8-GC, TF; EA9-CE, ML.

OK DX Contest

0000 to 2400 10 November

1·8 to 28MHz cw and phone, but no cross-mode QSOs. Exchange RS/T plus ITU zone (UK is 27). A station may be worked once only on each band. Three points are earned for working OK stations, and one for working others. The multiplier is the total number of ITU zones worked on each band added together. There are single-operator, single- and multi-band, and multi-operator multi-band categories. Separate logs for each band should be submitted, and should show date, time, station worked, numbers sent and received, and if multiplier. The usual signed statement should accompany the log, which should be posted by 31 December to CRC, PO Box 69, 113 27 Praha, Czechoslovakia.

Results of the **1985 PACC Contest** list the following UK entrants: **G4IQM** (3,968 points), G3ESF (3,388), G3TKK (3,270), **GM3KLA** (2,868), G4UFY (1,769), G4ISK (1,534), G4KHM (1,406), G4OKN (1,302), G4YEK (1,235), GM8SQ (1,116), GM4WEW (480), G4XHA (375) and G4GFH (308). A listener log was submitted by RS87156.

25 Years Electril Contest

0000 9 November to 2400 10 November

3·5 to 144MHz, cw and phone. Single- and multi-operator—the former must take rest periods totalling at least 12h. Call "CQ 25 Test" and exchange RS/T. Each QSO counts one point, and different band QSOs with a station may be made. There is no multiplier. Logs should show QSO number, station worked, reports sent and received, gmt, band, and mode. Post to PO Box 22, Labre-Sao Paulo Section. SP-Brazil 01000. Band winners will be awarded antennas made by the Electril antenna factory.

TOPS Activity Contest

1800 7 December to 1800 8 December

3,500-3,585kHz cw only. Single-operator stations must take a total of 7h rest and indicate this in the log. Call CQ TAC or CQ QMF (**not** CQ Test) and exchange RST and serial QSO number. TOPS members will give their membership number. QSOs with own country count one point, with own continent two, and with other continents six. QSOs with TOPS members attract a two-point bonus. The multiplier is the total of prefixes worked. Note that there is a QRP Class (up to 5W input) and that the lowest 12kHz may only be used for dx contacts—ie with other continents. Send logs to Bertil Arting, SM3VE, Bergeswegen 26, S-823 00 Kilafors, Sweden, no later than 31 January 1986.

1985 ALL-BAND TABLE No 4

	1·8MHz	3·5MHz	7MHz	14MHz	21MHz	28MHz	Total
G3KDB	30	70	102	135	**107**	50	494 (cw)
G4OBK	**80**	59	84	133	70	43	469
G4OTU	30	51	97	130	86	41	435
G3SXW	—	66	76	107	50	24	323 (cw)
GM3YOR	—	**73**	**111**	66	31	28	309 (cw)
G4XKR	19	19	39	116	63	24	280
GW4RHW	—	6	98	67	38	16	225
G3TXF	20	42	43	78	23	14	220 (cw)
G4GOF	12	22	25	54	50	46	209

Band leaders are listed in bold type. Deadline for scores for the next 1985 table—**to reach G3GIQ** no later than **13 November** please.

Awards

Poole Club Award

QSOs with stations in Poole, members of the Poole ARS, and club station G4PRS are valid for this award between 15 December 1985 and 5 January 1986. Stations in Poole count one point, PARS members five points, and G4PRS 20 points. At least 50 points are required for the award. No station may be counted more than once. Send log details plus £0.50 or two ircs to Colin Baverstock, G4WCK, 28 Kingston Rd, Poole, Dorset BH15 2LP, no later than 31 January next.

Islands on the Air Award (IOTA)
This programme caters for dxers who are interested in contacting the world's islands and island groups. It was created by Geoff Watts, a leading British listener, in the mid-'sixties and subsequently taken over by the RSGB in 1985. The IOTA programme consists of 15 separate awards, as listed below;

IOTA Century Club 100	IOTA Arctic Islands	IOTA Asia
IOTA Century Club 200	IOTA British Isles	IOTA Europe
IOTA Century Club 300	IOTA West Indies	IOTA N. America
IOTA Century Club 400	IOTA Africa	IOTA Oceania
IOTA World Diploma	IOTA Antarctica	IOTA S. America

Each award is issued on presentation of satisfactory evidence of contact between the applicant and the requisite number of licensed amateur stations operating from islands listed in the directory. A feature of the IOTA programme is the appearance of a quarterly honour roll in the Society's weekly *DX News Sheet*. The award manager is Roger Balister, G3KMA, La Quinta, Minibridge, Chobham, Surrey GU24 8AR, tel 09905 8224, from whom copies of the revised (September 1985) directory may be obtained in exchange for £1.50, eight ircs or US $3.

National Parks 100 Award
To publicise the 100th anniversary of Parks Canada. 100 points are needed from contact with Canadian stations during the anniversary year. QSOs with Canadian stations using special prefixes (XO1, XO2, XJ1, XJ2, XJ3, XJ4, XJ5, XJ6, XJ7, XJ8 or XK1) count 10 points, with stations operating from Parks sites 20, and others two points. The special prefix stations operated between 29 June and 29 August. Send log copy, certified by two other amateurs, plus three ircs to Garry Hamilton, VE3XN, 5 McLaren Av, Listowel, Ont, N4W 3K1, Canada.

HF f-layer propagation predictions for November 1985

Using the table
The time is presented vertically at two-hour intervals 00(00)gmt to 22(00)gmt for each band, ie 0 = 0000, 2 = 0200, 4 = 0400 etc.
The probability of signals being heard is given on a 0 (indicated by a dot) to 9 scale; the higher the number the greater the probability, with 1 meaning 10 to 19 per cent of days, and so on. Additionally 50MHz F-layer and 1·8MHz openings are indicated by a dagger (†) sign in the 28 and 3·5MHz columns respectively. The higher probability figures are printed in BLACK, lower probability in RED and lowest probability in GREEN type.

	28MHz				21MHz				14MHz				10MHz				7MHz				3·5MHz			
GMT	000	001	111	122	000	001	111	122	000	001	111	122	000	001	111	122	000	001	111	122	000	001	111	122
	024	680	246	802	024	680	246	802	024	680	246	802	024	680	246	802	024	680	246	802	024	680	246	802
EUROPE																								
Moscow	.	1	1	.	.	46	63	.	.	288	885	.	21	666	678	311	875	543	346	877	††	4	2	.	3	†††
Malta	.	1	.	.	.	46	552	.	.	288	888	1	352	765	668	721	998	643	346	888	†††	3	.	3	†††
Gibraltar	.	.	.	.	.	14	332	.	.	78	888	2	121	276	667	72	787	854	345	886	†††	†2	.	2	5††
Iceland	.	.	.	.	.	.	22	.	.	17	886	.	.	67	778	51	441	165	456	873	†††	†32	24	5††
ASIA																								
Osaka	.	.	.	.	.	1	.	.	.	72	.	.	.	163	234	.	.	131	124	542	.	.	.	2	45
Hong Kong	.	1	.	.	.	45	1	.	.	266	51	.	.	144	343	1	1	11	124	654	.	.	.	2	4†3
Bangkok	.	12	1	.	.	57	6	.	.	256	61	.	1	23	334	11	2	.	1	124	664	.	.	2	4†4
Singapore	.	12	1	.	.	167	63	.	.	246	673	.	1	13	346	211	1	.	1	124	775	.	.	2	4†3
New Delhi	.	12	1	.	.	167	6	.	.	346	65	.	311	113	343	212	73	.	1	124	678	4	.	.	2	4††
Teheran	.	22	1	.	.	266	64	.	.	555	674	.	533	322	346	323	873	1	.	124	778	†4	.	.	.	4††
Colombo	.	22	1	.	.	166	65	.	.	235	674	.	12	.	2	346	323	41	.	.	124	778	2	.	.	.	4††
Bahrain	.	22	2	.	.	266	65	.	.	534	674	.	643	211	346	323	972	.	.	124	778	†4	.	.	.	4††
Cyprus	.	33	32	.	.	288	872	.	121	766	788	2	786	643	467	755	996	311	135	898	††3	.	.	2	5††
Aden	.	32	22	.	.	266	771	.	1	422	577	1	713	1	.	246	644	952	.	.	14	788	†4	.	.	.	4††
OCEANIA																								
Suva (S)	.	.	.	.	.	.	.	.	.	3	551	.	.	.	44	444	1	.	.	31	124	2	.	.	.	.	.
Suva (L)	.	.	.	.	.	53	1	1	11	376	542	61	2	553	335	52	.	.	321	13	2	.	.	.	.	.
Wellington (S)	.	.	.	.	.	1	1	.	.	46	64	.	.	.	54	454	.	.	131	124	2	.	.	.	.	.
Wellington (L)	.	.	.	.	.	1	.	.	11	163	111	52	12	353	224	42	.	.	131	13	2	.	.	.	.	.
Sydney (S)	.	1	.	.	.	56	51	.	.	376	661	.	.	254	356	1	.	.	21	124	51	.	.	.	2	3
Sydney (L)	.	.	.	.	.	1	.	.	.	55	31	32	.	54	333	631	.	.	31	113	51	.	.	.	.	2
Perth	.	22	1	.	.	167	64	.	.	356	674	.	1	23	346	322	.	.	1	124	762	.	.	.	.	44
Honolulu	.	.	.	.	.	.	.	.	.	.	2	1	.	21	226	31	.	11	31	124	2	.	2	4	.	.
AFRICA																								
Seychelles	.	22	22	.	.	256	772	.	1	322	577	1	722	.	246	644	84	.	14	788	†	.	.	.	4††
Mauritius	.	32	23	.	.	266	783	.	11	322	578	1	641	.	246	744	73	.	14	788	4	.	.	.	4††
Nairobi	.	33	34	.	.	266	784	.	1	422	368	3	753	2	.	36	755	972	.	14	788	†4	.	.	.	4††
Harare	.	13	451	.	.	156	786	.	13	422	358	51	783	2	.	26	865	972	.	3	788	†4	.	.	.	4††
Capetown	.	2	563	.	.	35	788	.	12	432	246	621	773	2	.	14	776	873	.	1	588	†4	.	.	.	2††
Lagos	.	35	564	.	.	77	778	1	14	453	236	721	794	52	.	13	787	887	3	.	1	588	5†5	.	.	.	2††
Ascension Is	.	14	435	.	.	67	768	2	142	63	234	731	698	431	.	1	587	888	51	.	.	269	†††	2	.	.	4†
Dakar	.	4	545	.	.	48	778	2	133	75	335	731	688	552	.	2	586	888	62	.	.	279	†5†	3	.	.	4†
Las Palmas	.	3	332	.	.	48	878	1	21	187	667	82	688	675	445	786	999	842	112	589	†††	5	.	.	.	2††
S AMERICA																								
South Shetland	.	.	112	.	.	35	556	2	.	33	176	554	52	466	453	321	233	345	431	.	.	1	.	22	.	.	.	.
Falkland Is	.	1	134	.	.	26	577	2	.	23	76	433	42	588	453	1	.	123	577	631	.	.	2	.	244	3	.	.
Rio de Janeiro	.	1	2	.	.	6	445	2	.	23	56	333	42	588	453	.	.	145	889	73	.	.	15	.	†††	4	.	.	2
Buenos Aires	.	1	13	.	.	25	546	2	.	12	76	432	32	478	463	1	.	23	789	731	.	.	3	.	4††	4	.	.	.
Lima	.	.	212	.	.	.	765	2	.	.	.	633	21	235	1	3	31	11	688	621	1	.	1	.	3††	4	.	.	.
Bogota	.	.	211	.	.	.	655	1	.	12	632	21	223	.	43	31	22	787	531	1	.	3	.	5†5	4	.	.	.
N AMERICA																								
Barbados	.	.	211	.	.	2	755	2	.	.	6	532	42	234	144	2	.	133	887	631	.	.	15	.	††5	4	.	.	2
Jamaica	.	.	11	.	.	.	454	1	.	.	1	643	31	112	33	31	.	21	677	331	1	.	3	.	5†5	4	.	.	.
Bermuda	.	.	11	.	.	.	455	1	.	.	4	654	52	111	24	321	242	777	331	1	.	25	.	†††	4	.	.	3
New York	.	.	.	.	.	.	254	1	.	.	1	665	52	1	.	3	332	341	666	131	11	.	24	.	†††	4	.	.	2
Mexico	.	.	.	.	.	.	54	1	.	.	.	264	21	1	.	32	341	1	366	131	11	.	1	.	††	4	.	.	.
Montreal	.	.	.	.	.	.	244	.	.	.	1	666	51	1	.	3	343	341	665	131	11	.	125	.	†††	4	.	.	2
Denver	.	.	.	.	.	.	2	.	.	.	.	56	31	.	.	.	143	22	364	2	111	.	1	.	2††	4	.	.	.
Los Angeles	.	.	.	.	.	.	2	.	.	.	.	26	3	.	.	1	44	21	253	31	111	.	.	.	4†	4	.	.	.
Vancouver	.	.	.	.	.	.	.	.	.	.	.	4	2	.	.	.	25	42	252	21	123	111	.	.	4†	4	.	.	.
Fairbanks	.	.	.	.	.	.	.	.	.	.	.	1	.	.	22	225	42	231	31	124	322	.	23	4	.	.	.	.

The provisional mean sunspot number for August 1985 issued by the Sunspot Index Data Centre, Brussels, was 10·4. The maximum daily sunspot number was 35 on 1 August, and the minimum was 0 on 13-16, 22-25 and 29 August. The predicted smoothed sunspot numbers for November, December, January and February are, respectively: (classical method) 8, 7, 6 and 5, (SIDC adjusted values) 0, 0, 0, 0 and 0.

5L QSO Party 85
Amateurs in Liberia will be using the special 5L prefix during November 1985, and LRAA is offering this special award to all who submit satisfactory evidence of having made contact with 5L2RL and two other 5L stations during the month. Send copy of log, certified by an official of a national society or two general class licensed amateurs, plus US$5 or 20 ircs.

	10MHz				28MHz			
	All-time	1985			1985			
G3IGW	99	71	G3XQU	—98		G4OBK	—44	
G4UZN	71	49	G3VOF	—85		GW4TEJ	—35	
G4VDX	31	30	G4JBR	—85		G4NXG/M	—35	
5B4DN	32	23	G4XAH	—78		G4YWG	—30	
G4OBK	26	9	G4RAB	—75(ssb)		G0AGP	—25	
G4YWG	7	7	G4MUW	—65		G2FQR	—23(ssb)	
G5LP	56	—	5B4DN	—55		G4FVK	—12	
G4UYR	33	—	G4VPD	—49		G4RWP	— 5	
G4RWP	4	—	G4DXW	—47				

Three old-timers at a vintage car rally at Culzean Castle. L to r: Jim, G2FVR; Dave, G2BUD; and Jim, GM3CIX in July 1985

Around the bands

No G8KG report this month, so straight into the loggings: this month provided by G2s BAM, HKU, G3YY, G4QK, G5s JL, LP, G3s GVV, IGW, KSH, YRM, G4s EHQ, JBR, GW4KGR, G4s LRS, MUW, NXG/M, OBK, UOL, UZN, VDX, XAH, XRR and RS 10906—to whom many thanks.

Stations listed in italics were using A1A.

1·8MHz 0400 *K5BL.* **0500** *FP/W3ESU, I2ZGC, TF3KG.* **2000** *W7AWA/OY.* **2100** *OZ3QN/OY.* **2200** *RL7GDR, SP5HS, TR8JDL, UA9s FKW, FNR, VK6HD, 4X4NJ.* **2300** *UQ2GNK.*

3·5MHz 0000 *FP/W1CCN, UI8OAA, 5N0HAS.* **0300** FG5XC. **0400** *OA4JR, 9Y4NW.* **0500** *W2BA, ZLs 1AIZ, 3GQ.* **2000** ZS3GB, 7P8CM. **2100** J28EL. **2200** *KP2J, TK/DL4FF, UM8MY,* VK6LK, *9M2s AX,RT.* **2300** *DJ2BW/CT3, JW0A.*

7MHz 0000 *FP/W1CCN, UA0AKQ, W1,2,4.* **0100** *ZS6QU.* **0200** *LU7KAT.* **0400** ZF2AD. **0500** CE, CP6IB, *HC8ED, HK, KL7Y, W6-W7, XE3AAF,* ZL, *9H3DX.* **0600** *OA,* VK2CWS, VR6JR, *YV,* ZL, 9Y4BA. **0700** *JH8FNB/MM* (Nr HC8), TI2KD. **1600** *UJ8JKK, 9V1TL.* **1800** *JW0A, UL7CAD, UM8MM, YC2CIA.* **1900** *ZS6DM.* **2000** *HL1EJ, ZL3GQ,* 7X2LS. **2100** *OH0BA, TA1C,* 9H1EU. **2200** *C31LBR, EA9LZ, FY/DA1OP,* J5WAD, *N7DF/TT8, UA0TO,* V44KF, *ZS1HG, K1CJT/3A.* **2300** *UH8EC,* ZZ5EH.

10MHz 0000 *KP2J.* **0600** *HB0NL, I0UWG, VK2-VK5.* **0700** *VK2,3,6,7, W6, ZL3BJ, ZL4QO.* **0800** *VK3, 6.* **1200** *HV3SJ.* **1500** *VK3CWD.* **1600** *EA6OV.* **1800** *N5VV* (N Mex). **1900** *HB0/DJ2CS, VE1CY, 4X4FA, 5B4DN.* **2000** *FM5BH, KP2J.* **2100** *N4SU, W2GDV.* **2200** *FG5XC, LU, TR8DR, VK3MR, W2,3,4,8.* **2300** *J28CI, OY7ML.*

14MHz 0400 *3B8DB.* **0700** FW8AF, NL7AX, TL8DC, K1TCK/TU, ZD7CW, ZK1RE. **0800** A35SA, *KH6IJ, KL7,* KX6BE, TA1E, *VK6,* YJ8RG, 3D2RP. **0900** 3D2RW. **1000** *FP/K1RH,* 9K2MJ. **1100** JA, *UA0YM,* VE8RCS, 4U1VIC. **1200** P29FJ. **1300** DU9RG, *KL7MF,* VK, 9V1WA. **1400** *HL1AQ, JA,* V85GA, VU2DDT. **1500** AP2ZA, *TZ6FIC,* 4S7KS, *4U1VIC,* 9M2RT, 9M8GH. **1600** DU1JOK, *JY8FH, KZ7M, OH4EIY/5N1.* **1700** D68DX, *N7DF/TT8,* 9M8EN. **1800** A71AD, *FY5BO,* JY1, S79JW, *ZD8KM,* ZS3GB, 5Z4MZ. **1900** J37AH, VP8QP, ZD7XY, *ZF1GC,* 5H3HM, 5N9FDR. **2000** KH6WU, S79WHW, TR8SA, 5X5GK, 9Q5MA. **2100** FM4DX, J6LNT, TZ6FE, VK2IB, ZL4BC, 5V7HL. **2200** *FM5WU, FY/DA1OP,* J37AH, S92LB, *OE7RKH/YK,* VP9GQ.

18MHz 1000 *ZD8KM.* **1300** *LU1EGX/MM* (Nr 9V), *LU5DJO.*

21MHz 0800 TZ6FS. **0900** KB6DAW/KH2, P29JS. **1100** OD5LX. **1200** FT8XB, YC3CUU, Z21CD. **1300** A92DZ, 3D6BO, 4U1VIC. **1400** VQ9YR, VUs, YC6HE. **1500** YC4HA. **1600** VP8NX, VQ9YR, ZS, 5X5GK. **1700** OD5SF, JH4EIY/5N1. **1800** UH8OC. **1900** C53EK, PU1WDS, TZ6FIC, 3X0HAB, 5T5RG. **2100** W1-W4. **2200** HK3NR, HP, TI, W4.

24MHz No reports of dx signals.

28MHz 1100 7X2CX. **1500** J28EI, ZS6CDZ. **1600** 8R1RPN. **1700** HV2VO, LU5DJO, 9H1EL. **1800** ZS3KG. **2000** LU, YV5JEM, 9Y4BA. **2100** IS0XRI.

Thanks also to the authors of the following for information: *DX News Sheet* (G4DYO), The *EX-G Radio Club Bulletin* (GI3OEN/W6), *Long Skip* (VE3XN), the *Lynx DX Group Bulletin* (EA2JG/EA3CBQ), *DX 'press* (PA0GAM), *CQ Magazine* (W1WY), *DXNL* (DL3RK), and the *Long Island DX Bulletin* (W2IYX).

All contributions for **January** MOTA to reach G3FKM no later than **28 November** please. □

Microwaves

*by Mike Dixon, G3PFR**

Operating news

This is a "thin" month for operating news. As I write, the autumnal equinox is here and, traditionally, winter is almost upon us. The "classical" weather patterns associated with the equinoxes suggest that there may be gales and unsettled weather in the offing. This summer, at least in central and northern UK, has been abnormal in yielding few significant tropo openings, which are, of course, associated with stable or slowly-declining anticyclonic weather. The absence of such periods has, in turn, brought very little operating news, although I expect to hear news shortly that the brief "high" in the period 9 to 12 September has yielded some results, at least from the south and east to the Continent.

Even Frederick's (G6FK) regular reports on 1·3 and 2·3GHz activities have indicated little outstanding activity in the period from 28 July to 1 September—a few new callsigns appear in his listings, together with news that some of the operators mentioned are busy developing improved equipment, usually in the form of higher-powered amplifiers. He specifically mentioned that G3KFD is running skeds with G8JHL on 1·3GHz, and with G4CBW and G8GDZ on 2·3GHz. G6LUZ, G6DER and G4FXZ are all working, or are partially operational, on 2·3GHz.

A brief note from Geoff, GJ4ICD, concerning operation on 1·3GHz listed contacts on 28 August to ON4ASL (a first ON-GJ contact) and on 12 September to HB9AMH/P, giving Geoff his 42nd and 43rd squares on 1·3GHz. His antenna system is still two 50-element quad-loop Yagis; he says: "I hope to get another two up soon, although the two already in use seem to be working well."

Thinking about such international contacts, the licensing position in Belgium seems to be in a transitional state with the national society, UBA, in protracted discussion with their PTT. A letter from Walter Empsten, ON4ZN, the vhf/uhf manager of UBA, indicates that Belgian amateurs at the moment have power restrictions on both 144 to 146MHz and 434 to 440MHz (50W carrier), the 430 to 434MHz part of the band "having been lost to the primary user—Syledis". The bands 1,296 to 1,300MHz and 2,400 to 2,450MHz are available with a 1W power limit, and there are no allocations at 3·4 or 5·7GHz. As far as the higher bands (including the WARC 79 bands) are concerned, the position is far from clear.

Although it is recognized that this may be a transitional state of affairs, the implications for international microwave experiments are really quite serious, and it is to be hoped that the UBA representatives will succeed in gaining a satisfactory solution to their problems. Hopefully they will be able to restore the allocations and power limits which exist, and are in common use, in the vast majority of the other IARU Region 1 countries, thus enabling the interested operators to resume full and effective experimentation. While it may be true that amateurs in general do not make enough use of their microwave allocations, those who do, do so very effectively and the results obtained—especially in the fields of propagation investigation and development of narrowband techniques—fully justify the availability of microwave frequency allocations throughout Region 1 (and, of course, elsewhere!).

TV repeater news

Graham Shirville, G3VZV, sent a report on the current status of the 1·3GHz tv repeater network. GB3GV (near Leicester) has moved to a new site at Markfield and is fully operational on channel RMT2 (fm) and reports greatly improved coverage. GB3TV (Dunstable Downs, RMT2, fm) has provided a high level of activity throughout the summer, and has been accessed from as far north as Northampton and, under lift conditions, has been seen in Kent. GB3VR (same channel and mode), near Brighton, is awaiting approval for a site move which should improve its coverage.

Repeaters licensed but not yet operational are GB3UD (Staffs) and GB3UT (Bath). The application for GB3CT (Crawley) is with the DTI for approval, and included in several applications about to be sent to the DTI are GB3AF (Durham/Newcastle), GB3GW (Western Glasgow), GB3PV (Cambridgeshire), GB3SX (East Sussex/southwest Kent) and GB3HV (Western Home Counties). This last proposal is particularly interesting, since the use of any of the "standard" channels would be precluded by the

*"Woodstock", Gaze Bank, Norley, Warrington, Cheshire WA6 8LL.

presence of very powerful QRM from the extremely QRO (in-band) radar at Heathrow—it will almost certainly need the adoption of a slight offset from the RMT3 channel. One day I hope it will be possible to reproduce photographs of off-air signals so that others can see the results obtained from these repeaters.

Microwave round table

The next round table will be held at Sheffield University, in the Department of Electrical Engineering, Mappin Street, Sheffield, on 30 November, commencing at 10am and finishing at 5pm. There will be a bring-and-buy stall, and "workshop" facilities will include the usual comprehensive range of sophisticated test equipment. It is expected that the usual informal information exchange forum will develop, with many of the old-stagers on hand to assist the newcomers with their problems and queries. Further details can be obtained from the organizer, Dr Barry Chambers, G8AGN, at the above address.

From other publications

Recently arrived for my bookshelf is a copy of the new RSGB book *Amateur Radio Software* by John Morris, GM4ANB, the well-known architect of the "Maidenhead" locator system. It covers many aspects of computing which are of interest to microwave operators, for whom microcomputing probably plays a more important role than at hf or vhf/uhf. Apart from the almost inevitable sections on contest lists and scoring, cw, rtty, distance/bearing and locators, there are very useful sections on horn antennas, troposcatter path loss, line-of-sight and troposcatter system power budgets, sun and moon calculations, attenuator design and network analysis. Even without the non-microwave orientated programs, I found the book most informative and useful.

Meanwhile, for those microwave operators who do not yet subscribe to the *Microwave Newsletter*, I should perhaps indicate that over the past year, apart from operating news and a number of brief but terse technical items, a number of useful software programs have been published there too. These have included microwave systems analysis, uhf/microwave amplifier design and a microwave path-plotting (graphics) routine.

Microwave Committee changes

As readers of the *Microwave Newsletter* will know, the committee chairman, Graham Murchie, G4FSG, has had to relinquish the post because of increasing professional commitment outside his interest in microwaves. It falls to me, as incoming chairman, to thank Graham for his valued contribution to the committee's work over the past five years, four of them as chairman. He has agreed to continue his other role, that of microwave beacon co-ordinator, as a corresponding member of the committee. He should continue to receive "letters of intent" or actual proposals to establish microwave beacons (although I will willingly handle them also); his address is 7 Grove Gardens, Woodbridge, Suffolk IP12 4LL. Once licensed and operational, the administrative aspects of beaconry will still be handled via RSGB HQ. □

EPHEMERIS

Satellite news and views

*by R. O. Phillips, G4IQQ**

The World Administrative Radio Conference (WARC) 1979 drew to the attention of many people the work of the ITU. A further WARC was held in Geneva during August/September this year, which was attended by around 1,000 delegates whose task was to decide which space services and frequency bands should be considered for planning. The conference decided that only the Fixed Satellite Service should be planned, and selected a total of 800MHz to be used for an allotment plan from the frequency allocations at 4-6GHz and 11-13GHz. While there was little chance of any impact on the amateur satellite service, the IARU was represented and provided a good contact point for the representatives of many regulatory administrations present. It was also interesting to observe that around 25 of the delegates present were licensed amateurs, though not many had much spare time to operate the ITU club station, 4U1ITU.

*Transvaal Cottage, New Barn Road, Swanley, Kent BR8 7PW.

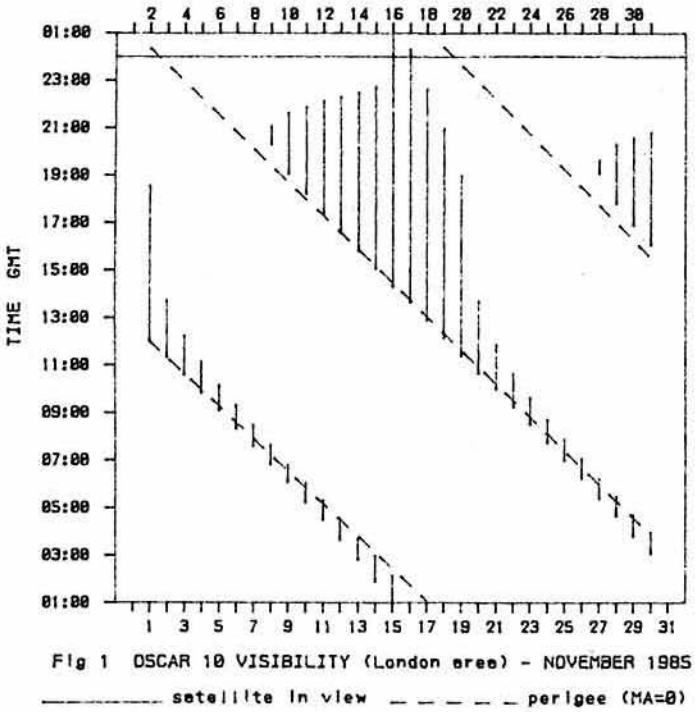


Fig 1 OSCAR 10 VISIBILITY (London area) - NOVEMBER 1985

Oscar 10

The summer eclipse season passed without any significant problem, but of course provided rather less operating time than we had been accustomed to in the earlier part of the year. The longest eclipse occurred on 20/21 August when the temperature of the batteries fell to −20°C.

There have been quite a number of schedule changes during recent months to maintain the health of the satellite. If there are no unforeseen changes, the schedule for October/November should be as follows:

MA	Status
40–120	Mode B
120–137	Mode L
137–221	Mode B
221–40	Off

Due to the improved solar illumination conditions, the spacecraft orientation should be appropriate for use of the high-gain antenna, which will improve uplink sensitivity over recent months.

The visibility of the satellite for the month is shown in Fig 1. If the schedule remains as above, then little activity will be possible before noon on any day of the month; in fact, seen from the UK, there will be no transponder operation at all between 1345gmt on 2 November and 2042gmt on 8 November. A similar situation will exist between 21 November (1155gmt) and 27 November (1925gmt). Remember though, that even when there are no transponders in operation, the general beacon on 145·810MHz will be switched on for the usual telemetry and bulletin transmissions.

The argument of perigee for the satellite is 57·4° on 1 November, and the periods of visibility will continue to decrease until this value reaches 90° in the spring of 1986.

Reference orbit values for 1 November 1985 are as follows:

Date	Time	Orbit number	MA	Argument of perigee
1 Nov	0021	1796	0	57·4

RS satellites

At the time of writing (late September), all three RS satellites appear to have survived their eclipse season, and certainly RS5 and RS7 are operating very well. The situation concerning RS8 is again not too good, but there still seems to be some life left in the satellite despite battery problems.

Uosat

With the increase in interest in image transmission, it has been decided to provide weekly CCD transmissions on Tuesdays. The weekly operating schedule for the satellite has been changed a number of times over the last few months to cater for particular interests. One of the constant features has been the bulletin and 1,200bps telemetry transmissions every Saturday and Sunday.

Under the new arrangements, radiation data will be collected as part of

the whole orbit data (wod) surveys, carried out on Thursdays.

The telemetry channels included in the wod survey are as follows:

02 Battery half voltage
03 Radiation detector A
22 Battery +14V
23 Sun sensor +z axis
29 Spacecraft +y facet temperature
30 Battery charge current
39 Spacecraft −Y facet temperature.

The as yet unused 32kbyte bank of memory on Uosat Oscar 11 was checked out during the middle of September and found to be in good order. This additional memory is likely to be used in future experiments.

Other news

There will be further space shuttle activity later this month with the planned launch of the European Spacelab on board *Columbia*. Two or three amateurs are likely to be on board, and a considerable amount of activity is planned during the seven day mission. Unlike previous flights, crossband operation will be used with 435MHz uplink and 145MHz downlink. During periods of work or sleep a 1W 435MHz beacon will be activated.

Finally, Amsat has made a proposal to Nasa to provide an experimental package to be flown on the advanced communications technology satellite (acts) which is due to be launched in 1989. No details are available, but the satellite will use a geostationary orbit and be located over the western hemisphere. □

Contest News

CW Cumulative Contests 1986 (1·8, 3·5 and 7MHz) rules

By popular request, the next series of cw cumulatives will revert to four sessions per band, with the total of the best three to count. The 7MHz sessions has been retained for a further year, but contestants are asked to say if they wish them included in future cumulative events. As suggested by many entrants in the 1985 series, certificates will be awarded to the overall winners as well as to the band and section leaders. It has been necessary to run some of the 7 and 3·5MHz sessions on the same weekend in order to avoid a conflict with other RSGB contests.

Dates and times:
1·8MHz: Monday 6 January, Tuesday 14 January, Wednesday 22 January and Thursday 30 January. All sessions from 2000 to 2200.
3·5MHz: Sunday 5 January, Saturday 11 January, Sunday 19 January and Saturday 25 January. All sessions from 1000 to 1200.
7MHz: Saturday 4 January, Sunday 12 January, Saturday 18 January and Sunday 26 January. All sessions from 1000 to 1200.
Frequencies: All contacts must be between 1,835 and 1,865kHz, 3,520 to 3,550kHz and 7,015 to 7,040kHz.
Exchanges: Stations may be contacted worldwide. RST followed by serial number (commencing at 001 for each session). Report and serial number (when sent) must be logged. SWL entrants may only log a station once in each session. The RST and serial number sent is to be recorded together with the call of the station being worked. The callsigns of the stations being worked may only repeat in every three contacts logged.
Operators: All operators and swl entrants must be members of the RSGB; clubs entering must be affiliated to the RSGB.
Sections: Single-operator, club (multi-operator) and swl.
Scoring: Three points may be claimed for each completed contact, or swl complete log entry. The total claimed score for transmitting and swl entrants is the sum of the best three sessions for each band entered.
Logs should be sent to RSGB HF Contests Committee, c/o R L Glaisher, G6LX, 279 Addiscombe Road, Croydon CR0 7HY, to arrive not later than 10 February 1986. No declarations are required, but entrants should state the section entered and the date on which they were first licensed. All claimed scores should be totalled for each band.
Awards: A certificate will be awarded for each band to the single-operator entrants with the highest checked score from three of the four sessions. Other certificates will be awarded for the best swl log and to the leading club entrant (subject to there being a minimum of five entrants in these sections), to the single-operator who achieves the best overall performance on all three bands, to the leading old-timer entrant, and to the highest-placed first-time entrant.

Affiliated Societies Team Contest 1986 rules

1. The general rules for RSGB hf contests, to be published in the "Operating Guide" supplement, *Rad Com* January 1986, will apply:
2. When. 1300 to 1700gmt, Sunday 12 January 1986.
3. The Affiliated Societies Team Contest is a competition between teams of stations, each team or teams representing an RSGB affiliated society. Each such society is encouraged to enter as many stations and teams as it can.
4.(a) A society entering one team will have its placing determined by the aggregate scores of the five highest scoring stations in its team.
(b) A society may enter more than one team. The aggregate scores of the five highest scoring stations will be placed in team "A", the next five highest scoring stations placed in team "B", etc.
5. Eligible entrants. Each operator must be a member of the society he represents, but need not be a member of the RSGB.
(b) Each station may be single- or multi-operator, but no operator may use more than one callsign during the contest period.
(c) All stations representing a society must be operated within 50 miles of the normal society meeting place.
(d) No station may represent more than one society.
(e) In the case of a society with national coverage, eg RNARS, each team may define a different society meeting place, but this should be a place of recognizable significance, eg a naval base. For all purposes, other than the indication of affiliation, each such team entry will be considered to be entirely separate.
6. Contacts. CW (A1A), only in the band 3,510 to 3,590kHz.
7. Exchange. RST and serial number commencing 001.
8. Scoring. Each contact will be worth 10 points.
9. Entries
(a) Each individual entry shall conform to the general rules. In particular each log must be accompanied by an hf contest summary sheet (Form HFC2). All entries from one society are to be sent in one package to RSGB HF Contests Committee, c/o P Miles, G3KDB, PO Box 73, Lichfield, Staffs WS13 6UJ. Packages underpaid and bearing postage-due stamps will be returned to the sender.
(b) Each package must include a declaration signed by an officer of the society that each entrant is a member of that society, and the normal meeting place address must be given.
(c) There should also be included a note stating the number of teams representing the society as well as a summary of the scores of each team. If the package does not include this information it will be assumed that the society wishes to enter only one team.
(d) Packages must be postmarked not later than Monday 27 January 1986.
10. Awards
(a) The Edgware Trophy will be awarded to the leading affiliated society.
(b) A certificate of merit will be awarded to the station having the highest individual score.
(c) A certificate of merit will be awarded to the leading affiliated society in each RSGB zone.

70MHz CW Contest rules

0900-1400gmt 15 December
The following general rules, published in the "Operating Guide" supplement, *Rad Com* January 1985, will apply: 1, 2, 3, 4a, 5a, 6b, 7a, 9, 10a, 11a, 12a, 13-24.

All entries and check logs to: VHF Contests Committee, c/o M Pharaoh, G3LCH, 49 Streathbourne Road, London SW17 8QZ.

Contests Calendar

1, 17 November	1,296/2,320MHz Cumulative
2, 3 November	144MHz CW *(Rules in October issue)*
2, 3 November	International Police ARC *(Rules in October* MOTA)
3 November	WAB CW *(Rules in February* MOTA)
8, 14, 22 Nov	28MHz CW Cumulative *(Rules in September issue)*
9, 25 November	432MHz Cumulative
9, 10 November	2nd 1·8MHz *(Rules in October issue)*
9, 10 November	25 Years Electril *(Rules in November* MOTA)
10 November	OK DX *(Rules in November* MOTA)
16, 17 November	All-Austrian *(Rules in November* MOTA)
23, 24 November	CQ WW DX *(Rules in October* MOTA)
1 December	144MHz Fixed *(Rules in October issue)*
3, 19 December	1,296/2,320MHz Cumulatives
7, 8 December	EA DX *(Rules in November* MOTA)
7, 8 December	TOPS Activity *(Rules in November* MOTA)
11 December	432MHz Cumulative
15 December	70MHz CW *(Rules in November issue)*
1986	
6-30 January	CW Cumulatives *(Rules in November issue)*
12 January	Affiliated Societies *(Rules in November issue)*
1, 2 February	7MHz SSB
1, 2, 22, 23 Feb	7MHz *(Rules in October issue)*
8, 9 February	First 1·8MHz
22, 23 February	7MHz CW
8, 9 March	Commonwealth *(Rules in September 1985 issue)*
15 March	Town & County
6 April	Ropoco 1
20 April	Low Power Fixed
18 May	Region Round-up
7, 8 June	HF NFD
28, 29 June	Summer 1·8MHz
12, 13 July	HF SWL
20 July	Low Power FD
3 August	Hopscotch
31 August	Ropoco 2
6, 7 September	IARU Region 1 SSB FD
12 October	21/28MHz SSB
19 October	21MHz CW
8, 9 November	Second 1·8 MHz

Club News

The following is the latest information received by RRs from RSGB affiliated societies, clubs and groups in time for inclusion in this issue. Basic unchanged information on other affiliated organizations will be published again in **January 1986.**

RSGB affiliated organizations are requested to report all programmes and new items to their regional representatives regularly. Information for inclusion in the **January** issue should reach them by **15 November** and for the **February** issue by **6 December**

Club programmes are given in order of date, subject, time and place of meeting. All callsigns of club secretaries and other contacts are QTHR (correct in the current *RSGB Call Book*) unless otherwise stated.

All clubs welcome visitors and would be pleased to hear from potential new members.

REGION 1—RR B Donn, G3XSN, 7 Thurne Way, Liverpool L25 4SQ. Tel 051-722 3644.

Accrington (NW) Repeater Group—21 November (AGM). 8pm. Globe Bowling Club, Willow Lane, Accrington. Free pie and peas for the first 50 members. Sec G6IKK.

Blackburn (E Lancs RC)—5 November (Home-construction night), 26 November (Informal), 3 December (AGM). 7.30pm. The Conservative Club, Cliffe St, Rishton. PRO G6LXU, tel Gt Harwood 887385.

Bury (BRS)—12 November (Visit by Bert Donn, G3XSN, Region 1 Representative, RSGB), 10 December (AGM). 8pm. Mosses Community Centre, Cecil St, Bury. PRO G4TBT, tel Burnley 24254.

Chester (C&DARS)—4 November (Quiz at Ellesmere Port), 5 November (Committee meeting), 12 November ("Radio astronomy", Dr R Spencer from Jodrell Bank), 19 November ("Raynet cares", Guy Wood), 26 November (TBA), 3 December (Committee meeting). 8pm. The Chester Rugby Union Football Club, Hare Lane, Vicars Cross, Chester. Details G4EZO, tel 40055.

Crewe (South Cheshire ARS)—11 November (Provisional talk on astronomy and Haley's comet), 9 December (Christmas social evening). 8pm. The Victoria Club, Gatesfield St, Crewe. Details G6IGW, tel 60062.

Fylde (FARS)—5 November (Informal and morse class), 19 November (Equipment sale), 3 December (Equipment construction competition. Agenda items for agm?). 7.45pm. The Kite Club, Blackpool Airport. Sec G8GG, tel 725717.

Liverpool (L&DARS)—5 November (Quiz), 12 November (Open night), 19 November (G4GHS talks), 26 November ("MOD surplus", Ian Mant). 8pm. The Churchill Conservative Club, Church Rd, Wavertree, Liverpool 15. Sec Albert Webb, tel 051-427 8557.

Manchester (SMRC)—1 November (Halloween df), 8 November ("Trains and radio in Scandinavia", G1MUR and G4ROM), 15 November (Annual dinner at The Four Seasons—Halebarns), 22 November (The Great Egg Race Mk42), 29 November ("Aerials", G2JT), 6 December ("Other thoughts on propagation", G3HZM). 8pm. Sale Moor Community Centre, Norris Rd, Sale. Sec G3WFT, tel 061-973 1837.

Morecambe (MBARS)—4 November (Morse class, G3PER and G4NEN), 11 November ("RTTY mailbox", G1GRP), 18 November (Morse class), 25 November (Talk on rtty), 2 December (Morse class), 9 December (Visit to police wireless workshops, Hutton). 7.30pm. Canteen of The Luneside Engineering Co, Mill Lane, Halton, Nr Lancaster. Details G3PER, tel Heysham 52659.

Penrith (PARS)—21 November ("Antenna and dx", G4AFU). The Ullswater School, Penrith. Details G4XPO.

Preston (PARS)—7 November ("Trams", Anthony Stevenson), 21 November ("Motor sport", G4PLB), 5 December (Talk by Jim Carroll, G3KCC). 8pm. The Lonsdale Club, Fulwood Hall Lane, Fulwood, Preston. Sec G3ZXC, tel 0772 718175.

Skelmersdale (S&DARC)—7 November (Home-brew exhibition/finishing off projects, hints and tips from members), 14 November (Activity night, hf), 21 November ("Microwaves on the cheap", with demonstration, G6HXL), 28 November (Activity night, rtty, etc), 5 December (Tech tips night, members' contributions). 7.45pm. Beacon Park Centre, Skelmersdale. Details G4ZPY, tel Ormskirk 894299.

Thornton Cleveleys (TCARS)—4 November ("Aerial Circus", RSGB video), 11 November (Club on the air/informal), 18 November (A practical approach to Antennae", G3AOW), 25 November (Club on air/informal), 2 December (Auction of equipment and components). 7.45pm. 1st Norbreck Scout HQ, Carr Lane, Bispham. Tel 0253 853554 for further details.

Warrington (WARC)—5 November (Your problems solved), 12 November ("QRP operation", Rev J C Dobbs, G3RJV), 19 November ("PSU", talk by expert constructor, G6XRE), 26 November ("Photography and ham radio", G4SCI), 3 December ("HF synthesizers", G3OGQ). 7.30pm. Grappenhall Community Centre, Bell House Lane, Warrington. Please note annual dinner, 29 November at Statham Lodge, Lymm. Tickets from Frank and G3MMD.

Wigan (Douglas Valley ARS)—7 November (Surplus equipment sale), 21 November (Visit by Bert Donn, G3XSN, Region 1 Representative RSGB). 8pm. Shevington Conservative Club. Details G4GWG, tel 211397.

Wirral (WARS)—6 November (Chairman's night), 20 November (Debate), 4 December (Christmas party). 8pm. Heswall Parish Church Hall, Heswall. Hon sec G4KPY, tel 051-625 7311.

Wirral (W&DARC)—3 November (144MHz CW Contest, club entry), 6 November (D&W, The Seven Stars), 13 November (Social and presentations), 20 November (D&W, The Basset Hound), 27 November (TBA). 8pm. Irby Cricket Ciub, Mill Hill Rd, Irby. Sec G8TRY, tel 051-630 1393.

Thank you to the Warrington ARC for their reception on my recent visit. I would also like to thank the radio amateurs of the Isle of Man for their hospitality and kindness during my visit in September. Welcome to Morecambe BARS and thank you for your details. *RR1.*

REGION 2—RR P R Sheppard, G4EJP, 9 Elvington Crescent, Leconfield, N. Humberside HU17 7LX. Tel 0401 50397

Goole (GR&ES)—NB New committee; secretary G6REL, chairman G6UCE, treasurer G6ZOI. Meetings 7.30pm. Junior Chambers, Boothferry Rd, Goole. Details G6REL.

Hull (H&DARS)—3 November (Junk sale). 7.30pm. Clubroom, Walton St Recreational Centre. Details G4PEP, tel 0482 77249.

Leconfield (RCTARS)—28 November (Autumn social). 7.30pm. Normandy Barracks. Details G4ZJW.

Leeds (White Rose ARS)—6 November (Natter night), 13 November ("Technical topics for beginners", G3TDZ), 20 November (Natter night), 27 November (Video, "W5LFL shuttle mission"). 8pm. Moortown RUFC, Moss Valley, Kings Lane. Details G6NIZ.

Maltby (MARS)—1 November (Open forum), 8 November ("Smoke detectors", G4BVV), 15 November (Three in a row, mini lectures), 22 November (Video), 29 November ("Meteor scatter", G6OYL). 7.30pm. Church Buildings, Church Lane, Maltby. Details G3ZHI, tel Rotherham 814911.

Halifax (Northern Heights ARS)—6 November ("Radio astronomy", L M Doughert), 20 November (Sale of surplus equipment). 8.15pm. Bradshaw Tavern, Bradshaw, Halifax. Details G3UI, tel 60574.

Pontefract (P&DARS)—7 November (Computer evening), 14 November (144MHz antenna project), 22 November (Ceilidh and supper), 28 November (Committee meeting). 8pm. Carlton Community Centre, Pontefract. Details G0AAD, tel 0977 43101.

Spen Valley (SVARS)—7 November ("Microwave operation", G4SDX), 21 November (Talk by RR2, G4EJP). 8pm. Old Bank WMC Mirfield. Details G4PHR.

Todmorden (T&DARS)—4 November (Talk by British Telecom), 18 November (Natter night). 8pm. Queens Hotel, Todmorden. Details G6MDB, tel 2494.

UK FM Group Northern—3 November (AGM). 7.30pm. Royal Hotel, Barnsley. Details G4UNA.

Wakefield (NWRC)—7 November (Natter night), 14 November (On the air), 21 November (Computer night, demonstration by local BBC Micro users group), 28 November (Monthly meeting). The White Horse, East Ardsley. Details G4RCH, tel 0532 536633.

Wakefield (W&DRS)—12 November (Homebrew equipment display), 26 November (On the air/natter night). 8pm. Ossett Community Centre, Prospect Rd. Ossett. Details G8PBE, tel 378727.

York (YARS)—1 November (Annual dinner). United Services Club, 61 Micklegate, York. Details G3WVO.

REGION 3—RR G Ross, G8MWR, 81 Ringwood Highway, Coventry CV2 2GT. Tel 0203 616941.

Atherstone (AARC)—11 November (AGM), 25 November (Open night). Sixth Form College, Long St, Atherstone. Sec G6YQU, tel Chapel End 393518.

Birmingham (Midland ARS)—19 November (Surplus sale). NB New meeting place, Unit 5, Henstead St, Birmingham. Sec G8BHE, tel 021-422 9787.

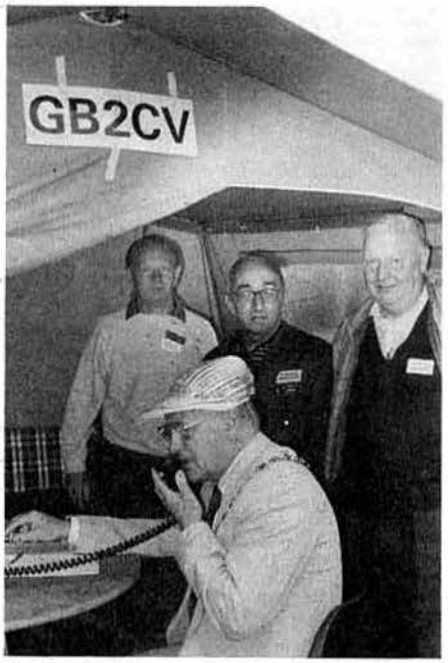
Birmingham (South RS)—6 November (AGM). 7.45pm. Hampstead House, Fairfax Rd, West Heath, Birmingham. Sec T Scrimshaw, tel 021-476 8312.

Bromsgrove (B&DARC)—8 November ("Have rig, will travel", G3BHT). 8pm. Avoncroft Arts Centre, Bromsgrove. Sec G4NYH, tel 73847.

Coventry (ARS)—1 November (Film show), 8 November (Sausage and mash supper). 8pm. Scout HQ, 121 St Nicholas St, Radford, Coventry. Sec G4JDO, tel 73999.

Halesowen (MEB RC)—12 November ("Aerials for the small garden", G3BA), 26 November (General meeting). 8pm. MEB Social Club, Mucklow Hill, Halesowen. Sec G4RWH, tel 021-747 8784.

Hereford (HARS)—1 November (Junk sale), 15 November (Informal meeting). 8pm. Civil Defence HQ, Goal St, Hereford. Sec G3WRQ, tel 0432 54064.



The Cheltenham, Gloucester and Smiths Industries radio societies joined forces on 27 to 31 July 1985 to operate GB2CV at Cheltenham Racecourse for the Citroen 2CV International Rally. The Mayor of Cheltenham, Peter Pennell, G3KME, is seen here in contact with Goettingen in Germany, the twin town of Cheltenham. Behind (l to r) are Gerry Train, G4LEX; Norman O'Brien, G3LP; and Pat Perkins, G3MA. *Photo:* G3XKD

Oswestry (O&DARC)—5 November (Discussion on aerials). 8pm. Bell Hotel, Oswestry. Sec GW6YIY.
Rugby (RATS)—5 November (Fireworks and Bar-B-Que). Sec G4TWH.
Stafford (SARS)—12 November (Secret Listeners), 19 November (Open meeting), 24 November (Night on the air). 8.30pm. Coach and Horses, Pasturefields, Staffs. Sec G4RWQ, tel 0785 714963.
Stourbridge (SARS)—4 November (Night on the air), 18 November (Surplus sale). 8pm. Robin Woods Centre, School St, off Enville St, Stourbridge. Sec Mr Williamson, tel 392006.
Stratford-upon-Avon (SuA ARC)—11 November (Surplus sale), 25 November (Homebuilt equipment). 7.30pm. Baptist Church, Payton St, Stratford-upon-Avon. Club sec G8OVC, tel SuA 750584.
Telford (TARS)—6 November ("Starting on microwaves", G8MWR), 13 November ("Medium wave dx", G6PZZ), 20 November ("Sweden", G3IMP), 27 November ("Project 90", G6XUF). 8pm. Dawley Bank Community Centre, Dawley, Telford. Sec G6XUF, tel 0952 770568.
Warwick (Mid-Warwick ARS)—12 November (Junk sale), 26 November (Film show). 8pm. St John HQ, 61 Emscote Rd, Warwick. Sec G6VHI.
Wolverhampton (WARS)—5 November (Older members' natter night), 12 November (General discussion), 19 November (Aerial circus and secret listeners), 24 November (144MHz df hunt), 26 November (Discussion groups). 8pm. Electricity Sports and Social Club, St Marks Rd, Chapel Ash, Wolverhampton. Sec K Jenkinson, tel 0902 24870.
Worcester (WARC)—4 November ("Amsat", G4BBR), 20 November (Informal meeting). 8pm. Oddfellows Club, New St, Worcester. Sec G4RBD, 14 Oakleigh Heath, Hallow, Worcester.

REGION 4—RR M Shardlow, G3SZJ, 19 Portreath Drive, Darley Abbey DE3 2BJ. Tel Derby (0332) 556875

Alfreton (A&DARC)—Mondays, 8pm, Swan & Salmon, Alfreton. First Monday in each month night on the air with club callsigns G1PWH and G0CPO. Sec G1BWE.
Buxton (BARS)—12 November (AGM), 26 November (TBA). 7.30pm. Haddon Hall Hotel, London Rd, Buxton. Sec G6MIF, tel Buxton 6174.
Derby (D&DARS)—6 November (Junk sale), 13 November (natter night), 20 November (Technical topics), 27 November (Home construction techniques), 4 December (Junk sale). 7.30pm. 119 Green Lane, Derby. Sec G4EYM, tel Derby 556875.
Heanor (Notts & Derby Border ARC)—5 November (Failed projects evening), 12 November, (Raynet group), 19 November, (Junk sale), 26 November, ("The RSGB", G3SZJ), 3 December (Film show). 7.30pm. Marlpool United Reform Church, Marlpool, Heanor, Derbys. Sec G4OQL, tel Draycott 3985.
Newark (N&DARC)—7 November (RSGB Video, "Dud Charman's aerial circus". 7.30pm. Worthington Simpson Sports Pavilion, Hawton Lane, Balderton, Newark. Sec G4SDZ, tel Newark 702076.
Spalding (S&DARS)—8 November (G2BQC Memorial Trophy). 7.30pm. The Ship Albion, Albion St, Spalding. Sec G4ZGT, tel Spalding 2781.
Worksop (WARS)—12 November (Bill Parry, G3AUZ, remembers his early days in amateur radio), 26 November (Memorial Cup night, plus G3RCW on the air). 7.30pm. The Old Maltkins, Gateford Rd, Worksop. Sec G4ZUN, tel Worksop 486614.

REGION 5—RR J S Allen, G3DOT, 77 Rosslyn Crescent, Luton LU3 2AT. Tel 0582 508515 or at work on 0582 21151.

Dunstable (DDownsRC)—8 November ("Receiver design", G3OSS). Chews House, Room 3, High St, Dunstable, Beds. Details G6EES, tel 607623.
Nene Valley (NVRC)—6 November (Buffet), 13 November (Natter night), 20 November (Homebrew competition and judging), 27 November (Natter night). NB New venue, Prince of Wales, Well St. Sec G4XEN.
Peterborough (Greater Peterborough RC)—28 November ("EMC", G3HCQ). Southfields Junior School, Stanground. Sec G4NRJ.
Shefford (S&DARS)—7 November ("Uosat update", G4PSO), 14 November ("Static, the shocking truth", a talk on IC protection, G6RHL), 21 November (Natter night), 28 November ("Software protection", G8PTP). Church Hall, Shefford, Beds. Sec G4PSO.

Not a lot of club news this month as you can see. Club secretaries please let me have your programme details, name of club officials and venues in good time before the next issue. *RR5*

The Cornwall ARC recently twinned with the Southern Eire AR Group and the president of the club, Bert Hammett, G3VWK, is shown here signing the twinning documents. Looking on are Norman Pascoe, G4USB, club secretary (l) and David Blackford, G3NPB, chairman. ***Photo:*** **S Bennetts**

REGION 6—RR F S G Rose, G2DRT, 84 Cock Lane, High Wycombe, Bucks HA3 7EA. Tel Penn (049481) 4240.

Abingdon Contest Club—Are you interested in contest operating on the vhf/uhf bands? Are you keen to operate for 24 hours on a cold wet windy hill? Yes! For details of how to join this small group, contact G3PSU, tel 048-838 696.
Chesham (C&DARS)—22 November (Annual dinner). 8pm. The Stable Loft, Bury Farm, Pednor Rd, Chesham. Details G4SNQ, tel 024-06 2516.
Hazelmere (CARC/High Wycombe)—Second and last Wednesday in each month. The Science Block, Sir William Ramsey School, Rose Ave, Hazelmere, Bucks. Sec G3NCL.
Oxford (RAFARS)—Monthly net on 3,710kHz ssb changed to 11.30am on second Sunday in each month. Meetings continue on third Wednesday in odd numbered months, 7.30pm, at Civil Service Club, Marston Rd, Oxford. Sec G6ZH.

REGION 7—RR R Sykes, G3NFV, 16 The Ridgeway, Leatherhead, Surrey KT22 9AZ. Tel 0372 372587.

Ashford (Echelford ARS)—11 November (Surplus equipment sale), 28 November (Constructional evening). 8pm. The Hall, St Martins Court, Kingston Crescent, Ashford, Middx. Sec G4VAZ, tel Sunbury 82823.
Biggin Hill (BHARC)—19 November (The work of the Radio Investigation Service). 8.30pm. St Marks Church Hall, Church Rd, Biggin Hill. Sec G0AMP, tel 0689 57848.
Coulsdon (CATS)—11 November ("High voltage engineering", G6AHR), 28 November (Morse tuition), 30 November (Grand Christmas Bazaar, with traders and club stands, 10.30am-3pm). St Swithin's Church Hall, Grovelands Rd, Purley, Surrey. Sec G6HC, tel 01-684 0610.
Cray Valley (CVARS)—7 November ("Modern microwaves", G8CIU). 8pm. Christchurch Centre, Eltham High St, Eltham SE9. Details G4WYG.
Croydon (Surrey RCC)—4 November ("Planetarium", part 2, G4WPB). 8pm. TS Terra Nova, 34 The Waldrons, South Croydon, Surrey. Sec G8IYS, tel 01-657 0454.
Crystal Palace (CP & DRS)—16 November ("Basics", G4AVV). 8pm. All Saints Parish Room, Upper Norwood SE19. Sec G3FZL, tel 01-699 6940.
Redhill (RATS)—19 November ("The work of an RSGB rep", G3NFV, RR7). 8pm. Constitutional and Conservative Club, Warwick Rd, Redhill. Sec G8JXV.
Sutton and Cheam (S & CRS)—15 November (Film evening, G6MKC). 8pm. Downs Lawn Tennis Club, Holland Ave, Cheam, Surrey. Sec G4BOX.

I shall be at the Coulsdon Club Bazaar and look forward to meeting members in the region. *RR7*

REGION 8—RR M Elliott, G4VEC, 20 Haysel, Sittingbourne, Kent ME10 4QE. Tel 0795 70132.

Brighton (BADRS)—Morse classes every Monday night, 7.30pm, Cromwell Rd, Hove. Details G4HLH or G3YY. Club nights, first and third Wednesday, 8pm. "Seven Furlong Bar", Brighton Racecourse. Sec G4IIL, tel 607737.
Burgess Hill (Mid Sussex ARS)—12 December (Christmas social). Marle Place, Burgess Hill. Details G1FRF, tel 07918 2937.
Chichester (CARC)—5 November (Club meeting in the Long room), 21 November (Club meeting in the Green room). 7.30pm. Details G4EHG, tel 789587.
Crawley (CARC)—16 November (Junk sale). 8pm. Trinity United Reform Church Hall, Ifield, Crawley. Details G4IQM, tel 882641.
Dartford (DDFC)—5 November (Pre-hunt meeting), 10 November (Club hunt, Dartford Heath). Pre-hunt meetings held after 9pm. The Horse & Groom, Leyton Cross, Dartford Heath. Details G8DYF, tel Greenhithe 844467.
Eastbourne (Southdown ARS)—4 November ("Weather satellites", G8FCD). 7.30pm. Chaseley Home, South Cliff, Eastbourne. Details G4XNL, tel 638653. Various courses are run on Tuesday nights at the Hailsham clubrooms and Friday nights are informal.
Gillingham (BRATS)—28 November (Low Power Competition). 7.30pm. Parkwood Community Centre, Parkwood Green, Wigmore, Gillingham. Details, G4ZTF, tel Medway 374670.
Hastings (HERC)—16 November ("2m dx", Ken Willis, G8VR). West Hill Community Centre. Details G4NVQ, tel 420608. Various activities during the week.
Maidstone (MYMCAARS)—8 November ("Conversion of cb rigs to 10m", G4RXH), 22 November (Junk sale). 8pm. YMCA Sports Centre, Melrose Close, Cripple St, Maidstone. Details G4AXD, tel 0622 29462. RAE and morse tuition in the Balcony Room on 1, 15 and 29 November.
Swale (SARC)—November (Dinner/social, date tba). 7.30pm. Ivy Leaf Club, 52 Dover St, Sittingbourne. Details G4NPM, tel Minster 873147.
Tunbridge Wells (West Kent ARS)—1 November (Club expedition video and slide show), 15 November (Surplus equipment sale). Informal meetings held on intervening Fridays. 8pm. Adult Education Centre, Annex, Quarry Rd, Tunbridge Wells. Details G4KIU, tel 33586.
Worthing (W&DARC)—6 November ("West Indies, my first radio visit", G3SXE), 13 November (Ragchew evening), 20 November ("Converting cb rigs to 10m fm", G4XRU). 7.30pm. Lancing Parish Hall, South St, Lancing. Details Roy Jones, G4SWH, WADARC, PO Box 599, Worthing BN14 7TT.

REGION 10—RR E J Case, GW4HWR, 2 Abbey Close, Tyrhiw, Taffswell, Mid-Glam CF5 7RS. Tel 0222 810368.

Abergavenny (A&NHARC)—On 24 September the club recommenced its RAE course, Tuesdays, 7-9pm. The club is a registered examination centre for the December and May examination sittings. Applications and further details from the course tutor, GW4YMR, or sec GW4XQH, tel 0873 4655.
Cardiff (CRSGBG)—11 November ("Modern trends in hf equipment", GW4NAD). 7.30pm. Pantmawr Hotel, Tyla Teg, Pantmawr Estate, Whitchurch, Cardiff. Sec GW0CUM, tel Cowbridge 3212.
Chepstow (C&DARS)—12 November (Third annual junk sale, also raffle and refreshments). 7.30pm. Chepstow Leisure Centre, Welsh St, Chepstow. Sec GW1FJI, tel 02912 2808.
Swansea (SARS)—21 November ("Aviation radio navigational aids", Paul Evans). 8pm. Lecture room N, Applied Sciences Building, Swansea University. 5 December (AGM followed by buffet evening. 8pm. College House). Sec GW4HSH, tel Swansea 404422.
Tredegar (LCRARC)—Tuesdays, 7.15pm. MIM Factory, North Ave, Tredegar. The "shack" is in the portacabin just inside the gates. All are welcome to attend. Sec GW1EXF, tel 049525 6560.
Pontypool (PARS)—Tuesdays (excluding Bank Holidays), 7pm, The Settlement Adult Centre, Rockhill Rd, Pontypool. All visitors are very welcome. A full programme of films, videos and lectures is planned for the winter months. The club shack is equipped for hf operation and we are hoping to add 144MHz equipment in the near future. New sec GW4RJA (not QTHR), tel Cwmbran 06333.

REGION 11—RR B H Green, GW2FLZ, 1 Clwyd Court, Tan-y-Bryn Road, Colwyn Bay, Clwyd LL28 4AH.Tel 0492 49288.

Colwyn Bay (Conwy Valley ARC, GW6TM)—14 November (Sale of surplus equipment). 8pm. Green Lawn Hotel, Bay View Rd, Colwyn Bay. Sec GW4VVW, tel 0492 636376.

Deeside (Alyn and Deeside ARS)—4 November (Bonfire and Bar-B-Que), 11 November (TBA), 18 November (D&W), 25 November (TBA). 8pm. Shotton Social Club, Shotton Lane, Deeside. Sec GW4RKX, tel 0244 660066.

Dolgellau (Meirion ARS)—7 November ("Eye of the wind", Rod James). Dolserau Hall Hotel, Dolgellau. Sec GW4KEV.

Porthmadog (P&DARC)—21 November (AGM). 8pm. The Harbour Cafe, Ffestiniog Railway, Porthmadog. Sec GW4WKQ, tel 0758 740445.

Rhyl (R&DARC, GW4ARC)—4 November (Activity night), 18 November (Computer demonstration). 7.30pm. Mona Hotel, Market St, Rhyl, Sec GW1AKT, tel Nantglyn 469.

Wrexham (WARC)—13 November ("Oh dear, what can the matter be?", G3UDA), 27 November (Natter night). 7pm. Friends Meeting House, Holt Rd, Wrexham, Clwyd. Sec G4HRH.

Clubs in Region 11 who do not appear in the above news have not sent details to me for inclusion. Please send details as soon as possible for future issues; refer to notes at heading of "Club News" for dates. *RR11*

REGION 13—RR A Givens, GM3YOR, 41 Veronica Crescent, Kirkcaldy, Fife KY1 2LH. Tel Kirkcaldy (0592) 200335.

Glenrothes (G&DARC, GM3ULG, GM4GRC)—17 November (Contests and dx hunting tips), 15 November (TBA). 7.30pm. Provosts Land, Leslie, Fife. Details GM4TNP, tel 755958.

Scottish Borders Repeater Group owns and maintains three repeaters: GB3BT at Berwick-on-Tweed; GB3SB at Duns; GB3HK at Hawick. Over £1,000 has been spent in the past year on improvements for the repeaters and users are invited to join or donate towards future developments. Details GM4BDJ, tel 0541 80018.

REGION 14—RR T G Wylie, GM4FDM, 3 Kings Crescent, Elderslie, Strathclyde PA5 9AB. Tel Johnstone (0505) 22749.

Ayr (AARG, GM0AYR)—1 November (At home), 15 November ("Computers and amateur radio", GM4HCO), 30 November ("Fables and fancies", GM4RSJ). 7.30pm. The Wellington Centre, Ayr. Details GM3THI.

Dumfries (Maxwelltown ARK, GM0AEE)—20 November (RSGB video "Aerial Circus", J C Judd). 8pm. The Tam O' Shanter Inn, Queensberry St, Dumfries. Details GM4NNC.

Dunoon (D&DARS)—29 November ("Slow Scan tv—rtty", GM3WIL). 7.30pm. Community Centre, Edward St, Dunoon. Details from Arthur, tel Kilmun 217.

Motherwell (Mid-Lanark ARS, GM3PXK)—8 November ("Broadcasting and technical information", Trevor Sykes of The Engineering Office, BBC Scotland), 30 November (Special event station, GB4SA, to commemorate St Andrews Day). 7.30pm. Wrangholm Hall Community Centre, Jerviston St, New Stevenston, Motherwell. Details GM4UXX.

Scottish Borders (SBRG)—Scottish Borders Repeater Group maintains three repeaters: GB3BT at Berwick-on-Tweed, GB3SB at Duns and GB3HK at Hawick. Users are invited to join or donate towards future development. Details GM4BDJ.

Glasgow (West of Scotland ARS, GM4AGG)—1 November. ("Proposed Glasgow and West atv repeater, GB3GT, on 23cm", GM1FML), 15 November ("All the latest from Arrow", demonstration of new equipment, GM0ARO, and GM0AAJ). 7.30pm. 154 Ingram St. Details GM4JDU, tel Brediland 2708. CW instruction for members.

REGION 16—RR A Owen, G4HMF, 102 Constable Road, Ipswich, Suffolk IP4 2XA. Tel 0473 51319.

Braintree (B&DARS)—4 November (Junk sale), 18 November "RSGB", RR16), 2 December (Informal). 8pm. NB new venue, Community Centre, Victoria Rd (next to Bus station), Braintree. Details G6THE, tel 0376 25587.

Bury St Edmunds (BSt.EARS)—19 November (TBA). 7.30pm. The Guildhall, Guildhall St, Bury St Edmunds. Details John Munro, G3GBB, 29 Angel Hill, Bury St Edmunds.

Chelmsford (CARS)—5 November ("Satellite tv", G8MKX). 7.30pm. Marconi College, Arbour Lane, Chelmsford. Details G4BYR, tel 0279 33049.

Colchester (CRA)—14 November ("Latest equipment", G3LST, Arrow), 28 November (Trophy and IARU Contest, G4CRA, contest group). 7.30pm. Colchester Institute, Sheepen Rd, Colchester CO3 3LL. Details G4FIJ, tel 0206 851189.

Great Yarmouth (GYRS)—7 November (Open evening), 21 November (AGM), 5 December (Informal). 7.30 for 8pm. STC Sports and Social Club, Beevor Rd, South Denes, Gt Yarmouth. Details G3NHU, tel 0493 721173.

Ipswich (IRC)—13 November ("RSGB", G3FRX), 20 November (Bangers and mash), 27 November (Repeater group meeting). 8pm. Rose and Crown, Norwich Rd, Ipswich. Details G4IFF, tel 0473 44047.

Leiston (LARC)—12 November (AGM. NB change of date), 21 November (Open evening), 3 December ("Computers and amateur radio", G4INP). 7.30 for 8pm. Sizewell Sports and Social Club, King George's Ave, Leiston or 5 Main Rd. Details G6ORK, tel 831597.

Loughton (L&DARS)—8 November (Informal), 22 November ("Interfacing the BBC Computer", G6ESL), 6 December (Informal). 8pm. Loughton Hall, Rectory Lane, Loughton. Details G6LWR, tel 0279 29457.

Martlesham (MRS)—NB changes, occasional first Wednesdays, 7.30pm, British Telecom Research Labs, Martlesham Heath, Ipswich. Details G4SYG, tel 0473 88663. 6 November ("Six metres", G4HUR and G4DDK).

Norwich (Norfolk ARC)—6 November ("Cellnet", Mr Artis, Motorola), 13 November (Home Constructors' Contest), 20 November ("Microwaves", G4FRE), 27 November (Technical topics), 4 December (Visit to Norfolk Constabulary). 8pm. Valley Drive Community Centre, 97 Plumstead Rd, Norwich. Details G4WTR, tel 610874.

REGION 17—RR T Emery, Wilverley, Old Lyndhurst Road, Cadnam, Southampton SO4 2NL. Tel 0703 812435.

Andover (ARAC)—5 November ("World of amateur radio"), 20 November ("World at their fingertips"), 3 December (AGM). 8pm. Wolversdene Club. Sec G0AMO, tel 51539.

Basingstoke (BARC)—4 November, (Constructors' competition), 2 December ("First Aid", G1EWO). Forest Ring Community Centre, Sycamore Way, Basingstoke. Sec G4WIZ, tel Tadley 5185.

Blackmore Vale (BVARS)—12 November ("Safety in the Shack", T Marriott and D Roberts). Second Tuesday of every month 7.45pm. The Bell and Crown, Zeals, (on the A303). Sec G1GRS, tel 0963 70969.

Eastleigh (Itchen Valley ARS)—8 November, (President's evening), 22 November, (Natter night). 7.30pm. The Scout Hut, Brickfield Lane, Chandlers Ford, Hants. Sec G6DIA, tel 0703 863039.

Farnborough (F&DARS)—13 November (AGM), 27 November (Chairman's evening). Railway Enthusiasts Club, Access Rd, off Hawley Lane, Farnborough. PRO G4MBZ, tel 837581.

Horndean (H&DARC)—4 November ("Constructional techniques", G4JXO). Merchiston Hall, London Rd, Horndean. PRO G4BEQ.

Liphook (Three Counties ARC)—13 November ("Victorian microwaves", G3SSJ), 27 November ("Amateur radio" G3JFF). 8pm. The Railway Hotel, Liphook. Sec G3TBT, tel Passfield 368.

Poole (PARS)—27 November ("Dos and Dont's of good cw operating"). 7.30pm. At Poole College, North Rd, Poole. Sec G4XYX.

Salisbury (SRES)—5 November ("The RSGB", G3KWU), 19 November "Operational amplifiers", G4YSP). 7.30pm. Grosvenor House, Churchfield Rd, Salisbury. Sec G4LDR, tel 0980 22809.

South Hants International Telegraphy Society—This Society incorporates the Portsmouth and District RS and now meets at The Community Centre, Malins Rd, Portsmouth every Thursday at 7.30pm. Morse classes for aspirants to full membership on Mondays. Sec G3JZV.

UK FM Southern Repeater Holding Group (GB3SN)—6 November (AGM). 7.30pm. Chineham House, Shakespeare Rd, Basingstoke. Sec Mrs Jan Steele, tel 02514 3311.

Waterside (WSWC)—26 November (First aid, with model!). 7.30pm. Fawley and Blackfield Community Centre, Blackfield, Southampton. Sec G1KMY.

Winchester (WARC)—14 November (Radio junk and equipment sale). 8pm. The Log Cabin, Stockbridge Rd, Winchester. Sec G4FPC, tel 0962 64747.

Married recently at Louth were Mick Reeson, G8OOS, and Miss Diane Scott. Among the guests were Mick Wrisdale, G8TDB; Roger Wilson, G4IPE; and Paul Sargent, G8RYO; seen here (l to r) with the bride and groom. *Photo:* David Dunn, G3SCD

REGION 18—RR Ian Gibbs, G4GWB, 61 The Gables, Widdrington, Morpeth NE61 5QZ. Tel 0670 790090.

Aycliffe & Shildon (A&SARC)—Tuesday evenings, Scout HQ, 4 Cross St, Shildon. NB new sec G1NNU, tel 0388 774081.

Berwick (Borders ARS)—29 November, Annual dinner, Tweed View Hotel, Tweed St, Berwick. Sec G1IUK 0289 305465.

Cleveland (RAFARS, G3PSG)—29 November, (Annual dinner at St George's Hotel, Teesside Airport). 8 December-4 January (GB2HC will operate to mark the passing of Haley's comet). Net on Sunday mornings 2m 145·350MHz at 1100 gmt. Details G0BIA, tel 0642 486474.

Consett (Derwentside ARS, G4PFQ)—4 November ("Computers and amateur radio"), 11 November (Natter night). 18 November (AGM and special raffle). 25 November ("Maidenhead squares"), 2 December ("Amtor and sstv", G3LIV). Consett Assocn FB Club, Belle Vue Park, Consett. Sec G1AAJ, tel 0207 520477.

Prudhoe (Tynedale ARC, G4ONQ)—4 November (Bring and buy evening, 8pm), 2 December (AGM. "Cellular radio", G3UVU). Scout & Guide HQ, Station Bank, Prudhoe. Sec G6RRT, tel 0434 602718.

Redcar (East Cleveland ARS, G4CRS)—1 November (Business meeting), 15 November (Quiz night, no RAE class), 29 November (Demonstration of hf station with FT101, G4ZPG). RAFA Club, Newcomen Tce, Redcar. Sec G1GMF, tel 0642 474769. RAE classes in progress.

Sunderland (SARS, G4LPK G6BXJ)—4 November, (videos: "Electromagnetic wave", "The electron's tale", "Thin film microcircuits"). 18 November (AGM). 7pm. Sunday mornings 11.30am-1pm. Sec G4WMW, tel 0783 343295.

REGION 19—RR R J C Broadbent, G3AA, 94 Herongate Road, Wanstead Park, London E12 5EQ. Tel 01-989 6741.

Boreham Wood (BEARS)—4 November (Junk sale). 8pm. Would the sec please let RR19 know their future programme. Full details to new members from Tony King, tel 01-207 3809.

Cheshunt (CDARC)—6 November (Natter night), 13 November ("Spectrum Analysis", G6BTQ), 20 November (Natter night), 27 November (AGM). 7.45 for 8pm. The Church Rooms, Church Lane, Wormley, Herts. All welcome. Details G3OJI, tel Ware 4316.

Chiswick (ABCARC)—19 November (Members' problems—a discussion). 7.30pm. Chiswick Town Hall, High Rd, Chiswick, London W4. Sec G3GEH, tel 01-992 3778.

Edgware (E&DRS)—14, 28 November (TBA). 145 Grange Hill Rd, Burnt Oak, Edgware. Details G4SYI, tel 958 9868.

Harrow (RSH)—1 November ("Astronomy for amateurs", G4ZES), 8 November (Activity night), 15 November (BBC World Service), 22 November (Activity night), 29 November (Junk sale). Roxeth Room, Harrow Arts Centre, High Rd, Harrow Weald, Middlesex. Tel Rickmansworth 779942.

Havering (H&DARC)—6 November (Informal), 13 November ("Q and Q meters", G3EUR), 20 November (Informal), 27 November (RSGB mat-

ters, Ron, G3AAJ). 8pm. Fairkytes Art Centre, Billet Lane, Hornchurch, Essex. Sec G1HTQ, tel Romford 23996.

London (Civil Service ARS)—First and third Mondays in each month, 12.30pm. G3CSR operational from shack in Recreational Centre, Monck Street, London SW1P 2BL, from 11am to 10pm. Nets Tuesdays, 7.30pm on 144.575MHz, followed at 8pm on 3,720MHz or 1,960MHz. Chair Bob Treacher, tel 01-212 8823 or G6IMM, tel 01-698 4437.

Southgate (SARC)—2 November (Annual Construction Contest and event). St Thomas's Church Hall, Prince George Ave, Oakwood, London N14. PRO G4OBE, tel 01-360 6555.

St Albans (Verulam)—12 November (Informal and workshop), 26 November ("Digital filters", G8FUL). RARA HQ, New Kent Rd, St Albans. Sec Hilary, tel 59318. All members should make a note of the Christmas Rally on 1 December. G3JKS will need a lot of help with this new venture.

Welwyn (W Hatfield ARC)—4 November (Informal and workshop), 18 November (Projects evening). 8pm. Knightsfield Scout HQ, Welwyn Garden City. Sec G0AII, tel 326138. All are welcome to this club. Nets on S15 at 8pm on Mondays.

REGION 20—RR N F O'Brien, G3LP, 26 Southfield Road, Gloucester GL4 9UD. Tel 0452 34890.

Bristol (BRSGBG)—24 November (Homebrew Competition). 7.30pm. Small Lecture Theatre, Bristol University. Details G4SQQ, tel 0272 508451 or G4ROX, tel 0272 513573.

Bristol (North Bristol ARC)—1 November (Natter night and committee meeting), 8 November (Junk sale, bring and buy), 15 November ("Radio therapy", Dr Preece, G3TCO), 22 November (Sporadic-E tv demonstration, G8UUE), 29 November (The making of semi conductors", Dr Wood). 7pm. SHE, 7 Braemar Crescent, Northville, Bristol. Details G4EUV.

Bristol (South Bristol ARC)—6 November (BTI morse tests, 7-9pm, G3YCP), 6 November ("Testing morse at Highbridge", G3YCP), 13 November (VHF activity night, G1HFJ), 20 November (Club projects-progress report, G8BDZ), 27 November (Final revision for the RAE, G8XIH). 7.30pm. Whitchurch Folk House, East Dundry Rd, Whitchurch, Bristol BS14 0LN. Details G4RZY, tel 0272 834282.

Cirencester (C&DARC)—7, 21 November (Natter nights). 7.30pm. Phoenix Centre, Beeches Rd, Cirencester. Details G0AZD, tel Cirencester 5015.

Gloucester (GARS)—6 November ("SSTV", with demonstration), 13, 20, 27 November (Natter nights), 4 December ("Shroud of Turin", Dr Clift). 7.30pm. St John Ambulance HQ, Heathville Rd, Gloucester. Details G6AWT.

Street (S&DARS)—5 November ("Computing in amateur radio", Peachment). 7.30pm. Strode College, Church Rd, Street. 6 December (Skittles evening). Victoria Club. Details G4SCD.

Stroud (SARS)—13, 27 November (Natter nights). 8pm. Nelson School, Stratford Lodge, Stroud. Details G1DCT, tel Nailsworth 2773.

Yeovil (Y&DARC)—7 November ("The inverse square law of radio wave propagation", G3MYM), 14 November ("Crime prevention and security", Yeovil Crime Prevention Officer), 21 November (Video, "The Secret Listeners"), 28 November ("Natter night"), 5 December (Video, "Visit to China"). 7.30pm. The Recreation Centre, Chilton Grove, Yeovil. Details G3GC. tel 0935 75533.

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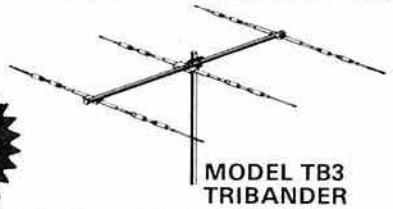

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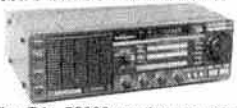

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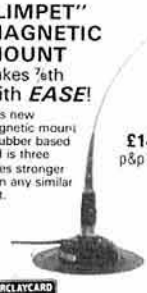

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Mixer type	Discrete Schottky ring
Post mixer processing	SL560c amplifier
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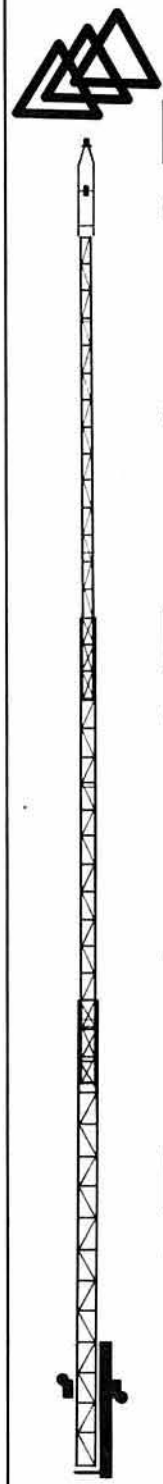

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TORQUAY HOLIDAY FLATS, low winter rates. G4NOA, G4NOD. Linden House, Ruckamore Road, Chelston. Torquay. (0803) 607333.

AMATEUR RADIO INSURANCE SCHEME

"ALL RISKS" INSURANCE for portable/mobile/base station amateur radio and ancillary equipment. A service for RSGB members only. Also public liability and equipment insurance for affiliated clubs and societies. Details and leaflets from Nick Gibson, Amateur Radio Insurance Services Ltd, 19 Quarry Street, Guildford, Surrey. Tel: 0483 33771.

MISCELLANEOUS

COURSE FOR CITY & GUILDS, Radio Amateurs Examination. Pass this important examination and obtain your licence, with an RRC Home Study Course. For details of this and other courses (GCE, Career and professional examinations, etc) write or phone—THE RAPID RESULTS COLLEGE, Dept JT10, Tuition House, London SW19 4DS. Tel: 01-947 7272 (9am-5pm) or use our 24hr Recordacall service 01-946 1102 quoting JT10.

DK1XE ECKARD, Ingrid (teachers), Marion, Andreas (45, 44, 12, 11) wish friendship with family in GB. Wendt, Geest 4, D-2093 Stelle, West Germany.

INDEX TO ADVERTISERS

A FEW THOUGHTS . . . . . on transverters . . . . . .

Transverters can represent a very cost-effective way of getting onto new bands with all the facilities of your existing equipment, but unless the transverter is well designed, they can also be a very questionable investment!

Any mixing process, and transverters in essence are just a mixer, generates not only the wanted signal but also a multitude of unwanted products. To reduce the level of these to a reasonable level requires very careful design. It seems to me that, although there is no detailed legal requirement governing the levels of spurious radiation from amateur radio equipment in the UK it is prudent to take the requirements for PMR equipment as a guide. These generally insist on a maximum spurious product level of 2.5 microwatts in the uhf region. This is the same as spurious levels 66dB below the pep output of a 10W transverter. Our vhf transverters are designed to this standard.

It's not at all easy to get performance like this. Indeed, having spent a considerable amount of time designing high-performance transverters for 50 & 144MHz, I'm not altogether sure that it's something which could be obtained in a home-brew transverter set-up without access to a spectrum analyser. The 50/28MHz translation is a fairly difficult case, particularly if you have ambitions to cover the full 50–54MHz range. To achieve a satisfactory level of spurious signal rejection, our TVVF 50a uses a high performance mixer of our own manufacture, operated at around 10dB below its saturation level, in order to reduce the level of in-band spurii caused by high-order mixing processes. The mixer is followed by a terminating network and two-pole filter, which is common to the receive path, a class-A amplifier, and then a five-pole tchebyshev bandpass filter which removes the out-of-band products. I'd humbly suggest that this level of filtering represents a minimum, and that it rather rubbishes the attempts of certain manufacturers to cash-in on the interest in 50MHz by modifying 144MHz transverters for our new band! The system problems presented by 144MHz transverters are distinct from those inherent in the 50MHz case and indeed we've found it necessary to use entirely separate pcb designs to accommodate the different allocations.

Obviously, the receive side of transverters also requires careful attention. Here I'd simply comment that muTek has unrivalled experience in the design and manufacture of high performance receiver front-ends for the amateur vhf/uhf amateur bands. Our transverter front-ends represent the results of an evolutionary design process stretching back over several years. Don't forget that muTek was the first (and we feel, remains the only!) manufacturer of vhf amateur radio equipment to quote MEANINGFUL dynamic performance figures for it's products, and that we pioneered the use of concepts such as noiseless negative feedback around GaAsfets at vhf.

On deliveries . . . . . .

As I write this, we have a large backlog of orders which we're scrabbling to clear without compromising quality. The main problem has been in test. At some cost, we've recently doubled the size of this area and we're slowly reducing our delivery times. My apologies to those of you who waited. We're always pleased to give an estimate of delivery times if you 'phone before placing your order, and you can be sure that if you place an order, your credit card won't be debited, or your cheque presented for payment before we're ready to dispatch (allowing for clearance times).

and the telephone . . . . . .

During August and September we had a few irate telephone calls from people who said that they had been ringing our telephone number for days upon end without an answer. We hadn't all decided to go to the beach! On investigation, BT discovered an obscure exchange fault which (we hope!) has since been corrected. If you have problems getting through at any time, please let us know.

And data . . . . . .

Over the years, we've relied on a variety of individual data sheets. We're now just about to launch a new integrated data sheet in poster format. If you'd like a copy, a phone call or letter will send one winging on its way to you!

Chris Bartram G4DGU

The range

		£
TVHF 230c	Very high performance 2m to 9 hf bands transverter	334.90
TVVF 50a	Very high performance 10m to 6m transverter	239.90
TVVF 50c	Very high performance (again!) 2m to 6m transverter	199.90
TVVF 144a	Ultra-high performance 10m to 2m transverter	239.90
SLNA 144s	2m low-noise rf-switched preamplifier 0·9dB typical noise figure	39.95
SLNA 145sb	Transceiver optimised preamplifier for the FT 290	29.90
SBLA 144e	Masthead-mounting 2m low-noise high dynamic range preamplifier. 250W through-power	89.90
GFBA 144e	Ultra-high performance masthead-mounting GaAsFet 2m preamplifier using advanced noiseless negative feedback for low noise figure and superb dynamic performance. 1000W pep (ssb) through-power. Supplied with ATCS 500 sequencer-controller	149.90
GLNA 432e	Masthead-mounting 430-440MHz high performance GaAsFet preamplifier. 0·9dB typical noise figure, 250W through-power. Supplied with ATCS 500 sequencer-controller	149.90
GLNA 433e	Masthead-mounting 430-440MHz high performance GaAsFet preamplifier. 1dB typical noise figure. Rf switching, 50W through-power	79.90
BLNA 432ub	Sub-miniature 430-440MHz preamplifier. 1·3dB typical noise figure. Requires external filtering.	13.70
BBBA 500u	20-500MHz high dynamic range broadband preamplifier. Ideal for scanners	34.90

		£
RPCB 144ub	Complete replacement front-end for the FT221 and FT225	79.90
RPCB 251ub	Complete replacement front-end for the IC211 and IC251	84.90
RPCB 271ub	Complete replacement front-end for the IC271 (e and h)	89.90
GDIF 107ub	Gunn diode WBFM back-end processing board	49.65
LBPF 144u	Low-loss 144-148MHz two-pole bandpass filter. 0·3dB typical insertion loss, 120W power handling	22.40
LBPF 432u	Low-loss 430-440MHz two-pole bandpass filter. 0·3dB typical insertion loss, 100W power handling	22.40
XBPF 700ub	Microstripline bandpass tvi filter	2.95
ATCS 500	Sequencer-controller	33.90
VFAT 206	25W 6dB attenuator suitable for use with the TVHF 230c	19.65

Carriage/postage rates

GFBA 144e, SBLA 144e, GLNA 432e, GLNA 433e	2.50
TVHF 230c, TVVF 50a, TVVF 50c	5.00
All other products above	1.50

ALL PRICES INCLUDE 15% VAT E. & O.E.

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Dept. RC, Bradworthy, Holsworthy, Devon EX22 7TU (040 924) 543

Access VISA

RSGB News Bulletin

FOR MEMBERS ONLY

RSGB Headquarters: Alma House, Cranborne Road, Potters Bar, Hertfordshire EN6 3JW.

No. 23 November 1985 17 October 1985

We have some very special pre-Christmas offers on some RSGB books: prices for members as follows:

Radio Data Reference Book £6.61 (normally £7.76) Amateur Radio Operating Manual £4.69 (normally £5.54) New Locator Map of Western Europe £2.32 (normally £2.75) Teleprinter Handbook £6.52 (normally £11.45) ARRL 1985 Handbook £9.99 (normally £14.22)

Subject to availability, these special prices are valid for orders from members received between 1 November and 31 December 1985. Just the thing for Christmas (leave this list somewhere near the XYL/OM....)

The 11th edition of the Society's RAE Manual should be available about a fortnight after you read this - price probably similar to the 10th edition. Another forthcoming attraction is the RSGB Buyer's Guide to Amateur Radio Equipment by Angus McKenzie, G3OSS - this unique publication should be available early in the New Year. Various other publications in pipeline - watch this space.

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As we went to press NASA confirmed that 27 November was still the predicted date for the launch of Shuttle mission 61-A, carrying Spacelab plus three radio amateurs. Basic information was given on page 765 of the October 1985 edition of Radio Communication - just a reminder that GB2RS will be transmitting special news broadcasts at 1200 and 1900 gmt with information on progress of mission.

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RSGB is pleased to announce an extension to the greetings message facility available to special-event stations. As of 14 October 1985, special-event stations may exchange greetings messages with stations in Canada, the Falkland Islands and the United States of America. Some simple rules: the UK SES must be under control of an amateur whose licence class permits him to operate it. Initial contact must be made with licensed station in one of the three countries concerned before the message is passed, and message should not last more than two minutes. As usual, content must be of a technical and purely personal nature only, only one contact per licensee permitted. No payment must change hands.

As we went to press JOTA was a few days away and they'll be the first major beneficiary of the new concession. Lots of negotiation between Society and DTI went into this and we're delighted to have achieved it.

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DTI has unveiled "United Kingdom Table of Radio Frequency Allocations", listing frequency bands allocated to various calsses of radio users in UK: it's broadly based on International Radio Regulations format and shows international allocations by Region and what UK does with them. Some useful

annexes show allocations to amateurs, PMR, fixed links, etc. Book contains 310 pages, costs £12, available from HMSO.

++++++++++

The RSGB Databox - our new dial-up news and information service - received more than 1000 calls in its first fortnight of "official" operation. A second incoming line should be available by the time you read this so the waiting time for users will be reduced. Lots of useful comments and suggestions have been made, and we hope to incorporate some of them into the system when time permits - please keep your comments coming in via page 885.

Here's a further tip for those who might be having logging-on problems because of their particular make of modem. If the log-on page is corrupted for any reason, key "*ØØ"; if that doesn't reset the log-on page key "###". Only information keyed on to this page is recorded in the system log.

The Data Box is available on Potters Bar (0707) 52242.

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A new VHF Affiliated Societies Contest takes place on 1 December, in conjunction with the usual 144 MHz Fixed Station contest. Rules are very similar to those of the well established 3.5 MHz CW event but the VHF version is an all-mode contest. Entrants forming a team must be members of an affiliated society, although they needn't be RSGB members. We're hoping for a bumper crop of entries, so turn up the rules on page 806 of the October 1985 edition of Radio Communication and plan your entry now. Wouldn't it be nice if conditions were as good as those in mid-October? Some superb VHF and UHF DX was worked from the UK around the 15th and condx were well up from Spain right round to Scandinavia. Best we've heard of so far is Scotland to Northern Italy on 430 MHz.....anyone cap that?

++++++++++

UK radio amateurs and RAYNET in public eye late in September during aftermath of Mexico earthquake. It all started in Staffordshire on 20 September: G4TVA and G4EJM worked Mexico City & USA East Coast Emergency Nets at request of RAYNET county controller Martin Harrison, G3USF: he'd been contacted by teachers at boarding school with a Mexican pupil, Diana Pando. By 2315 it was known that her parents were safe. Media quickly picked up the story and more requests for assistance poured in: RAYNET Committee chairman Geoff Griffiths, G3STG, and family, monitored telephones on 24-hour basis and arranged operators. RAYNET liaised with British Red Cross Society and Foreign Office. DTI Radio Regulatory Division very helpful and encouraging.

Last return traffic received 8 October, so entire operation lasted for some 17 days: Geoff Griffiths said that "....entire operation reflects nothing but good upon the hobby". Full details in next month's Amateur Radio News.

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We're sorry that some members received their copies of the October edition of Radio Communication later than usual. Two factors were involved: there

was a delay in wrapping part of the print run (we were looking into this as the Bulletin went to press) and there was also a delay somewhere in the Post Office.

We obviously want to give the best possible service to members and in order to monitor the situation we'd like you to help us. We would be grateful if members could write the date on which they receive THIS edition of Radio Communication on a postcard together with their callsign and town and send it to: The Editor, Radio Communication, 88 Broomfield Road, Chelmsford, Essex CM1 1SS. We can then see exactly where the problem is and take the appropriate action. Obviously the more postcards we get the better, but we need the information in writing so please don't telephone the Editor. The problems seem to have arisen since the distributors moved from Norwich to Maidstone recently.

++++++++++

No news on the 50 MHz allocation yet: Society continuing negotiations to obtain best possible operating conditions for UK amateurs consistent with need for protection to other services. Shouldn't be far off now. VHF Committee has devised a modified draft bandplan, looks like this:

--------50.000----------

CW ONLY 50.02-50.08 Beacons

--------50.100----------

	50.110 Worldwide DX calling	
NARROWBAND	50.200 SSB activity centre	THIS BAND IS
MODES	50.300 +/- CW MS	NOT YET
	50.350 +/- SSB MS	AVAILABLE!

NOTE!!
======

--------50.400----------

PSE QRX

ALL MODES

--------50.500----------

Committee would welcome any comments on this: send them to Chairman, Malcolm Appleby, G3ZNU, QTHR.

++++++++++

Royal Jordanian Amateur Radio Society has announced plans for JY50, a 2-week celebration marking 50th birthday of His Majesty King Hussein, JY1. All amateur radio stations in Jordan will use special prefix JY50 between 7 & 21 November.

++++++++++

Leeds & District ARS have their Xmas Rally on Sunday 8 December at Civic Hall, Dawsons Corner on Leeds Ring Road. Doors open 11am, talk-in on S22.

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MEMBERS' ADS

FOR SALE

ForTop TVT435R 70cm ATV tcvr with 435 and 437 xtals £125 ono MM435/600 ATV rx converter £20. Datong RF clipper £20 Meaden, G3BHT, Sutton Coldfield QTHR tel 021-308 4764

FDK Palm IV 70cm 6-channel handheld c/w rubber duck antenna, nicads, charger, 7 crystals for SU8/20 and RB0/6/10/14/15 £90 ono.Acorn Electron 32k and plus-1 interface c/w manuals and amateur radio software, £130 ono. G4BLT QTHR tel 0934 255515

G4MH minibeam £55, Yaesu YD148 desk mic £15, both exc cond. Zetagi BV130P linear, 27-30 MHz, good wkg cond £20. G4YOV QTHR tel 0642 581972

Hammarlund HQ170A rx, ham bands top band to 50-54MHz (new band), recently re-aligned by old timer. Very sensitive. Purchase of new HF txcvr forces sale. £170 ono, may swap for 70cm handheld rig. Ron, GOAWL, tel Lichfield (05432) 22916 after 7pm.

T1154 c/w original psus £10. Whip antenna bases £1, box of five £4. Zetagi programmable freq. meter, 500 MHz, £60. 4X150 valves ex eqpt, £2 each. Wanted, orig. manual for AR77 rx. Postage extra G4DVH QTHR tel 0229 54466.

Heath DX100 and SB10 ssb adapter in regular use £75 ono.Buyer collects.G4ERA QTHR tel 0424 812350

Standard C8900 2m fm boxed £165, Belcom LS102L 10m multimode 10W out £170. Wanted: latest 25W out MM transverter. Tel 0625 527250 (Manchester area).

Old radio books. "Handbook of Technical Instruction For Wireless Telegraphs", 1917, £5. "Wireless Telegraphy and Telephony" by Redpath G2DS, c. 1921, £3 "The Amateurs' Book of Wireless Circuits" by Haynes, 1923 £5 G3BDQ QTHR. Books sent post paid, others available.

Save almost £15, Mutek SLNA144s 2m preamp as new with tech data etc. NF below 1dB and RF switching. £25 secures.G3BDQ QTHR tel 812262

Packet radio Tucson TAPR TNC1 system f.w.o. with massive manual. Buyer to test and collect. Wireless World teletext built into Sony 13" TV direct to Trinitron tube, needs updating. Offers G3VMR QTHR tel 0628 24929 anytime.

Icom IC290H 2m multimode, as IC290E but 5/25W output, no 5kHz step only 1kHz step, thus £300 ovno (silent key sale) G6SUQ QTHR 01-845 9261

FL2100Z linear mint £500. Homebrew 2x813 linear & PSU £140. 2x813 with bases £15 ea. QY3- 125 with base £20. Racal RA17 in cabinet, excellent £175. Commodore 8032 computer, brand new, boxed £300. Pye PP70 £8. Gavin G4UCR 0420 50 362.

HQ-1 hybrid quad antenna with fully automatic rotator, full paperwork, in operation 15 months Bedford area £120. G4PNK QTHR tel Oakley 5274

PSU's 240V in; Lambda 5V 24A £20, 12-15V 6.2A £15, APT 12V 5A £5: 120V in; 2 Gould 12V 16A £20, Lambda 5V 24A £20, 2x5V 15A £12, ono buyer collect G4NNA, Southall Middx. Tel 01-571 0625

Dressler D200 VHF QRP amplifier, less than 70 hrs use, vgc, homebrewing proper W1SL/G4FRX QRO amp, £570. FT707, FP707 & FC707 gwo £430. Lee G4RKV tel 0227 360841 eve. NOT QTHR.

Trio HS5 headphones, little used, boxed, mint cond, £10 ono G6ZAM QTHR tel Ashford(Middx) 57276

Trio TS500 with external vfo 80m-10m ssb, cw, am modes £150 ono. Spare set of valves included with workshop manual. GOABF QTHR tel 0783 844673.

FDK Multi 2000 txcvr, 2m multimode, ssb, fm, cw, 10/1W, base station or mobile £175 buyer collects, G6TZL, Bernard Rogers, 24 Marmion Road, Coningsby, Lincoln. Tel 0526 42899.

Trio TR2500 c/w spkr/mic, mobile mount, charger, soft case, little use, boxed £190. Also 3x5/8 70cm colinear £10. G6LXW QTHR tel Rotherham 555624.

Yaesu FT202R, charger, £60, Standard 8800 £150, Trio 7800 £250, Weltz SP400 £55, IC2E, extras, £125, linear 10-100W £100. 10-40W £45. Dummy load, 1/4 x duck sony 'specials' £45. Fortop TV txcvr £100. G6PBS QTHR tel (03224) 31807/38770

Eddystone EA12 amateur band valve rx, as new condition, original box c/w manual, extn spkr, little used since new. £150. G4YEI QTHR tel 01 286 2975 evenings/weekends.

Tandy TRS 80 model 1 level II 16k computer with green screen monitor, many program tapes instruction books and manuals, tape recorder not included, contact G4ROG QTHR or tel 0209 713992.

Datong D70 Morse tutor, oscillator, with earphone and instructions. Absolutely as new (four months old) £38. RSGB morse course cassette (as new) with RSGB morse book, both £4. Buyer collects or pays postage. Ring GOCKY, Leeds 609456.

FT102 £500 hardly used, ex G3XUK silent key, Write Mrs I Jacobs, 7 Dalmeny Road, Erith, Kent DA8 1JX.

CPC 464 64k computer, green screen monitor, amended manual, dust covers. As new (upgrading) £150. G4RGA QTHR tel 082347 4911.

Working PF1 Pocketfone with toneburst and xtals for RB0 & SU8 £15. 23cm converter, xtals for 144MHz and 50MHz if's, £7. Mains operated 30 Mhz frequency counter £25. G8FDJ QTHR tel 0742 333847.

Versatower, SP60 with ground post but without socket, KR400 rotator, SMC DX33 3 ele triband beam. All first class order, can be seen in operation, offered dismantled ex QTH, buyer collects Sussex, £500. G3WYN QTHR, tel 0444 412420.

Bungalow between bulbfields and Norfolk coast, 6m Kings Lynn, lounge, hall, kitchen, 2 dblbeds, dbglz, CH, garage, brick shed, 2/3 acre secluded garden, 60' Westower, DX33 & VHF/UHF beams, £37000. G3NXT tel 0553 828339/763486, ask for Mr Fletcher.

TS930S c/w internal automatic antenna tuner, £1000 GOCEO QTHR tel 01-202 7029 after 9pm.

NRD 515 c/w CFL230 filters, NDH 515 memory unit, NVA 515 speaker £750. G4UGJ QTHR tel 484952 evenings.

MMT 144/28 xvtr £90 ono, MMT 432/28 c/w 1.6MHz shift £90 ono, both just serviced by Microwave Modules. Also mobile mount for FT707 or FT 77 £10 Tel Alan G4VSU 0602 271824.

Yaesu FRDX 500 receiver c/w FM, 6m & 2m, £150. Audio sig gen Heathkit sin/sq, model IG-1B £60. RF generator, Heathkit Model RF-1U £20. Box of valves octal and miniature, some new £10.G8EJR QTHR tel 0751 74947.

Racal RA117E gen cov HF rx, cased, would suit a person with more knowledge than I. B Bissell 'Strathmore' Birdham, Chichester, Sussex. P.S. manual as well, £200.

UHF Compendium, Weiner, £8, Amateur Radio Techniques £5, ARRL Antenna Book £5, Confidential Frequency List £3, World Dx Guide £2, Short Wave Listeners Handbook £2, Sat Tracking Software for the Radio Amateur £2, Practical Wireless, 031232 G6LPT QTHR tel 01-459 4849.

ICOM 271H 100W multimode base fitted Mutek f/end with IC-PS30 25A PSU & IC-SP3.Also IC-02E offers would split or part exchange for NRD-515 rx. G6NKB QTHR tel 0509 502989 evenings.

Tektronix scope, dual timebase type 547, dual and quad trace 50MHz plug-ins, calibration plug- in, manuals and scope trolley £125. Polyskop SWOB 2 0.5MHz to 1200MHz sweeper and display c/w cables & manuals £100. Dave G8KHU tel 0533 857687 evenings/weekends.

Telequipment D54 dual beam scope, 0-10MHz with manual £110, Pye W15AM Westminster £25, HFW1 wobbulator alignment oscillator 4-220MHz £18, Nascom 1 with memory, RTTY input £60.Wanted Telequipment Serviscope Minor circuit. G8EII tel 0276 35228

TR2300 2M fm txcvr, VB2300 pa, charger & feather lite mobile mike £140. FRG7 rx, no mods £125. All exc con, going HF mobile. G4MET QTHR tel 0457 64322.

KW107 mod to 109, Hustler mobile coils 10-160m, mast, ball, and bumper strap, Offers. Want mast or tower and FT290R. Tel 03957 492.

Jaybeam 48 ele 70cm Multibeam £20, Dressler D200 2m amplifier, 1KW dummy load, £475 ono. G6WIL 01-520 6020.

Racal RA117E c/w louvred case & manual £175. No. 62 set, vgc, £50. Wanted, info on tape recorders EMI RE321, Ferrograph Y722G, receiver CR300/2 your price paid. Info also required Brenell Mk5 & Mk6. Tel Basingstoke (0256) 56232

R1000 £185, Avo Meter EM272 £50, UCI £85 Weltz atu £50, Datong antenna £35, Hygain 14AVQ +80m £50, IC2AT c/w charger £150, Millen gdo £30, Transam Tuscan computer £400, Vanguard 432MHz converter £25, 430MHz pre-amp £15, 2m Co-Linear £25, 18AVT 10-80m vertical £70, Datong FL3 multimode filter £60. Tel Little Chalfont 3720 after 6.30 pm Mon-Fri anytime weekends, ask for Terry G4ZCU QTHR

HF5V multiband vertical antenna c/w radials £60. G4URJ QTHR tel. Hindhead 5501 evenings or weekends.

Icom 2E & 4E with h/duty case & nicad pack, each £150. Wanted, Army No.22 set in working condition G4YUG QTHR tel (0473) 830147.

Trio JR500S rx c/w h/b top band converter, gwo, £60 P1..P.RTTY terminal unit and bar graph indicator with circuit & interface dets £20. phone 01-290 5827 (Bromley, Kent) after 5.45pm. G4TJE, NOT QTHR.

Trio TS510 & PS510 80-10m TX/RX £175. S.S.M Europa xvtr 144/28, book, cables, conversion to 50 MHz £50, Taylor Instruments valve tester 45C charts £35, Avo valve tester £15, Taylor Instruments oscilloscope, 30A "Winsor" S/Beam £30, Heathkit rx RG-1 , sort of working, £15. Trio TR2200G 2m FM with sling, fully xtalled £80. Whole lot £360, prefer cash & carry, carriage xtra. G4HBU QTHR tel Bristol 719923 (day) 611093 (eve).

100 yd drum UR65 75 ohm coax, 7dB/100' at 1GHz, new unused (superior UR57) £32 ono. G3XMB QTHR tel Chelmsford 320747.

FT200/FP200 tx/rx, 10-80m c/w mic & Planet speech processor, now surplus to requirements, £150, buyer collects. G3MYO QTHR tel Malvern 64044.

Trio TR7730 2m FM mobile, 25W out, £140. G4YJO QTHR tel 0634 43875

AR40 rotator c/w 15m 5-wire lead £70, buyer collects. G4MAQ, 46 Bernwood Road, Headington Oxford OX3 9LQ.

Icom 730, vgc, £400, or exchange for TS120S/TS130S G4JFE QTHR tel Newbury 41613.

TS820 c/w digital read out, first class condition recently revalved by Lowe, £480. Galvanised steel lattice mast, three 10ft sections in good cond. £45. G4GBN QTHR tel 0935 862505.

Creed 2300 teleprinter, £70. Transtel AF11R matrix printer 50 & 75 bauds, £55. H/B QRO transmatch inc balun £35. Gould MG12-10B smps, 12.5V 10A, perfect, £35. G4GXE QTHR tel Buxton (0298) 71410.

Eddystone EA12 rx c/w full set replacement valves, exc cond, £135. KW Vespa c/w replacement valves inc 6HF5s. G3AUZ QTHR tel (0909) 473893.

Heathkit HW-100 80-10m ssb/CW txcvr, gwo but needs new valves and xtals. £75 ono Richard G4EPO, QTHR tel St. Albans (0727) 36201.

20 IRCs for £5.75 inc postage, Parkes, 6 Hazeley Close, Hartley Witney, Basingstoke, Hants RG27 8QS.

Yaesu FT757GX 9 months old, MH1BB mic, mint condition. Genuine reason for sale. 15 months importers' warranty to run. £620. Free delivery U.K. G6XEZ QTHR tel Leicester 773908.

2m stn clearance, Trio 9000 £280, Icom ICPS20 20A c/w spkr £89, MML100/144-5 £115, 4 mths old, KR400RC c/w top & bottom clamps £89,Hirschman 250 used as elevator £29, Adonis 503 desk compressor mike £25, Icom ICHP1 headphones £10, Drae VHF wavemeter £18, Antennas: MET 19L yagi £38 5/8 + 1/4 wave folding whips (new) + gutter mount £7. G6PBG QTHR tel Crawley (0293) 510491 evenings.

FT708R, nicad charger etc. As new in mint condition hardly used. Future XYL & I are saving up, hence sale. GW4UWD QTHR tel 0654 710548, daytime only.

2m FM txcvrs & HF rx IC2Y & IC22,both 10W repeaters £110 & £95 ono Eddystone 940 rx, very sensitive & selective 550-30MHz, £115 ono. G6XRP tel Luton 423495 anytime.

Philips VLP600 Laservisions inc 37 discs £450, Kenwood DM-81 dip meter, boxed, immaculate £45, Jaybeam TB3 triband beam £110. G4PGX QTHR tel Burton on Trent (0283) 46367 after 6pm.

RTTY "Colour Genie" 32K TU. Radsoft RTTY CW. QRA Loc. contest log, manuals plus tech manual, demo tapes. Reason for sale, eye trouble, bargain at £90 ono. G3MMM QTHR.

Yaesu FT980 HF txcvr c/w hand mike, filters etc. Yaesu YS2000 power meter. Drake DL1000 dummy load. All brand new in original cartons, must sell. First reasonable offer secures. Ring Chas, G4UJW, 01-346 8597.

Collins enthusiasts, KWM1, working but needs attention, original handbook. Old KWM2A some knobs missing otherwise complete with handbook and PSU. Wish I had time to renovate. My loss your gain, offers,p/x why? G4BWP not QTHR tel Newmarket 0638 751830,

FT757GX c/w heavy duty psu & linear switch, scan mic, 2 paddle key, £765. Polar 70cm 2C39A 50W linear, built-in psu, £85. 70cm 12X Yagi £25. Buyer collects. G4NUM QTHR tel 0532 686016.

Trio TR7800 25W FM, 15 memory c/w battery backup, mic, up/down buttons, priority channel, mobile mount etc. £150. MK704 squeeze paddle boxed £7. G3OGP QTHR tel Rudgwick (0403 72) 2275.

C64 Tape, £115 ono, terminal unit interface £18 introduction basic part 1 £6, Ref guide £4, Music Maker £18,Music composer £5 multisound synthesiser £7, stereo deck £7, music 64 £3, Grand master chess £3. G3OAB Birmingham tel 021-747 8489.

AOR AR2001, the best 25-550 MHz AM/FM rx, £250. G3YXZ QTHR. Maidenhead 27350.

Sony Beta Hifi video recorder, 15 tapes, new Jan 1985. Below average mileage £350. Buyer collects. GW8ARC QTHR. Phone 0222 615366, evenings (Cardiff)

Pair KEF Cadenza speakers, 3 unit system, exc cond, £75 & p&p. Also Vega 402D DX TV, tunable VHF/UHF c/w Antiference high gain aerial, never used outside, £55 plus p&p. Chorley, tel Lymington 45231.

FR101D rx, amateur & broadcast bands, VHF 6m & 2m USB, LSB, CW, AM, FM RTTY, instr. manual £175 plus delivery charge. GW8TKM QTHR, Ferryside 649.

MMT 144/28 xvtr, £65. 144MHz converter, bipolar RF stage plus 2 MOSFETS for oscillator & mixer (70MHz xtal) IF out 4-6MHz, £6. G3BDK QTHR tel Towcester 52309.

AT5, mint, hardly used. MF455-10K mechanical filter audio phase shift network, bandwidth 350Hz with 3 matching audio xformers, offers for any item. G2HKQ QTHR.

Breaking for spares, rxs SX24, SX28. Wanted, frequency scale pointer for R1155. G3OWY QTHR tel (0244) 381051, evenings.

QTH Brigg, S Humberside. Georgian style 3 bed detached house and garage, C/H, double glazing, cavity and roof insulation. A desirable residence with permission for 30ft tower. Only £38750. G4ZMH QTHR tel 0652 54917.

Kenwood TR7950 2m FM txcvr, 5/45w output c/w MC4 scanning mic & mounting bracket,never used mobile, £250. G0ARF QTHR tel Pembridge (05447) 350 (Herefordshire).

Mobile antenna or fixed station where compact unobtrusive installation desired. G-whip multimobile self-selecting system for 80/20/15/10 metres with extra extenda-rod, 560W ssb input used once only, cost £62, sell £42. Graham, G4VOE QTHR, tel: 061-740 4126.

TA33 Junior, £60. G4DUF QTHR tel Wormley 2104.

10m FM rigs, DNT M40FM modified 29.31-29.7MHz brand new, tested £40 each, post paid. Kenwood TR8400 70cm FM tx, mint, £185 ono. JWR 10 FM rig £35. G4SNO tel 0562 710817 evenings or weekends. Not QTHR.

IC2E imac. £125, 2 x QQV06-40 £4 ea, Solavox 60w hifi speakers £20, Transtel dot-matrix printer 75/300 baud RS432 £20, PW, ETI, PE, WW mags lots. Tony G8YUE tel 01-568 0994.

Yaesu FT101ZD Mk3, CW filter, FM, fan, mic, manual, £490. Also Wavemeter Class D No 2 with manual £15. G3XFB QTHR. Tel 0902 850033.

726R 2m mint. Offers or will swop for Trio 930S with auto ATU, cash adjust. Microdot RTTY, cw terminal, inbuilt VDU £175. Triple 7/8 2m vertical £25. 16 ele bcx 2m homebrew £22. G4YNI QTHR tel 061-740 7708.

Swap Commodore 16 & datacorder plus 48k Spectrum with assorted software for HF txcvr or tx in gwo. Please write to Paul, G0AIP QTHR.

Icom 70cm M/H pre-amp (suit 451/471) sell. exch. Mutek Dressler equivalent. 2x9 ele Tonna £20. YM-48 mic (FT480/726) £20. SX-200N scanner £195. BNOS LPM432-10-50 £150. WE1145 rotator £25. CBM 4032/12 plus software, offers?. Phone Rayleigh (0268)774089 after 1400hrs, P/X possible.

Trio TR2400 handheld ST1 base stand/charger, quick charger, hard leather case, separate hand mic for base use MC30S, manuals, orig. packing, £160 comp. G6NPN QTHR tel Hassocks 3472 after 7pm.

Yaesu FT2700RH 25W duplex 2m/70cm transceiver. Absolutely mint, boxed, cost £539-£395. Alinco ELH260D linear 2m, 60W+ preamp (ideal for FT290R) £114 new-£69. Welz SP45M 140-500MHz £39. Yaesu FT404R 3W, 70cm handheld + extras £120. Wanted FT290R/FT790R. G4HKS 01-998 4936 after 8pm.

Heathkit HW101 txcvr, vgc, 80-10m, 100W, £130, G0AAR QTHR tel Bury St Edmunds 61333.

Yaesu FT200 hf tx/rx, 80m-10m, 300W, ssb/am/cw, ideal starter for hf bands, £200 c/w operating manual. Can deliver if required. Contact G4OIE QTHR tel Mansfield (0623) 810944.

TS180S hf transceiver, super rig, complete with PSU, SP180 and both optional filters fitted, £450. Also Creed teleprinter and tape punch, £10. Buyer(s) collect. G4JYW NOT QTHR tel 0482 802074.

R2000 all mode gen cov rx with 10 freq memory. As new cond, c/w manual and orig packing £300. FRT7700 ATU also as new, £30. G6WOH QTHR tel 029384 542.

TS930S fitted ATU, both cw filters, mic, immaculate, cost £1600, sell £995. Yaesu FT1000 1kW linear £250. Ham International 25A PSU, £75. G4WDZ NOT QTHR, 37 New Street, St.Neots, Cambs. Tel 0480 217026 after 6pm.

RTTY clearout. MM4000 V4.1 transceiver incl keyboard - RTTY without losing your computer, £160. Kantronics "Mini-Terminal", integral display, portable, £160. Kantronics "The Interface", TTL compatible, Apple software available, all cables, manuals, etc, £120. Peter, G8PRR tel 01-340 4139.

Trio 520S c/w SP520, remote VFO, vgc, £400 ono. Amstrad CPC464 with colour monitor, Epsom FX80 printer, joystick, dust covers, and too much software to detail here. Only £500 the lot. G4EJP QTHR tel 0401 50397 evenings

Trio TM201A as new, 7/8 boot mount, £250. TR9000 PSU, 5/8 mag halo, £250. 10 ele parabeam £20. Colinear £15. Rotator and 8 ele ZL £25. Possible exchange hf rx tx/rx. G8ZGY QTHR tel Scunthorpe 710747.

BBC model B computer, 1.2 OS, fitted UDM double density disc interface + Wordwise, Beebcalc, +EXMON chips. UDM dual 2 x 100k (400 d/den) disc drives, Epsom RX80 printer, Beebug m/file disc, 30 Beebug tapes & mags, 50+ 5.5" discs and container, 3,000 sheets fanfold paper, 8,000 labels 89x36mm, approx 50 assorted tapes; RTTY, games, m/c etc. All in mint condition. Retail value over £1250 - bargain at £750. Please no offers at this price. Consider AR2001 or similar in part exchange. Buyer collects or pay carriage. G4NKH QTHR. Tel 0253 62925.

TR2300 c/w nicads, all accessories, £100. Matching VB2300 10W PA, £30. Regulated protected AC PSU, £20. All vgc. G3THA, QTHR. Tel 07048 77169.

Yaesu linear amplifier HF80-10 FL-2100B vgc. £350. Phone Ruislip 30627, G4SSX QTHR.

FT290 hardly used £235. 1296MHz MM transverter from 144MHz £150. 1296MHz 2C39 PA cavity £50. 4x23 ele 23cms beams £100. FT207 £85. FT720RU 70cms + switch box, £160. FT720RH 2m, 25W, £150. Sailor RT144 marine vhf £285. 432MHz tv tx c/w rx convertor £90. Linear suitable to mod for 70cms (2x4CX250B) £60. Linear suitable to mod to 2m (2x 4CX250B) £75. 4CX250FG valves, ex-equip £6. 2m 19 ele boomer, £45. Phone working hours 0703 868886, ask for Richard, G4CVI.

Creed 444 teleprinter, dust cover and paper, £40. PAG TU £50, could deliver within limited radius. G0CFB tel Ubbeston 403 evenings.

Telex Hy-Gain TH5DX Thunderbird 5 element beam. Reasonable offers please or would consider swap for 3 element beam. G4WXD. Phone John 0823 442512 evenings or weekends.

Datong D70 morse tutor, mint condition hardly used £40. G6ZER QTHR tel 0604 891258 evenings.

Lowe SRX30, £75. Realistic PRO2008 scanner, £50, Sharp PC1211 pocket computer with books, £25. GW4YDF QTHR tel Llanharan (0443) 223223.

Tono 7000E TU keyboard, transceive CW, RTTY, ASCII. Direct connections for any transceiver, gwo, £300 ono. FL2000B linear amp, 1200W PEP, working order, £150 ono. Buyer collect only. G4BAL QTHR tel 01-302 4062 anytime up to 7pm.

B40 vgc £35. Hirschmann rotator control box plus bottom bearing £45. Zetagi BV131 linear, £30. G0CKB Tel 0206 575035.

KW Vanguard MK II HF TX. CW and phone. 100W output. Very bulky. Buyer collects. £50 or offer. G6GRU QTHR tel 0752 894987

LF choke "Varley" 20H-120mA-250 ohms, £3. 57' screened cable, 12 coded wires, 20 swg pvc covered 9/16" dia, £6. Receiver antenna tuner "Joymatch",£4. Details on 1959 G2DAF tx. 6EW6, £1. G3MBL, 32 Heldhaw Road, Bury St.Edmunds, Suffolk tel 0284 60984.

70cm linear HL20U, 2W in, 25W out, £72. MET 144/19T 19 ele Yagi, £40. Both mint, ono. Richard Mason G6HKS QTHR tel Wisbech 584640.

Marconi 10-480MHz signal generator, model 801D, mint condition with manual, £85 ono. Four 4CX250B, £8 ea. Two HF bases mounted on diecast grid cavity with snail blower, £9. G4PXW tel Maidstone (0622) 51844 after 8pm.

Creed 444, £25. Creed 75, £20. Complete BBC to teleprinter interface, neat, mains powered, with cable to printer port and good printer driver software. (variable character buffer, full punctuation by overprinting, RAM or swRAM/ROM based) £20. G3VPX tel Preston 719633.

Icom IC251E c/w Mutek board, £420. Datong D75 speech processor, £40. Daiwa CN620A cross-needle SWR meter, £50. 10m H100 coax with Greenpar N connectors (unused), £10. 9 ele Tonna (unused), £10. All in exc cond, not used mobile. Peter, tel 01-885 1162.

Electroniques transistor ham bands front end and IF strip with xtal filter. Eddystone drive unit type 898. Offers. G3NAZ QTHR tel 0473 685837.

Creed model 15B teleprinter with perforator, reader requires PSU, £35. Navy tx AP100337 1.6-16MHz c/w matching rx AP100335, £100 pair. Army C11 (L556) tx 2-16MHz cw/ssb/dsb 5/160W, £60. Army bench PSU type gives all supplies for manpacks with 4 separate meters, £25. HW7 tx/rx c/w HW7-A-1 psu, manuals, £40. Helford tx/rx G4CLF board, complete plus all other bits to 25W, with all info, £40. Buyers to inspect, collect. G3LYU QTHR tel Leicester (0533) 876459 after 6pm.

FDK Multi 700AX 2m FM, 1-25W variable output, good cond c/w mobile mount, tone burst, repeater shift, £110 ono. G1HFY QTHR tel 02214 64306

Kango diesel generator 3.0KVA, 2.4KW, 1ph. 120/240V, 25/12.5A, good condition, £350. Will exchange for BBC micro with disc drive. Pioneer car radio, £15. Gnome enlarger plus accessories, £25. Transformer 500VA, secondaries 6/8/10/12V 41.6A plus h/duty rectifiers, offers, G3UXH tel 0634 250562.

Datong D70 morse tutor, vgc, boxed £40 or exchange for quality ATU plus cash adjustment either way. Keith ex-G6RPM, now G0CUT. Tel Aylesbury 86916 after 6pm midweek.

Heath SB620 scanalyser, mint cond. £65 plus carr. or buyer collects. G4AXS QTHR tel 0227 831709.

FT101B, Shure 401A mic, two sets PAs & drivers £285. 7360s £5. 811As £6. Labgear wideband coupler £5. 813 bases, heater transformer, choke £35. 5B254M £7.50, 5B258M £7.50. EL34 £1.50, KT88 £5. Postage extra. G3VCV QTHR tel 0480 51232.

KW2000A good working station c/w psu, mic "Shure", home brew ATU, will split. FT202 h/held fully xtal'd. Battery charger, nicads, working well. Price KW £165, ATU £5, FT202 £70 + mic, ONOs. Tel 0473 77440 after 6.00pm.

Microdot 2 RTTY/cw terminal unit, built in monitor, mint condition. Wanted TS130V or similar QRP rig, possible part exchange with cash adjustment. Must be mint. Ring Stuart G4OOK QTHR 0642 211685.

Collins KWM-2A, 516-F2, £400. 312B-5 VFO, £150. 75S-3B £200. PM2 PSU £75 or the lot for £750. Z-match and vswr meter in G-line cabinet, £40. G3CGK QTHR tel 0954 210374. Cambs.

Yaesu FT290R c/w Mutek front end, nicads etc. Also Microwave Modules 144/100LS linear amplifier. All boxed as new. Offers. Wanted: Yaesu 902DM, also FT7B. Must be mint. Cash waiting. Tel Irvine 217611.

TW4000A is again for sale due to more time-wasters in exc cond with original packing, £395 ono. Tel G6JNS 0905 620041 anytime.

Back numbers: Rad Com, June 1976-Dec 1983. Short Wave Mag: April 1975-Feb 1981. RST: Aug 1980-July 1981 inclusive. Plus odd copies SWM April 1981- April 1982. £25 lot, prefer buyer collects. RS36829 tel 01-749-0322.

IC251E 2m tx/rx, mint cond, orig packing with MMA 144V RF switched preamp, £375. G4XQN QTHR tel 091-236 2437.

FDK Multi 700EX in perfect condition, £130. Adonis mobile mic £12. Mag mount antenna 1/4 or 5/8 wave £12. All ono. G4TQJ NOT QTHR tel Tadley (07356) 2594 after 6.30pm.

TS780 dual band all mode 2m + 70cm c/w MC60 desk mic, SP70 speaker, little used. Transport needs force reluctant sale. £750 ono. Tel 01-267 6257 days. G6HSL QTHR.

SB2M 2m ssb portable, £60. MM4001KB RTTY tx/rx £175, Daiwa 2m 6dB linear with preamp, max drive 4W, £30. Daiwa infra-red mobile mic, £25. 9R59D rx, £40. Prefer buyer collects; will haggle. G8UYD NOT QTHR tel Mansfield 652093 after 6pm.

TS120V, DFC230 controller, both items absolutely mint, never used on transmit, c/w handbooks, workshop manuals, orig packing £325. SM220 monitorscope, mint, handbook and manual £160 GW8IQC QTHR tel 0633 894708 after 6pm.

New Telecommunication Antenna Systems 40ft 4-section wall mounting antenna tower, type F7. Very compact; retracted length including head 16ft. Complete all fittings, £330 inc delivery most parts UK. Genuine reason for reluctant sale. Ron G3XTN QTHR tel 0926 511579.

Yaesu FT708R 70cm h/held transceiver c/w YM24a spkr/mic,NC-8 charger/psu, used mainly as base station, 18 months old, exc cond, £190 ono or part exchange for FT790R. Details from Rob, G1GHA, QTHR tel 021-350 1473.

FRG7 gen cov rx, exc cond, manual, no mods, £120. G4VVH Geoff QTHR Milton Keynes tel 0908 665100

FT225RD, mic, handbook, mint, £525. Katsumi message keyer model MK1024, £75. Ex WD telescopic steel mast, 6 to 20 ft, £10. 8 ele 2m yagi c/w rotator & cable, £25. Wanted: FRG8800 with converter, G5HX QTHR tel Coventry 412397.

Trio TW4000A dual bander 70/144, 5/25 both bands. Fitted voice synth, packing etc, £385 or possible part exchange YO901 scope or 2m handheld. G6MUK NOT QTHR tel 0837 3207.

Mobile antenna, Hi-Gain Hamcat c/w full set loading coils, £40. Jaybeam 4Y/4M £20. Auto transformer 500W 230/115V Gardners £12. Advance CVT 150W, £10. G3SNN tel 0452 70407. Wanted, crank-up tower.

Hirschmann RO250 rotator £20. Jaybeam 4m 4el yagi £15. Jaybeam SBM6 £10. Buyer collects. GW4BZI QTHR tel 0244 675794.

Yaesu FT902M, FTV901R, FC902, TA33, Q6/2M, Welz CT300, Hanson FS50HP, all new cond never used. Cost £2,000 sell £1,200 no offers, no splits, incl switches, coax etc. Will take cabin cruiser part payment. Tel 04895 4822.

Icom R71 rx incl FL44A high grade SSB filter, EX275 FM board, CK70 DC kit, RC11 infra-red remote control, all fitted when new 18 mths ago, current list price £917 inc. New cond £600 ono. G0BII (QTHR G8CCI) tel 0865 880229.

Heathkit IM-13U valve voltmeter, £15. 6' professional 19" equipment rack, lockable rear door, some panels of instrumentation. Ex condx suit complete Racal station, £40. Leak mono trough-line FM tuner, £10. Almost new computer trolley, £30. G0BII (QTHR G8CCI) tel: 0865 880229.

Antennas: 70cm 3x5/8 colinear, £20. 2m vertical colinear, £15, both base stn types. 2m/70cm dual band mobile whip, £10. Jaybeam circular phasing harness PHM/2C, £5. Welz CH20N coaxial switch, £10 Signal generator, £15. G6VCI QTHR Royston tel 0763 61102.

Standard C110 handheld, Japanese model c/w nicads, charger, spare battery pack, £70 ono. G4VAF QTHR tel Brighton 508713.

FT230R 3/25w mobile txcvr, manual, bracket etc. Just over 1 year old, good cond, used little, £210 ono. G1HEY QTHR tel 0623 648802 evenings.

TR8400 70cm transceiver, 1/10W, c/w manual, carton, push-button mic, mobile magmount antenna, lead, £165. Katsumi EK121 electronic keyer, £18. G2WQ QTHR, tel 0691 71 3675.

TS430S, PS430, SP430, FM board, all boxed, prefer buyer inspects & collects, £725. Consider swap for FT902DM line, ATU etc or TS830S line, ATU etc. Xvtr, MM 28/144 as new, £70. Dave GW4VDP QTHR tel Holyhead 2197.

PSU, 9-16V adj 25A+, fully regulated & protected, made by IBM, £38. As above but 12.5A £16. Advance 0-15V 10A £20. G4XOX QTHR tel 0245 324555.

IC740 txcvr with ICPS15 psu, little used, £600. Yaesu FC902 500w atu, all bands, £75. Creed 444 teleprinter with extras and paper, £40. G3JTQ QTHR tel Highcliffe 77767 after 6pm.

Codar 160/80m Tx AT5, Rx T28, mains psu 250MS, 12V psu 12MS, remote control unit 12RC, leads, pamphlets. Rx inter. £25. G3UVS QTHR tel Plymouth (0752) 774405.

100w 2m linear MML100LS 3w-in/100w-out, current model, bargain at £120 ono. G6DOD QTHR tel Luton (0582) 452731 or 01-422 2428.

48 ele multibeam, 88 ele multibeam, 8/8 2m. 2 off 5000 series Sony VTRs, 1 off 2000 series VTR, parts interchangeable. 40 1/2" tapes. 19" colour monitor. DL2RZ fast-slow convertor. 14" Airmec long persistent display scope. Cheap clearance. G8MFG QTHR.

Dressler D200 2m amplifier, 400W plus on FM, 1kW power meter and dummy load, £450 ono. Jaybeam 70cm 48 ele multibeam, £20. KW Match vswr bridge. G6WIL tel 01-520 6020 anytime.

HRO-MX rx complete coil set, no psu, £25. 4 x GE Pyranol capacitors 1uF 18.7kV, offers. G4HXX QTHR.

TW4000A, exc cond, orig packing, £395. Kenpro KP600 memory keyer, £100. Tono 6000E CW RTTY send/receive unit, cost new £800 sell £425. G6JNS QTHR tel 0905 620041 anytime.

Trio-Kenwood service manual for TS130S/V, VF0120, AT120, PS30, £7.50 incl p&p. G3ILO tel Nailsworth (0453 83) 3411.

MM4001 RTTY ASCII computer & keyboard, exc cond, accept £200 ovno. G4INP QTHR.

Shack clearout. Yaesu FT480R, 2m multimode £200. FT708 70cm hand-held with charger, £130. FT757GX £600. FP757 h/duty PSU, £150. FL2100B hf linear, £250. CT300 1kW dummy load, £35. SEM transmatch 180-10, £40. 2M8X yagi, £15. LF30A 1kW low pass filter £15. Drae vhf wave meter £15. Trio gdo 0.7-250MHz £35. HF5 vertical £25. Scarab RTTY for Spectrum 48k, MPTU1, interface, software, £70. All equip in gwo. G4WSN QTHR tel 0743 62393.

Heavy duty triangular tubular mast, 3x10' sections tapered with 10' round tube top section, tilt-over base, galvanised & epoxy coated, £225. G1AEA QTHR.

AMT-2 hi-tones version of this excellent tu. 2125/2296 Hz. Phone Ken, 021-459 7041 with offers around £150. G4RPV QTHR.

Smith-Corona TP1 daisy wheel printer, hardly used, spare wheels and ribbons, fully working, £95 ono. Also interface for Commodore. G8JVD tel Wickford (03744) 66595 after 6.30pm.

Yaesu FT290R 2m multimode, nicads, charger, mint condx, £285. Also MM linear, suit FT290R, £50. G1FWQ tel Bordon 8125 evenings.

FT726R 2m, £575 ono. Altron tower, 42ft wall mounting, winch needs repair, £250. G8DGR NOT QTHR tel Woolhampton 712462.

Spectrum analyser, Hewlett Packard 8551B, 851B, 10MHz to 42GHz, late model with solid-state electronics, spare BWO, £750 ono. Sweep osc HP694D 8 to 12.4GHz, £180. HP431C power meter, nicads, needs head, £55. Chris, tel Oxford 750681.

Heathkit HW12 80m ssb tx/rx, £50. G3VGC, QTHR tel 01-659 0845.

Casio PB-300 personal computer with built-in printer & cassette interface, approx 6.5" x 3.5", as new, incl case & batteries, £75. Roy G1NCY tel: Oxford (0865) 880997.

Yaesu FT301 hf txcvr, matching psu, £300. Swan 1200 hf linear amp £75. MM144/28 xvtr as new, £75. MM432/144 xvtr with attenuator, £90. 4 ele 70MHz Jaybeam (brand new) £20. 14 ele Parabeam, 15m cable (only used in 3 contests) £30. 4 ele 144MHz Jaybeam quad (used) £10. 46 ele 432MHz multibeam (used) £5. 80/40m trapped vertical (never used) £10. AR30 rotator + cable £20. SWR/power meter £5. Tokyo 80-10m ATU £20. Junker morse key £20. Datong DT1 £5. 2 x Dragon 32s, one faulty, c/w manual & 5 books on Dragon, £75. Iwatsu SS5711 100MHz, 4 trace scope £400. Soligor telephoto zoom lens 90-230mm £75. Contact Ian 07555 4840 weekends only.

Belcom LS102L all modes 28-30MHz, 10w, ideal for 10m mobile, £160. G4XWZ QTHR tel 04536 70267.

Westower 12 metre telescopic tiltover tower, framed baseplate type with auto-braked winches. As new, buyer arranges transport, £400 ono. Paul, G4IJE NOT QTHR tel 0279 89482.

FT101Z old bands, fitted cw filter and fan. Recently checked by supplier. Mainly used cw 80W, £335 ovno. G3KLT NOT QTHR tel 08444 3279 day, 08444 4691 evenings/weekends. Deliver 50 miles Aylesbury.

First £80 secures G4MH Minibeam c/w AR1002 50kg rotator, controller, 4' stub, 15m UR67, 15m 3 core control cable. GM4WEQ QTHR tel 0382 552362.

SEM Z match £35, antenna noise bridge £8, Advance DVM £20, Advance 50 MHz counter £30, HP DVM £40, Maplin audio oscillator £25, Tektronics P6045 FET probe, Ferranti DVM £15, Armstrong 626 tuner/amp £ 15. G6BAN QTHR tel Glossop 65752.

Azden PCS4000 2m FM mobile, 5/35w, 16 memories, scanning, 600kHz +/- shift, 16 key touchtone control pad, 5/10kHz steps, microprocessor controlled, 2"x 5.5"x 6.75", scanning mic, manual, £190, consider exch multimode. G1MXP, 69 Alderley Way, Cramlington, Northumberland.

FT208R, car adaptor, spkr/mic, nicads, charger, £140. Wanted: IC2E. SEM 10/50W 2m amp & Rx preamp, £30, Tonna 5 ele yagi £15. Wanted: 10/40m vertical antenna. G3NQX QTHR tel 0539 28166.

TS130V, £400. IC202S, £115. IC240, £100. Heathkit HW17A, £45. RAF aircraft morse keys, £4.50. Pentax SV, £40. Exarta VX1000, £75. EXA1A, £25. Puch K 50cc moped, 162 miles, £200. G3AFN tel Rudgwick 2500.

Collins S Line, 7533 rx/3253 tx, separates or transceive, cw filter, recently revalved, cleaned, realigned, superb cond (more sensitive than TS930S on 10m!) £425. 60ft versatower c/w motorised winch & ground post (buyer to help dismantle) poss deliver within reasonable distance, £400. 4 ele 3 band quad, fibreglass spreaders, W2AU centre supports £100. Ham-M rotator £50. Heathkit 5 way coax remote switch £50. Datong ASP processor £50. G3HCV QTHR tel 0386 870052.

Yaesu FT708 70cm h/held, NC8C base psu/charger, FNB2 spare nicad pack, FBA2 charging sleeve, MMB10 mobile bracket, YM24A spkr/mic, half-wave flexible £240, might split. Drae morse tutor, mains, £35. G6IOB NOT QTHR tel 0692 630224.

FC107 atu with separate swr & power meters on front panel, £80. BK100 bug-key, £25. KW EZI-match atu, £40. Datong FL1 audio peak & notch filter, £40. G3JYT tel 01-866 3878.

TRIO 940, new, save money. TL922 linear amp, new. Trio 430 as new. Wanted KWM 380, must be good cond or Corsair MkII. Cash waiting. Ring Derby 557705.

KW202 rx, spkr, KW204 tx, mic, new PA's recently fitted, leads, handbooks, vgc, delivery 50 miles, £175. G4VQJ QTHR tel Romsey 390565.

2m xvtr module, all model's FTV, cost £170, will accept £100 or what have you got to exchange? Tel Ballymena 40173.

MM converter 436/28, h/b 2m FM tx linear, Pye UHF base station, Westminster tx+rx strips. Lots of junk, 4CX250B's, bases etc. All cheap to clear. See other advert for aerials and video. G8MFC tel Reading (0734) 29808

Lunar solid state linear 160-10m, 3/10W in, 100W out, £55. KM4000 memory keyer board, ideal m/s, new, £30. Ultimatic MkII keyer, autospacing, £20. Pye Pocketfones, RB0, £30. Robertson tel 0908 567362 evenings.

FT757GX plus MH1 scan mic, little used, original packing, penury forces sale, £600. G4OSJ QTHR tel 0572 85 451.

23cm xvtr, SOTA 1296/144MHz, 2W rf out, £85 ono plus postage. G8AYY QTHR tel 021-783 2996 evenings or weekends only.

Heathkit HW100 tx & psu, 80-10m, new pa & driver valves fitted recently, manual, vgc, ideal for new class A, £130. G4VZF QTHR tel Brentwood (0277) 354822.

FT101E c/w FM board, desk mic, Yaesu extn spkr, vgc, £425. Tony G1IWV QTHR tel 0964 70395.

HF linear, QY4-400, £150. BC221 £16. 2m xvtr, 6-40 pa, £50. G4MH minibeam, AR40 rotator, 22m cable/ coax £140. SWR bridges, atus, LV/HV psu. QQV06-40, QQV03-20, £10. Valves, transistors, components, tools, SAE list. G2ANT c/o G3UFY QTHR tel 01-684 6903

Yaesu FRDX400 rx, converters, filters, Sommerkamp FLDX500 tx, both vgc, manuals, £225 ono pr. YD148 desk-mic, £15. Swr bridge, 3.5-150MHz, twin meter, £10. Carriage at cost. G4LPM QTHR tel Dereham (0362) 5591.

Sony CCD-V8E 8mm camcorder with extras, little used and in mint condition. Cost £1200, will swap for TS930S, Icom 751 with PSU. Why? Ring Bill G4EMG 01-534 3460 evenings, 01-553 7308 days.

VFO230 £125 ono. DNT M40FM converted cb, 40 chnls 29.31-29.7 MHz FM with 25W amp & adjustable vertical antenna £45 ono. Please collect and try before you buy. G4JIZ QTHR tel 0629 81 2398.

RA17 in case, good working order with Racal manual, £120. Buyer collects. RS39580 Phone 0925 764797, Culcheth near Warrington.

Kenwood TS770E 2m/70cm dual band multimode base, digital readout, 8 memories, search/scan facility, hbk, boxed, vgc. £525. G3WEX QTHR tel 021-354 4265

TS770E dual band base multimode, £495. Metalfayre: 19 el 70cm, £27; 7el 2m, £19, still in pkts. Shure 526T mic, £37. 2m/10m converter, £12. Convertible DNT, £15. 4 way diecast antenna switch, 500MHz, £27. G4SYR QTHR tel 01-554 3544.

Trio TS820S, JR599, TS700S, must be in top condition. GM8BDX QTHR tel 0361 83221.

TRIO TR2400 2m handheld, direct entry, microprocessor controlled, 10 memories, repeater shift, nicads, charger, speaker-mic, rubber duck, case, service & instruction manuals, perfect, original packing, £110. G0AAT tel Worcester 359333 evenings.

HF beams: TET HB33M 10-15-20m minibeam, brand new, never assembled £199. Altron 6-20 minibeam, up 12 months, VGC, excellent performer for size, £55. Delivery possible SE London. Phil tel Gravesend 64224.

Trio TS520S txcvr 160-10m c/w VFO520, SP520, pristine condition £320. HF atu, coax/balanced feeder,80-10m £40. 29 MHz FM txcvr, rptr shift, rf gain etc, £40. Trio TR7800 2m FM txcvr, 25W, £210. Mike tel Preston (0772) 635560.

Drake R4C rx, pristine cond, serial No. 28000+, fitted noise blanker, 250Hz/500Hz/1200Hz filters, 160 xtal all 10m, boxed, manual, £375 no offers. Epson FX80 dot-matrix printer, £300. Trippler C64 interface, £35. Wanted, Eddystone gdo. G3RCQ tel Hornchurch 55733.

Yaesu FTDX560, good condition, 200W into antenna, £165. Hi-fi speaker £5. G4AMW QTHR tel 0202 741430

Slow/fast & fast/slow scan converter, home-brew using Robot pcb. G4FBZ QTHR tel 0952 613824.

Philips 70cm txcvr model FM321, complete, £135 inc p&p. Kenwood HF rx model R600, clean and to spec, £150. G8LT QTHR tel 0327 860321.

Yaesu FT757GX all mode HF txcvr, YM35 scan mic, handbook & technical supplement, original packing, £575. Wanted, more basic HF txcvr, prefer 9 band SSB/CW with CW filter. G4YSS QTHR tel 0723 863137

50W broadband PA 2-30MHz, FP107 psu, £85. Various PA transistors, car stereo cassette radio, £19. Portable tape cassette, cost £34 sell £12. Trio stereo reel to reel tape recorder, £25 why? Wanted: Atlas, working or faulty. G3MXO tel 021-788 0518.

Trio R600 rx purchased by owner from Lowe Electronics, as new, boxed, manual etc, £255 ono. Buyer collects. D.Mathews tel 01-876 7868.

Nascom 2 cased with psu, including cassette recorder, assembler, disassembler, debugger, word processor, chess, graphics, NASSYS 1+3 system, music board and progs, documentation, books and RTTY program, £120 ono. G8JVD tel Wickford (03744) 66595 after 6.30pm.

WANTED

Wanted, FT225RD cash waiting good price paid. Modified or unmodified phone anytime 0498-21372 Ken G4IZW. Also 2M FM mobile tx, mint condition Yaesu preferred, would consider any multimode, will pay all expenses.

Heath HP23 AC PSU with manual Alfred Brown G4ADW tel 0204 62520 QTHR

£20 for you if you send me a pre-war QSL card from Andrew Young, VR6AY on Pitcairn. Card must be postally used and in fair condition. John Heys G3BDQ QTHR tel Hastings 812262.

95 MHz transmitter 25w WB FM for experimental broadcast of data. Also station recorder studio equipment & aerial pending licence. Offers to G3VMR QTHR or tel. 0628 24929 anytime.

Has anyone please got an Icom IC451 for sale? My IC251 needs a partner as she's fed up with driving transverters to give me 70cm. I will sell MM transverter if i get an IC451. Julian G6LOH tel Banbury 768152.

Heathkit 4 way aerial switch assembled or in kit form. Tel Canworthywater (056 681) 493.

FTV707 frame or exchange for FTV107. For sale, MML 432/20 linear and preamp £50, MMT 28/144 transverter OK 10 FM, £45. Star 8480 RS232 printer £75. All vgc and ono. Dave G3ZOI QTHR tel Reading 332777.

4CX1000A valve. Please state condition and price. P.O'Neill GW4UZL, Panteg, Ambleston, Haverfordwest, Dyfed SA62 5QZ.

Scope Dual Beam Solid State 15/20 MHz, pref portable. G4EUL tel Sandwich 611040.

Yaesu SP901 spkr unit please. Ray G4XXH QTHR tel 0256 881300

FT290R in good clean unmod cond, Securicor delivery paid if distance a problem G6GRU QTHR tel 0752 893966. Friend G3CJG seeks 2m fm trans like Trio 2300, his tel 0752 894987, immediate cash.

Wanted, Yaesu 902DM, must be in exc cond, cash waiting, also Yaesu FT7B or Shimizu required. Tel Irvine 217611.

Belcom VHF scanner, AMR217B h/duty rotator, minibeam tribander, HF linear, must be in exc cond. G0BNT, 10 Tor Road, Hartley, Plymouth Devon PL3 STD tel (0752) 777777.

ATU FC902 or similar, must be mint condition. G3NJP QTHR tel 0580 714482 (Cranbrook, Kent).

G3IGW going vertical, needs supply of or source of pvc balloons or ex W.D met. balloons. Please help QTHR.

Handbooks for Star ST-700 ssb tx & SR-700A rx, beg borrow or buy. G3XMB QTHR tel Chelmsford 320747.

Icom IC251E with or without Mutek front end. G3XKN QTHR Tel 05255 2207 (Bedfordshire).

Eddystone 888A rx, any cond considered, must be model "A" & BFO must be in good order. Would also consider BFO coil of BFO unit for 888A. Please contact G3VDL QTHR tel 02404 2268 (Bucks).

Suitcase tx/rxs, any spaces or damaged sets welcome, also any books etc. Also want wireless set (Canadian) No 29, any connecting leads etc. Any CCG (1945-56) comms publications. Taylor G3UCT, 1 Harewarren close, Wilton, Salisbury, Wilts tel 0722 244133.

Nec CQP2200E txcvr circuit diagram etc. for loan to copy. Will pay postage. Dave Barlow G1MZD, 112 Wolverton Road, Haversham, Milton Keynes, MK19 7AB tel 0908 310412.

Drake items required, B1000 accessory balun, 1608 TV, 3300 LPF 1531, MS 1536, AUX-7 rx only. G1DES QTHR tel Ruislip 33118.

WW2 RF Amplifier No 2 as used to increase range of 19 Set, also interested in any ancillary parts. Henry G8GAR tel 01-660 3043 after 6pm weekdays.

Hammarlund HQ 180: I am trying to obtain handbook or circuit for this rx. Will be grateful for loan for few days or buy. G3JWI QTHR tel 0277 218531.

FRG7700, R600, R1000 or similar HF RX in good working order. VHF converter useful. Tel 0794 68136 (Hants).

HF linear, TL922, FL2100Z, KW1000 or any over 500Ww in gwo, also TR9500 70cm txcvr to match my TR9000. G4IGC QTHR tel Coalville (0530) 36840.

VB2300 10W PA for matching to TR2300, must be in good cond. Contact Stan G8XPB NOT QTHR tel Hickle Trafford 301276.

Drake MS-4 spkr & cabinet, also TR4C or TR4 for spares etc. G4AGP QTHR tel 091-268 4605.

Wanted, Yaesu spkr unit SP980, SP901P or similar. G2FXS QTHR tel 0632 572852.

Transformer 1500-0-1500 or 2000 volts 750mA/1A for linear, W.H.Y? Tel Paul 061-724 8222.

Details of mods or improvements to National NCX-5 txcvr, information can be copied & returned. Cct diagram & servicing details for Robophone Communicator 7 telephone answering machine. G3TGF QTHR tel Knockholt (0959) 33296.

Xtals for my homebrew vxo, fundamental types for cw segments of 15m to 80m bands, W.H.Y? Stuart Senior G4MIB, 29 Ryde Vale Road, London SW12 9JQ.

Trio 530S/120S/130S. G3XFB QTHR tel 0902 850033.

Wanted, Butternut vertical 6 band antenna, any cond. Good price for right antenna. Iain GM4MIM QTHR tel 0955 3960 after 6pm any evening.

Racal gear sought for bodybuilding fanatic! MA79 transmit driver, TA99 amplifier, PU99 PSU, MA152 swr meter, etc, etc. If you want to sell or exchange, please get in touch. Eddie G0AQI, 53 Holden Road, London N12 7DP tel 01-445 0528.

Plessey module 11 for PR1551 RX, Bird Thruline equip, good coaxial relay, 8875 valves, Bases for 4CX250B, rotator CDE type, turns counter, your disused rx/tx suitable for repair. Tel 03306 613 after 7.30pm.

Yaesu line-up inc FT902DM, matching ATU, speaker, oscilloscope, external vfo, vhf/uhf xvtr, linear, desk mic, dummy load, aerials, W.H.Y? Also Yaesu 2m mag mount. Cash waiting for perfect only equipment. John, G0CHU tel 0827-895957.

Marconi synthesizer as seen at HF convention, also aerial plug AM type 161 (10H/184). G4FUY QTHR tel Reading 733633.

Public address horns, any condition, the bigger the better. Good price paid. Collection could be arranged. Also QRO PA amplifiers around 100W rms. Prefer valved with 100V line. G4DVE, West Midlands, tel 0384 50539.

TS430S or FT757GX in exchange for Ford Prefect 1950 E493A, Original log, history, stored many years, very nice condition, new battery, as easy to maintain as Meccano set, ideal kids to school, shopping car, worth £800. Nottingham 606589.

TenTec Corsair, Drake R4C with filters, manuals etc. GW4YDF QTHR tel Llanharan (0443) 223223.

Wanted: HF mobile antenna. Webster Band Spanner, Swan or other 80-10 auto-tune mobile antenna considered. G4DCC tel Lancaster 0524 381381.

Trio TS430S, also short wave rx, ham bands or general coverage. Must be easy to use (for new swl). Prefer digital but anything considered. Cash waiting for both. Steve G4WXC tel Grantham (0476) 77708 anytime.

Desperate to obtain manual, circuit for Redifon Safari RT106. Your price paid. Also require T1154, 118m aircraft rx. HRO coil packs, vhf marine R/T, old Seavoice OK. Have R1155, BC342, BC348, etc for disposal. G3DVF QTHR tel 0665 602487.

Tektronix plug-in units required, Series 2 or 3 types at sensible price and within 100 miles of Southampton. G6AMW QTHR tel 61115 evenings.

Linear, TL922 or IC2KL. Tony G0CJU tel East Grinstead (0342) 312374 evenings & weekends.

KW EZ-EE ATU or Yaesu FC902 ATU, good condx. G3FUN QTHR tel 0795 532608

FT101ZD Mk 3, must be mint or vgc, G0CWX ex G1FAQ, QTHR, tel 0983 294178 evenings/weekends.

TRIO TS700S wanted, pref unmodified. G4VGH tel 06845 61458.

Wanted, plug-in units & information on Cossor CDU110 scope, also information for Microwave Modules 28/144 transverter. G3PTD, 88 Sandy Lane, Stretford, Manchester.

G1FAZ's failing eyesight prompts urgent need for mains table radio LW/MW/VHF with bright magic-eye tuning indicator. Also early hand-cranked shocking coil device in mahogany box. Please write to 158, Tennal Road, Harborne, Birmingham, B32 2HN.

ATLAS 210X tx/rx in good working order. G8WTY QTHR tel Malvern 4968.

Tower, 60'/80' tiltover/extending, lattice, can collect. RS85587, tel 0407 730636 after 6pm.

Handbook or circuit diagram for Eddystone 730/4 gen cov rx. Willing to buy or hire for copy. Will pay costs and postage. P Thompson, 10 Carnarvon Road, West Bridgford, Nottingham. Tel Nottingham 233648.

Meter for Cushman CE24 SLM, P/N D1402-0024 Rev G made by API, P/N 56 4592 0000 or defective CE24 for parts. Thanks, G3YFK QTHR tel 0743 81425.

Servicing would be appreciated from conversant serviceman, cash payment. For sale: RadCom 1975-84 SWM 1974-84, offers. G4IQN QTHR tel 01-902 4732.

Electronic keyer, EK150 or Vibroplex, others considered. 2 off QY3-125 valve bases, atlas (national Geographic or Comprehensive Times), metal valves 6J7, 6K7, 6SQ7, KTW61, Yaesu YH77 h/phones, YD148 mic. Write with details. G3KMR QTHR.

Commercial aircraft band rx in good cond or DR600 aircraft band rx. Tel 0532 822861.

Buy or loan to copy information on Nems-Clarke rx, 52-220MHz am/fm/cw switched 1-300kHz video bandwidth. G4OSJ QTHR tel 0572 85 451.

Collins mechanical filter type F455-F05. Nick G3KWJ QTHR. Tel 027 587 2306.

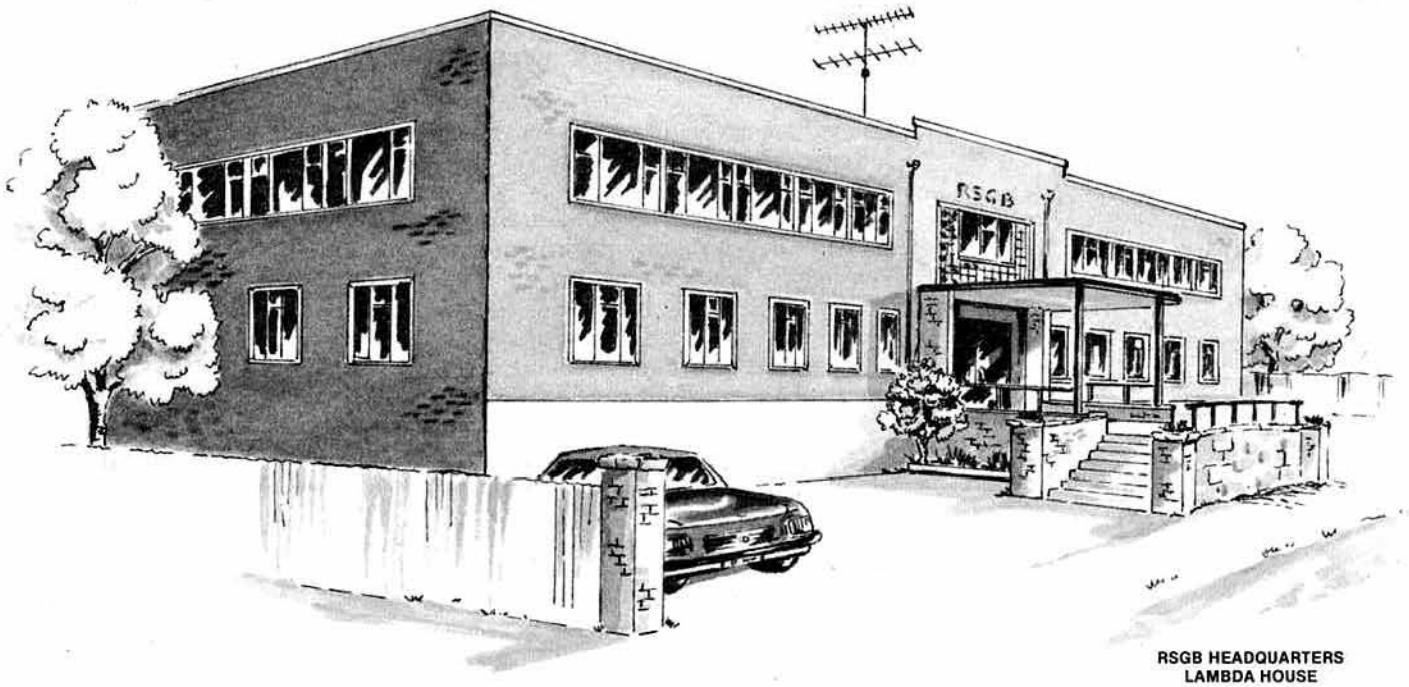
HF linear parts needed, esp 813s, bases, pi network components. Also pair field telephones. Also valve comms rx rough but unimproved. G4XMK QTHR Surrey. Tel 08833 4718.

Desperate of West Wickham requires Yaesu FT225RD 2m multimode, cynics say request hopeless, please prove them wrong. Alco cabinet for Racal RA117, MA144 atu, TA99 1 kW linear, RA1220 Rx. G6XNC QTHR tel 01-462 4461.

Help us to help you!

Remember, your member's ad must be sent direct to RSGB HQ.

RADIO SOCIETY OF GREAT BRITAIN



RSGB HEADQUARTERS
LAMBDA HOUSE

REPORT & ACCOUNTS
and
THE YEAR IN REVIEW

for the year ended 30 June 1985

RADIO SOCIETY OF GREAT BRITAIN

(COMPANY LIMITED BY GUARANTEE)

LAMBDA HOUSE, CRANBORNE ROAD, POTTERS BAR, HERTS EN6 3JW

PATRON: HRH The Prince Philip, Duke of Edinburgh, KG

COUNCIL
(1 July 1984 to 30 June 1985)

President
J Heathershaw (Mrs), G4CHH

Executive vice-President
W J McClintock, G3VPK

Immediate past-President
R G Barrett, GW8HEZ

Honorary treasurer
P F D Cornish, FCA, G3COR

Members
E J Allaway, MB, ChB, MRCS, LRCP, G3FKM
J T Barnes, GI3USS
E J Case, GW4HWR††
D S Evans, PhD, BSc, FIM, G3RPE**
J N Gannaway, G3YGF**
F D Hall, GM8BZX
L N G Hawkyard, G5HD*
H M Holmden, G4KCC
G R Jessop, CEng, MIERE, G6JP
T I Lundegard, G3GJW*
B O'Brien, G2AMV
H S Pinchin, BSc, MBIM, G3VPE
D M Pratt, BTech, CEng, MIEE, MIERE, G3KEP
G R Smith, BSc, MBIM, G4AJJ†
D M Thomas, GW3RWX*
K E V Willis, BSc, ARCS, CEng, MIEE, G8VR

*Retired 31 December 1984
**Elected 1 January 1985
†Resigned 2 April 1985
††Co-opted 14 March 1985

Secretary & general manager
D A Evans, G3OUF

Auditors
Moores & Rowland,
chartered accountants

Bankers
Barclays Bank Ltd

Financial report of Council to members of the Radio Society of Great Britain

Council has pleasure to present the audited accounts of the Society and its subsidiaries for the year ended 30 June 1985 which are set out on Pages iii to vi.

The Income and Expenditure account shows that before taxation the Society's deficit on ordinary activities was £24,877. Provision for Corporation Tax (which arises mainly on the Society's other income comprising bank interest) absorbs a further £5,843 leaving the total deficit for the year at £30,720 which is deducted from the Society's accumulated funds.

The deficit on ordinary activities before taxation for the year is some £5,000 greater than forecast in the financial report attached to the accounts to 30 June 1984. The factors contributing to the greater deficit included a smaller than expected increase in membership and therefore membership subscriptions, a small shortfall on book sales and a number of cost increases that were not entirely foreseen.

The subscription income for the year fell short of the budget by some £4,000. This figure also embraces the effects of the revised basis on which the Society accounts for Value Added Tax which was mentioned in last year's report.

Advertising revenue for the year is very much as forecast although it was down on the previous year. This coupled with increased costs of production of *Radio Communication* meant that the net cost for members was approximately £21,000 greater than the previous year.

The level of sales of books and other products during the year was some £5,000 less than forecast. At the end of the year a number of new books became available but they made no significant contribution to sales in the year. Other income, comprising principally bank interest of £17,805, was lower than in previous years and reflected a reduction in interest rates obtainable and the decreased sums available for short term investment in that form.

Under the headings of Expenses, overall expenditure on Headquarters increased by £4,000. There were increases in rates payable arising from a revaluation of part of the premises due to the change of use by the Society and repairs and maintenance included substantial work on the roof which cost approximately £3,000 more than the sum budgeted for.

Administration expenses in total, are £3,000 less than in the previous year but within the detailed accounts it will be observed that there were both increases and decreases when compared with 1984.

Finance costs comprising bank interest, bank charges and bad debts provision showed an increase in the year. This is due principally to a bad debt provision required this year, whereas in 1983–4 no provision was required and there was in fact a recovery.

Under the heading of Membership Services the overall cost increased by £3,000 but it will be noted that the most significant change has been the reduction in the cost of rallies, exhibitions and publicity. The total reduction under this heading is just under £20,000 and is accounted for by an improved result from NEC 1985, and a reduction in the cost of Society publicity.

The Society has had another difficult year and Council is still taking whatever measures are appropriate to contain expenses and generally increase income. The outline forecast and budget for 1985/86 indicates a surplus of £8,000 on ordinary activities subject to attainment of expectations on sales of books and other products and the practical containment of costs within the budget set.

RADIO SOCIETY OF GREAT BRITAIN

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30 JUNE 1985

	Notes	1985 £	1985 £	1984 £	1984 £
INCOME					
Subscriptions	(1)		510,589		*461,095*
Advertising	(1)		202,876		*205,739*
Book sales			280,240		*316,282*
Other income	(5)		19,708		*22,259*
TOTAL INCOME			£1,013,413		*£1,005,375*
EXPENDITURE					
Cost of book sales					
Cost of printing and distribution		146,545		*170,433*	
Costs of editing and despatch staff		58,423	204,968	*50,750*	*221,183*
Headquarters					
Rates, lighting, heating and cleaning		20,951		*17,382*	
Repairs and maintenance		14,329	35,280	*13,891*	*31,273*
Administration					
Staff costs		176,647		*173,418*	
Telephone, postage, printing and stationery		82,463		*82,925*	
Insurance		4,296		*7,643*	
Hire and maintenance of equipment	(7)	51,360		*54,202*	
Depreciation of fixed assets	(1)	20,177		*19,573*	
Audit fees		8,400		*8,000*	
Legal and professional fees		7,475		*8,614*	
General expenses		5,681	356,499	*5,431*	*359,806*
Finance					
Bank interest		203		*205*	
Bank charges		3,340		*4,362*	
Bad debt provision		1,510	5,053	*(1,746)*	*2,821*
Membership services					
Radio Communication	(8)	345,305		*327,292*	
Certificates, awards, trophies, etc		2,928		*2,820*	
QSL Bureau		17,023		*16,316*	
Beacons, repeaters, satellites and Intruder Watch		7,116		*5,160*	
IARU Region 1 contribution and levy		10,137		*7,011*	
Rallies, exhibitions and publicity	(9)	9,659		*29,438*	
Cost of committee, regional and Council meetings		43,573		*42,075*	
Cost of international meetings and conferences		749	436,490	*3,114*	*433,226*
TOTAL EXPENDITURE			£1,038,290		*£1,048,309*
DEFICIT ON ORDINARY ACTIVITIES BEFORE TAXATION					
[all of which arises in the Society]			(24,877)		*(42,934)*
Less Provision for taxation thereon at 30% (*1984: 30%*)	(10)	(7,000)		*(7,956)*	
Over provision for corporation tax in previous year		1,157	(5,843)	*648*	*(7,308)*
DEFICIT FOR YEAR			£(30,720)		*£(50,242)*

RADIO SOCIETY OF GREAT BRITAIN

BALANCE SHEETS AT 30 JUNE 1985

	Notes	1985 The Society £	1985 The Society and subsidiaries £	1984 The Society £	1984 The Society and subsidiaries £
FIXED ASSETS					
Tangible assets	(1) (2)	377,499	377,499	*384,867*	*384,867*
Investments	(3)	200	—	*200*	—
		377,699	377,499	*385,067*	*384,867*
CURRENT ASSETS					
Stocks, at lower of cost and net realizable value		183,439	183,439	*143,546*	*143,546*
Trade debtors		40,959	40,959	*61,788*	*61,788*
Other debtors		—	—	*8,580*	*8,580*
Prepayments and accrued income		37,726	37,726	*51,671*	*51,671*
Cash at bank and in hand		123,137	125,186	*106,784*	*108,858*
		385,261	387,310	*372,369*	*374,443*
CREDITORS: AMOUNTS FALLING DUE WITHIN ONE YEAR					
Bank overdraft		(54,779)	(54,779)	—	—
Trade creditors		(29,617)	(29,617)	*(49,197)*	*(49,197)*
Amounts due to subsidiary companies		(215,567)	—	*(215,567)*	—
Corporation tax		(6,843)	(6,843)	*(10,656)*	*(10,656)*
Other taxation and social security		(8,922)	(8,922)	*(11,498)*	*(11,498)*
Other creditors		(18,546)	(19,765)	*(19,358)*	*(20,602)*
Accruals and deferred income		(16,803)	(16,803)	*(36,067)*	*(36,067)*
		(351,077)	(136,729)	*(342,343)*	*(128,020)*
Subscriptions in advance		(251,471)	(251,471)	*(222,947)*	*(222,947)*
		(602,548)	(388,200)	*(565,290)*	*(350,967)*
NET CURRENT ASSETS/(LIABILITIES)		(217,287)	(890)	*(192,921)*	*23,476*
Total assets less current liabilities		160,412	376,609	*192,146*	*408,343*
CREDITORS: AMOUNTS FALLING DUE AFTER MORE THAN ONE YEAR					
Corporation tax payable 1 January 1987		(7,000)	(7,000)	*(8,000)*	*(8,000)*
		153,412	369,609	*184,146*	*400,343*
PROVISIONS FOR LIABILITIES AND CHARGES					
Deferred taxation	(1)(10)	(2,000)	(2,000)	*(2,000)*	*(2,000)*
		£151,412	£367,609	*£182,146*	*£398,343*
ACCUMULATED FUNDS					
Income and expenditure account					
Balance at 1 July 1984		180,316	396,513	*230,558*	*446,755*
Deficit for year		(30,720)	(30,720)	*(50,242)*	*(50,242)*
		149,596	365,793	*180,316*	*396,513*
Legacy fund	(4)	1,816	1,816	*1,830*	*1,830*
		£151,412	£367,609	*£182,146*	*£398,343*

(The notes on pages vi and vii form part of these accounts)

Approved by the Council on 26 September 1985, and signed on its behalf by:

J. HEATHERSHAW, *President*
P. F. D. CORNISH, FCA, *Honorary treasurer*

NOTES ON THE ACCOUNTS

1. Accounting policies:
   (a) Subscriptions—cash received in respect of subscriptions for the year has been apportioned on a time basis from the actual dates subscriptions were receivable, after deduction of VAT.
   (b) Advertising income is the net amount receivable, after deduction of VAT, for advertisements in *Radio Communication*.
   (c) Depreciation—tangible fixed assets, except freehold land, are written off using the straight-line method over their estimated useful lives at the following rates based on cost:
   - Freehold buildings — 2 per cent per annum
   - Furniture — 10 per cent per annum
   - Equipment — 20–25 per cent per annum
   - Computer — 20 per cent per annum

   (d) Deferred taxation has been provided using the liability method in respect of timing differences which are not expected to continue for the foreseeable future.
   (e) Since a consolidated income and expenditure account is submitted, no such account for the Society alone has been presented.

2. Tangible fixed assets

	Freehold land and buildings	Furniture, equipment and computer programming	Total
Cost	£	£	£
At 1 July 1984	367,572	83,773	451,345
Additions	—	12,808	12,808
At 30 June 1985	£367,572	£96,581	£464,153
Depreciation			
At 1 July 1984	12,702	53,776	66,478
Charge for the year	6,351	13,825	20,176
	£19,053	£67,601	£86,654
Net book value			
At 30 June 1985	£348,519	£28,980	£377,499
At 1 July 1984	£354,870	£29,997	£384,867

Freehold land included above amounts to £50,000

3. Fixed asset investments

	1985	*1984*
	£	*£*
Shares in group companies at cost	£200	*£200*

The subsidiaries, both of which are wholly owned, are Lambda Investment Company Limited (an investment company) and RSGB (Raynet) Limited, which has been dormant since incorporation.

4. Legacy fund

	1985	*1984*
	£	*£*
Balance at 1 July 1984	1,830	*2,194*
Donations received	86	*69*
Payments made in accordance with donors' directions	(100)	*(433)*
Balance at 30 June 1985	£1,816	*£1,830*

5. Other income includes bank interest of £17,805 (*1984: £21,099*).

6. Staff costs

	1985	*1984*
	£	*£*
Wages and salaries	261,285	*236,187*
Social security costs	25,122	*24,581*
Pension costs	8,754	*4,558*
	£295,161	*£265,326*

The average number of persons employed by the Society was 29 (*1984: 29*), divided into the following categories:

	1985	*1984*
Headquarters	22	*22*
Radio Communication	4	*4*
QSL Bureau	2	*2*
Advertising	1	*1*
	29	*29*

7. Lease rentals for equipment amounted to £21,671 *(1984: £24,318)*. The only significant leasing arrangements are in connection with the IBM38 computer in relation to which the Society has a commitment to pay £15,336 annually until 31 December 1987.

8. *Radio Communication* expenses comprise the whole of the costs of printing and distribution, the cost of editorial and advertising staff and the Chelmsford office.

9. Rallies, exhibitions and publicity expenses comprise:

	1985	*1984*
	£	*£*
Society publicity and advertising	7,847	*17,710*
Deficit on the Society's own events and the cost of participation in other rallies and exhibitions	1,812	*11,728*
	£9,659	*£29,438*

Book sales totalling £40,604 gross *(1984: £44,193)* made at rallies and exhibitions have been accounted for under income from book sales.

10. The Society is liable to pay corporation tax on its investment and trading income. Tax deferred owing to the effects of capital allowances has been provided for in full. The potential taxation liability, not provided for in these accounts, in respect of capital gains rolled over is £65,000.

11. The Society administers certain prize and memorial funds, totalling £669 *(1984: £629)* which are not included in these accounts.

12. Capital commitments contracted for at 30 June 1985 amounted to £45,000, in respect of the purchase of land adjacent to the Society's headquarters at Lambda House *(1984: £45,000)*.

CONSOLIDATED STATEMENT OF SOURCE AND APPLICATION OF FUNDS FOR THE YEAR ENDED 30 JUNE 1985

	1985	*1984*
SOURCE OF FUNDS	£	*£*
Deficit for the year before taxation	(24,877)	*(42,934)*
Payments made (less donations received) from legacy fund	(14)	*(364)*
Adjustment for items not involving the movement of funds:		
Depreciation (including losses on disposals)	20,176	*19,573*
Total absorbed by operations	(4,715)	*(23,725)*
APPLICATION OF FUNDS		
Purchase of fixed assets, less proceeds of sale	(12,808)	*(15,336)*
Corporation tax paid	(10,656)	*(13,018)*
	(£28,179)	*(£52,079)*
INCREASE/(DECREASE) IN WORKING CAPITAL		
Stocks	39,893	*(17,449)*
Debtors, prepayments and accrued income	(43,354)	*22,262*
Creditors, accruals, deferred income and subscriptions in advance	13,733	*(33,520)*
	10,272	*(28,707)*
MOVEMENT IN NET LIQUID FUNDS		
Cash balances less bank overdraft	(38,451)	*(23,372)*
	(£28,179)	*(£52,079)*

REPORT OF THE AUDITORS TO THE MEMBERS OF THE RADIO SOCIETY OF GREAT BRITAIN

We have audited the accounts set out on pages *iv* to *vii* in accordance with approved auditing standards.

In our opinion the accounts, which have been prepared under the historical cost convention, give a true and fair view of the state of affairs of the Society and its subsidiaries at 30 June 1985 and of their deficit of income and of their source and application of funds for the year ended on that date and comply with the Companies Act 1985.

Clifford's Inn,
Fetter Lane,
London EC4A 1AS.
26 September 1985

MOORES & ROWLAND
Chartered Accountants

THE YEAR IN REVIEW

Some of the activities of the Society in the year ended 30 June 1985

GENERAL MANAGER'S REPORT

MAIN POINTS

This report represents a period of further consolidation in the work of the Society in its second full year in its new HQ. It has been a year of some success and much disappointment. On the positive side, membership has continued to rise, from 35,860 to 37,096, an increase of 3·4 per cent. The turnover has increased and remains at just over £1 million. The Society's accumulated fund, though slightly reduced, remains a healthy £149,596, and its assets over liabilities stand at £367,609 for the Society and its subsidiaries.

On the negative side, the continuing loss of advertising revenue, for the second year running, of some £40,000 (largely associated with the existence of other new amateur radio magazines) is most disturbing: whether these magazines will continue to exist and whether this crucial loss of income will be restored or made up in other ways, remains to be seen. Although the Society has continued to expand its membership, there are signs that this situation might change; (a) as the 'sixties bulge in birth-rate passes its peak, and (b) following the world-wide decline in the proportion of young people being attracted into the hobby. There are, however, positive signs that the use of home computers will continue to stimulate interest in many aspects of amateur radio. The great success of the RSGB dial-up DataBox in providing yet another output of news and information on the Society's activities is evidence of this fact.

One particularly sad observation is that although the Society has survived the economic conditions of the last few years remarkably well, about 90 per cent of those who write in to resign from the Society do so on the grounds of being unemployed; a reflection on the general economic situation. Presumably a proportion of those who allow their membership to lapse do so for the same reason.

It would be a serious omission not to refer to one matter of grave concern. In the course of the last year, a significant and increasing proportion of the Society's professional and volunteer efforts—between 1,000 and 2,000 man-hours—have had to be spent in dealing with correspondence, discussions and legal advice as a result of those who wish to change radically the way in which the Society operates, irrespective of whether these changes have a sound logical or legal basis. This has cost the Society considerably, both financially and in terms of the diversion of effort from more important work in progressing amateur radio. There is no organization in the world that cannot but benefit from the constant review of every aspect of its operation. However, no organization has unlimited resources, and therefore questions of priority must arise. These can only be determined by those responsible for the total success, or otherwise, of the organization. In the case of the Society, such decisions can only come from the legally-elected body—namely, Council.

Despite this, there has been significant progress in a number of areas, as will be apparent from the remainder of this report. First, the considerable investment in effort over the years towards obtaining a 50MHz allocation seems about to pay off: in this, we are unique in IARU Region 1, and perhaps our commitment will inspire other national administrations to make progress along these lines. Second, the morse-for-Class B experiment seems to be a success, with many members writing in to say that it provided the stimulus they required to pass the morse test. These are just two examples of the dozen or more items currently under discussion with the DTI: they represent a heavy workload but nevertheless they are a most important part of the Society's responsibilities.

A second major investment over a period of two years, which is now beginning to pay off, has been in the production of camera-ready copy for publications. Apart from being a vital service to members (and indeed to amateur radio in general), publications continue to make good profits which represent a crucial source of revenue as long as members' subscriptions continue to remain insufficient to pay for the services supplied to both members and amateur radio in general.

To the above could be added many other examples illustrating the investment being made for the future. I believe, speaking as general manager/secretary, that I echo the feelings of the many hundreds directly involved with running the Society on a day-by-day basis that, while being conscious of the effort required to solve the tasks for the coming year, they are confident of continuing progress of what many regard as one of the best and most important amateur radio societies in the world.

GENERAL MATTERS

DataBox and Prestel

The first experiments on an RSGB Prestel-type information service were made in January. This started with a modest 50 pages of information, and has since been increased to the next possible size up—an immodest 10,000 pages, which may take some time to fill. At present, there are some 500 pages of information available covering very many aspects of amateur radio. It is, of course, a service available on a 24-hour-a-day, seven-days-a-week basis.

We anticipate that the Society will also be able to have pages on the national Prestel facility via "Clubspot 810". At present we are awaiting the training of RSGB staff and volunteers who will ensure that the information is kept right up-to-date. The limited number of pages on national Prestel will essentially be devoted to national and international amateur radio news and will therefore complement the Society's own DataBox service.

Audio-Video Library

The Society is well aware of the need to up-date this service and has made some progress during the year. Two new tapes have been produced. The first is the lecture given by Nasa astronaut Tony England at the 1984 Welsh Convention, which is now available. The second is the lecture on packet radio given by Ian Wade, G3NRW, at the 1985 RSGB National Convention. This tape should be available shortly.

Book production

This has been an area of mixed fortunes. On the negative side, there have been major problems associated with staff continuity—or rather the lack of it. This is inevitable in an organization the size of the Society where a relatively small staff have to cover a wide range of duties: it is not easy to provide an adequate back-up. Whether we can afford to continue the present policy in an area as important as book production needs to be seriously questioned.

On the positive side, considerable progress has been made with generating in-house facilities for producing camera-ready copy of material for publication—leaflets and pamphlets as well as books. This started with the one page *RSGB News Bulletin* which, although unambitious in terms of size, nevertheless, still represents the most up-to-date source of amateur radio information in any magazine.

The 1986 *Call Book* broke new ground by being generated directly from the DTI records maintained by the RALU at Chesterfield. The transfer was not, however, without its problems. The RALU records proved to contain many spelling and grammatical errors. A crash programme was initiated to make as many corrections as possible within the time set by the production schedule. Even with 200 hours of overtime, not all the errors could be eliminated—regrets and apologies to those who had to be missed out. Nevertheless, this *Call Book* represented a significant jump forward and many lessons have been learnt.

The value of the RSGB investment in capital and effort has been shown subsequently by its use in the production of our new *Amateur Radio Software* by GM4ANB, which was our first publication to utilize the new editing and production techniques.

Currently, the whole of the book programme, the most ambitious in the history of the Society, is being reviewed in the light of the ever-changing economic and technical conditions influencing book production and marketing. At the same time, much attention is being paid to alternative methods for communication, some of which are described above.

The Presidential Advisory Group

The Presidential Advisory Group is simply an informal group of members from whom the President may seek advice on tackling problems not covered by other parts of the Society's organization. Being effectively a working party of Council, it has no executive powers.

A major area of concern has been the procedures associated with the election of Council members. Following consultation with the Membership & Representation Committee, this has resulted in some changes to this year's election. We await the results. Progress has also been made in defining those Memorandum and Articles of Association of the Society that require updating to bring them into line with present-day conditions and

recent Companies Act legislation. It is to be noted that the present documentation is largely based on the 1926 version.

An important item raised during the year is that of the organization of amateur radio at the local level. This recognizes the potential high value of closer links between affiliated societies and the central administration represented by the HQ and Council/committee organization.

Currently, a set of standing orders for Council is being established.

Editorial Board

A major problem faced by *Radio Communication* is that it has to try and cover all the aspects of amateur radio of interest to **all** its members, as well as much official business. Other magazines are comparatively free to pick and choose which bits of amateur radio they feel will be most popular. One consequence is that the pressure on space in our magazine is very high indeed—just compare how much it includes compared with other amateur magazines.

During the year, there has been much debate on the way in which the space available could best be used. For example, how much should be allocated to fixed topics such as the regular "columns", news and readers' letters, how much for technical and non-technical articles, and how much for new activities, eg the computer "column". One outcome of these considerations will appear in the November issue. In this, the *RSGB News Bulletin* will carry "Members Ads" and will be printed as an eight-page centre section bound into the magazine, but readily removable if desired. One advantage will be that this will reduce the delay between submitting an advert and its appearance. It is also expected to save space in *Radio Communication*.

Other considerations include whether there are better ways of communicating certain types of information other than in the magazine. For example, could not a proportion of routine information be given in another form, such as the Prestel-like DataBox describes elsewhere? Would specialist interests be better catered for in newsletters available as an option? These matters will form part of the future thinking.

Aerial Planning Group

An area that continues to cause concern is planning permission problems concerning that crucial piece of equipment—the antenna. The Aerial Planning Group met several times during the year. During this time, advice was given by HQ staff to members in 67 cases. Eight planning authorities were briefed and lectures given to two clubs. Of the five planning appeals attended and evidence given on behalf of members, all were successful. Once again, can we remind members that, as soon as they begin to have problems in this area, the sooner they contact HQ the greater the chance of success?

HQ station

Further improvements have been made to the HQ station in order to make it more effective for making multi-band news broadcasts as has been necessary for recent shuttle experiments. It is now a station of which the Society can feel truly proud, and it has been invaluable for demonstrating various aspects of amateur radio to a number of important visitors, including staff from the DTI, as mentioned elsewhere.

The HQ station also includes the 50MHz beacon GB3NHQ which became operational in July 1984. This has proved to be a most successful service, not least for UK amateurs.

LIAISON WITH THE RADIO REGULATORY DIVISION OF THE DTI

A prime function of the Society is to maintain a continuing dialogue with the UK licensing authority in order to enhance the positive framework within which UK radio amateurs operate. A substantial part of this year's report is devoted to licensing matters.

The year under review has been a very busy one and a number of major advances have been achieved. Liaison with the licensing authority is of paramount importance in safeguarding the future of amateur radio; those members who believe that the RSGB provides only a monthly magazine and a QSL Bureau have overlooked this most vital point.

The arrangement which commenced last year whereby the regular quarterly meetings between the DTI and the Society alternated between RSGB HQ and Waterloo Bridge House have continued, with most positive results. The demonstrations of various facets of amateur operation at the HQ station, GB3RS, have clearly benefitted amateur radio. There are no doubts that RRD staff have been able to appreciate more fully what happens in the environment of the radio amateur, and that this knowledge has assisted them in reaching those decisions which determine the future of the hobby.

During the early part of 1984 the Society used its magazine, and other means, to call for members' views on the content of a future UK licence document; in this way a *major review of the UK amateur licence* began. Many hundreds of members responded to this call for feedback in a variety of ways. Of those members who wrote to the Society's Licensing Advisory Committee—some wrote in great detail—their letters and the views expressed have been categorized and debated at a number of meetings of the LAC held during the year, together with all the other information received. The conclusions drawn by the committee to date have been discussed in general terms with the RRD, and the first licence working group meeting will take place in early December 1985. There is still time for members to let us have their views and comments on any matter related to the UK licence, via "The Secretary".

The long-awaited *new schedule to the UK amateur licence* was published by the DTI on 10 September 1984. The publication of this document ended some two years of extensive discussions and negotiation between the division and the Society. It was pleasing to note that the new "plain language" schedule was based on a concept originally put forward by the Society. The detailed discussions occupied over 100 man-hours of direct discussion, and even more in terms of preparation. The major licence review referred to in the above paragraph is the next stage in the licence review process.

The *abuse of the radio spectrum,* in all its forms, continued to dominate much of the work between the Society and the DTI. Spectrum abuse takes on many guises; from harmful radiation from computers, telephones and other non-radio devices to conventional piracy; from noise generated by electrical equipment, such as motors, to licence contravention; and from harmful harmonic and spurious transmitter radiation to malicious interference. The Society is, of course, predominately interested in amateur radio and, therefore, spectrum abuse which affects the amateur bands. On occasion problems not affecting the amateur bands have been discussed since they have indirectly affected the operations of radio amateurs.

During the year the Society has continued to request that the DTI publish the names and addresses of those that have been convicted of offences under the various Acts which have been associated with amateur radio. The Society believes that such publication would benefit the overall situation. While the DTI has not yet agreed to reinstate the policy of publication which was curtailed in the mid-'seventies; it has now agreed to pass details of *prosecution statistics* to the RSGB for publication.

Two factors have greatly influenced the position with regard to illegal operation and licence contravention. First, the *Telecommunications Act 1984,* which received the Royal Assent on 12 April 1984, has given the Secretary of State for Trade & Industry additional powers with which to address such problems. Second, the transfer of the (now) Radio Investigation Service from British Telecom to the DTI on 7 August 1984 has resulted in a *major review of the functions of the RIS.* This review has resulted in a significant redeployment of RIS resources, and these will now be used extensively to deal with all the problems associated with the abuse of the spectrum. Since the RSGB is not a law enforcement agency, it must always look to the government for positive action to curb the type of abuse which is now common and which we have all experienced on the amateur bands during the past decade. The Society expects to see action being taken to ease the present situation, following which it hopes to be able to provide further assistance to the government with the aid of more monitoring of our bands by radio amateurs.

Akin to spectrum abuse are problems associated with *electro-magnetic compatibility* (emc). The Telecommunication Act 1984 also gave the government powers to determine immunity standards for certain types of equipment. The Society has discussed such powers with the RRD on numerous occasions, and it is pleasing to note that the DTI has recently announced that it intends to start implementation of some new legislation in this area. In fact the standards laid down in British Standards Institute document BS905 are to be made law. RSGB now has its own representative on BSI Committee GEL/111/5, and it is hoped that this standard can be improved to benefit the amateur population further. Though not strictly relevant to this section of the annual report it is pleasing to note that the Society's EMC Committee, and HQ staff, are taking a more active role in dealing with the day-to-day emc problems of individual members.

Not all liaison with the RRD has proceeded as smoothly as the Society would have wished. However, we do recognize that the RRD has a large workload spread among only a few staff. When staff changes do take place it is inevitable that hard-won experience is lost and we have to recognize that it does take time for new staff to find their feet—the benefits of continuity are so often taken for granted. A number of items have taken longer to resolve than expected. Among these we note the delay in drawing to a conclusion the *guidelines for crossband working,* which will ultimately result in a DTI press release. *Special research permits* for scientific work have not yet been finally resolved, and the long-awaited

application form for 24GHz operation was only made available to the Society during August of 1984. Many will have noted the very long delays associated with *repeater licensing*, partly as a result of so many government departments being involved with site vetting.

The future of *morse testing* has been under debate with the RRD during the entire year. In this instance the Society took longer than it expected to provide the DTI with details of its plans to operate the morse test for radio amateurs in the UK. The DTI had invited the Society to submit its proposals for morse testing when British Telecom International announced that it no longer wished to be involved in such tests, presumably for commercial reasons. The RRD also invited the City & Guilds London Institute to prepare its own plans for morse testing. Somewhat surprisingly, BTI announced recently that it had decided to draw up new plans for morse testing itself, and so at present three organizations have bids being discussed by the RRD. Clearly the Society believes that it is in a unique position to call upon the experience of radio amateurs who might act as volunteer morse examiners, as is done in other countries. The Society expects that the DTI will make its decision in the early part of 1986.

Licensing with other countries in its various forms has been an on-going subject this year, with Japan, Yugoslavia and Greece, as well as other countries, being discussed. Such discussions can be most protracted, sometimes over many years. The possibility of a *CEPT licence* which would allow operation in some countries without the need for advanced paperwork has been discussed with the DTI on several occasions. The RRD have been most responsive to this form of licence, and we gather that it has been keen to advance the debate on this issue at the CEPT conferences that it has attended. Needless to say, the Society has encouraged and backed the DTI initiative to the full.

Discussions relating to the passing of *third-party greetings messages* to a number of countries reached an advanced stage by the end of the period under review, and it is hoped that the facility might be available to GB stations in time for the 1985 Jamboree-on-the-Air.

The facility whereby *Class B licensees could use morse code* in order to prepare themselves for the morse test and experience the advantages of morse under real operating conditions was a major success for the Society. To date, some 25 per cent of all Class B licensees have applied for the notice of variation to their licence. Judging by the letters received at RSGB HQ, many have used this facility to advantage to enable them to pass the 12wpm morse test. This one-year experiment will be completed at the end of March 1986, and the Society hopes to receive more feedback so that the experiment can be assessed.

Other matters discussed with the RRD during the year include: licence fees, special event callsigns, Operation Raleigh, intruders in the 7MHz band, repeaters and beacons, emergency operation and Raynet, International Radio Regulations, examinations for disabled people, the re-issue of callsigns, special prefixes including the issue of GV prefixes via the RSGB for VE-Day 1985, GB2RS news broadcasts, charitable events, additional types of amateur licensing, the Interception of Communications Bill, licence statistics, RRD documentation, RALU record-keeping and the amateur radio certificate.

Last—but by no means least—is the major success of the Society in the *advancement of the 50MHz experiment*. On 28 June 1985, the Minister of State for Trade & Industry, Geoffrey Pattie, announced that a band at 50MHz would be made available to UK radio amateurs. Behind this announcement is some 10 years of work between the RSGB and the UK licensing authority. At the time of writing, negotiations on the conditions under which the band will be used by UK radio amateurs had not been completed. The Society is anxious that the best operating conditions can be achieved for UK radio amateurs, but this must be consistent with the need to protect the authorized broadcasting and land mobile services in Europe. Indeed, such protection is essential if UK amateurs are to maintain a presence in this band, which is not, of course, allocated to the amateur service in Region 1 by the ITU. However, being able to use the 50MHz band throughout the day represents a major step forward and one which the Society is proud to have negotiated.

All in all, during the year under review the Society sent 150 letters and telexes to the DTI, held over 500 telephone conversations with the division and spent some 250 man-hours in meetings. This does not take into account all the committee and HQ preparatory work which is involved with our heavy commitment to licensing matters.

SOCIETY AFFAIRS

The Society's 50th President, Mr R G Barrett, GW8HEZ, completed his term of office at the end of 1984. His extensive experience in professional broadcasting was a great asset to the Society, and he brought his professionalism to bear in several aspects of the Society, including its increased use of audio and video recording techniques in the service of the membership.

Mrs Joan Heathershaw, G4CHH, the RSGB's first lady President, took office on 1 January 1985. She was officially installed as President in York on 19 January 1985.

There were eight vacancies for the 1985 Council, of which one was a vacancy for an ordinary member. This was filled by Dr E J Allaway, G3FKM, who, having gained 2,394 votes, returned to Council after his one year's absence under Article 26. No ballot was necessary for the vacancies in four of the zones, since only one nomination was received for each of them: the vacancies were therefore filled by Messrs D S Smith, G4DAX, a new member of Council for Zone A; together with Messrs H S Pinchin, G3VPE (Zone B); J T Barnes, GI3USS (Zone F); and F D Hall, GM8BZX (Zone G). No nomination was received in respect of Zone E: Council therefore co-opted Mr E J Case, GW4HWR, in March 1985 to serve as zonal member for Zone E until the end of the year.

Ballots were held in respect of Zones C and D. As a result, Mr W J McClintock, G3VPK, was elected for Zone C, and Dr J N Gannaway, G3YGF, a second new member of Council, for Zone D, having gained 535 and 462 votes respectively.

Four Council members did not continue their membership of Council in 1985. Mr D E Baptiste, CBE, stood down after three years' work on Council, during which he was the Society's President in 1983. His experience in the area of technical administration proved to be of outstanding value to the Society. Mr L N G Hawkyard, G5HD, was not eligible for re-election under Article 26. Mr T I Lundegard, G3GJW, having served three years on Council as an ordinary member, stood for his second term of office as a zonal member for Zone C, but was not re-elected to the 1986 Council. Mr D M Thomas, GW3RWX, had been co-opted by Council until the end of 1984, and did not seek re-election.

At its first meeting in 1985, Council elected Mr W J McClintock, G3VPK, as executive vice-President for the year.

In the year under review, Council and its 16 committees held a total of 133 meetings: Council met nine times.

On 2 April 1985, Mr G R Smith, G4AJJ, resigned from Council; the vacancy he left was not filled during the year.

ATTENDANCE AT COUNCIL MEETINGS

	1984					1985			
	28/7	11/8	20/9	29/10	9/11	19/1	14/3	4/5	27/6
E J Allaway, G3FKM						X	X	X	X
D E Baptiste, CBE	—	X	X	X	X				
J T Barnes, GI3USS	X	—	X	X	X	X	X	X	X
R G Barrett, GW8HEZ	X	X	—	X	X	X	X	—	X
E J Case, GW4HWR*								X	—
P F D Cornish, G3COR	—	—	X	—	—	—	—	—	—
D S Evans, G3RPE	X	X	X	X	X	X	X	X	—
J N Gannaway, G3YGF						X	X	X	X
F D Hall, GM8BZX	X	X	X	X	X	X	X	X	X
L N G Hawkyard, G5HD	X	X	X	X	X				
J Heathershaw, G4CHH	—	X	X	X	X	X	X	X	X
H M Holmden, G4KCC	X	X	X	X	X	X	X	X	X
G R Jessop, G6JP	X	X	X	X	X	—	X	X	X
T I Lundegard, G3GJW	X	X	X	X	X				
W J McClintock, G3VPK	X	X	—	X	X	X	X	X	X
B O'Brien, G2AMV	X	X	X	X	X	X	—	X	X
H S Pinchin, G3VPE	X	X	X	X	X	X	X	X	X
D M Pratt, G4DMP	X	X	—	X	X	X	X	X	X
D S Smith, G4DAX						X	X	X	X
G R Smith, G4AJJ	X	X	—	X	—	X	X	Resigned	
D M Thomas, GW3RWX	—	X	—	X	—				
K E V Willis, G8VR	X	X	X	X	X	—	X	X	X

*Co-opted March 1985

THE SOCIETY AND THE MEDIA

It is legitimate to enquire why the Society should devote any of its perennially limited resources to maintaining and extending its relations with broadcast and newspaper media. Is it, for example, cost-effective to devote many hours of staff and volunteer time to securing a contact with a shuttle astronaut which then receives some media coverage?

Within limits, the answer is "yes", but the reasoning behind that conclusion is subtle and complex. With an active rather than a passive approach to the media and the right sort of handling, the end result of such an exercise is almost always very positive. However, the relationship between the effort put in and the end result is neither linear nor predictable, and the strongly reductivist tendency of editors and broadcasters confronted with technical matters requires firm and competent opposition.

There is no doubt that in an era when the man-in-the-street has easy and cheap access to global communication and he sees pictures from the other side of the world each evening on television, the primitive magic of radio communication over a distance has long since lost its power. The fantasy of instant communication with other people at any time, which was potent even 10 years ago, is largely a reality in an age of cellular radio and Intelsats; communication with anyone anywhere is now an expected norm rather than an unexpected surprise. What this means is that the mere fact of beng able to communicate with the other side of the world from, metaphorically speaking, the kitchen table, has no intrinsic news value; by itself, amateur radio has no more ability to fascinate the public at large than any other kind of radio. To paraphrase Marshall McLuhan's famous dictum, the public interest is in the message, not the medium: one assumes that the average listener to "The World At One" is much more interested in the news which is being broadcast than the whereabouts of the transmitter from which it is coming and how the radio signal is being propagated.

The fact remains, however, that achieving favourable publicity for amateur radio is highly important for the credibility of the hobby, nationally and internationally. Given the enormous pressures on the radio frequency spectrum, the frequent difficulties faced by radio amateurs wishing to erect large antennas in urban environments, and the ever-present spectre of breakthrough problems in one form or another, publicity demonstrating that radio amateurs are valuable members of society who exercise the privilege of their licences in a positive and creative way is most important. Looking at it the other way round, the right sort of publicity tends to assist in convincing decision-makers that the allocation of scarce radio frequency space to the amateur service is a good investment.

One small domestic example serves to illustrate the principle at work in quite a direct way. Not long after a shuttle mission had taken place and there had been some television coverage of the contact between headquarters and the spacecraft, a member of headquarters staff was visiting a local authority planning officer at the behest of a member who was having considerable difficulty with a planning application for an antenna. The officer in question immediately recognized the staff member, commented very favourably on what wonderful things radio amateurs did, and said that his draft recommendations to the planning committee of the local authority would now have to be rewritten! They were, and the authority concerned has now completely revised its policy on amateur radio antennas. No-one could have predicted an event of this type, but publicity of the right sort tends to have unexpected and positive effects, often at very high level.

The Society's primary premise is that radio amateurs have skills which are often capable of being used in the public interest and are occasionally vital to it. This is the premise on which Raynet is based and also with which the Society approaches the topic of how best to gain favourable publicity for the hobby. A secondary premise is that even in the 'eighties radio amateurs can sometimes achieve something new which catches the public imagination—speaking to an astronaut in an orbiting spacecraft being a good example.

During the year in review, however, the tendency of UK news media to confine themselves to the superficial and the sensational—virtually to the point of dishonesty—was lamentably well demonstrated in the Tom McClean affair. Perhaps it could have been predicted that the story of a brave lone adventurer occupying Rockall for Britain and keeping in touch with humanity via amateur radio would be meat and drink to media editors: it is pure Hammond Innes. When it was pointed out to ITN and others that Mr McClean was not a licensed radio amateur and that he was breaking the law in precisely the same way as the pirate broadcasting stations who so excite the ire of the IBA, the response was nil—no doubt because to have responded would have meant acknowledging that the romantic fantasy was just that. The Society's view is that spectrum abuse is a far larger and more important issue than that of the tenure of Rockall, but it does not lend itself anything like so easily to trivialization, and it is also not a promising subject for shock-horror treatment; it will probably never receive publicity unless someone dies as a result of it.

In summary, the Society's relationship with the media remains ambivalent, largely because many elements of the news media appear to remain unsure as to whether their function is to inform or to entertain. From the Society's point of view, UK news media all too often produce a peculiar hybrid of information and entertainment wherein the real issues are shrugged off because they are too complicated or they do not fit some pre-digested "story". Herein lies the reason why dealing with the broadcasters, in particular, is much more difficult than it seems: whatever the subject, it is vital to keep the real issues in front of the microphone or the camera and to make sure that—as far as possible—they have been grasped, even if this means that no coverage of a given event takes place. As was said last year in these pages, there is such a thing as a bad press and it is preferable to have little publicity than the wrong sort of publicity.

On balance, however, amateur radio has done reasonably well during the year in review. Fewer newspaper editors have written headlines which bracket radio amateurs together with various types of illicit users of radio under the generic title of "radio ham", and from those who have received letters from headquarters pointing out their mistake, retractions have often followed. A good number of provincial newspapers have run features on local amateurs and special event stations, and the standard of accuracy has in general terms been higher. Local radio stations have also shown considerable interest in local amateur radio-related events, and several took interviews from headquarters staff on subjects ranging from the reasons for tropospheric propagation at vhf to whether or not transmissions from a local amateur could be inducing record growth of a marrow in a neighbour's garden. . . .

It is worth adding that if individual members or clubs find themselves approached by elements of the media and would like advice as to how to proceed, assistance is always available from RSGB headquarters.

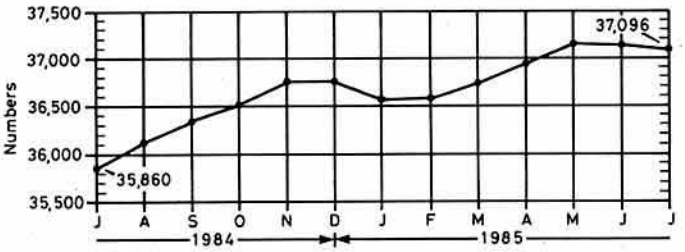
MEMBERSHIP

The membership of the Society increased from 35,860 to 37,096 during the financial year. The rate of increase in membership has been slowing down in recent years: this is mainly due to the enrolement of less new members in the Society, as can be seen in the table below.

New members by month

Month	1984-5	1983-4	1982-3	1981-2	1980-1	1979-80
July	108	377	540	540	291	213
August	458	352	446	414	295	307
September	590	481	509	836	679	210
October	514	653	558	626	288	400
November	340	513	192	549	581	455
December	277	321	458	558	280	328
January	235	439	511	313	483	539
February	302	401	468	419	529	320
March	450	517	795	436	320	316
April	323	524	365	478	491	439
May	488	335	355	283	437	342
June	225	588	301	285	696	346
TOTAL	4,310					

Membership graph



MEMBERSHIP CONTACT AND SERVICES

The first line of contact for members needing information or services from the Society is the membership services department, and the workload of the four staff directly involved has increased dramatically during the year in review. Some of the appropriate statistics reveal the sheer scale of the operation: 1,989 applications for special event stations were processed, 195,585 pages of news and news-sheets were printed, packed and distributed, 8,670 copies of the weekly GB2RS script were produced (along with an astonishing 36,500 copies of *DX News Sheet*), 95 members were referred to members of the Planning Panel for assistance, and some 200 requests each week just for "standard forms" were received and dealt with. Mailing information for standard forms is produced directly by the IBM38 computer system, making for fast and efficient turnover. The latter is indispensable to the headquarters operation as a whole, but it is particularly vital to the running of the Membership Services Department: it is a tribute to the efficiency of the data processing system and its special software that such a small number of staff has been able to handle the volume of work coming into the department. Probably their single biggest asset is the file known as "INFO", which contains details of everything from Amateur Radio Abbreviations to Worked All Britain, and includes information on such esoteric matters as the rate of duty for equipment imported into the UK from abroad, Amtor, df contests, WACRAL and

sporadic-E propagation—to name a few. The size of this file roughly corresponds to 300 pages of A4, and on average it is accessed some 500 times a day in order to answer queries arising in correspondence and on the telephone.

Members of the department attended 18 rallies and exhibitions during the year in review: to sell publications and sundries to members, to make themselves available to assist with members' problems, and to receive the feedback which is so vital to the proper running of the Society. As has been said before, the Society cannot effectively carry out the task for which it exists unless it is in touch with the needs and problems of its members, and a great deal of attention is paid to this in the department. In the course of the year, the major changes which were instigated were: the issue of a special event callsign directly upon receipt of the application form; the introduction of a more streamlined scheme for the appointment of GB2RS newsreaders, and much more comprehensive software for the maintenance of associated information; the implementation of the Raynet membership card scheme, and the new scheme for the appointment of controllers; and a considerable expansion and overhaul of the database relating to reciprocal licensing information.

Headquarters staff also regard as a vital part of their job the visiting of amateur radio clubs and societies up and down the country for what are usually known as "lectures" but which invariably become lively dialogues. During the year the number of clubs visited in this way (19) was slightly less than in previous years, chiefly because of a high degree of pressure on the available time of senior staff who have been involved with a multitude of other duties requiring "after-hours" working. Subject to availability, the Society will always endeavour to provide staff to visit clubs and societies to describe and discuss the work of the RSGB in detail. However, it is obviously much more cost-effective for one staff member to be able to lecture to several groups at once, and it is most beneficial if several local clubs combine for an evening to hear "the man from the RSGB".

It is often difficult to know which of the 25 or so services to members to highlight in a report such as this, since almost all have been revised, expanded or improved in some way or other during the year. One of the most heavily-used services is the QSL Bureau, and during the year the number of cards passing through the bureau was 2·4 million: this figure is almost identical with that for 1983–4. Of these, 1·5 million were distributed to stations in the UK by the two full-time staff of the bureau via the voluntary sub-managers, who currently number more than 40. The remainder went overseas, either directly or via foreign bureaux.

In general terms the bureau's service is speedy and efficient: the chief hindrance is caused by the use of under- or over-sized cards, and it is hoped that use of the IARU-recommended size of 5·5 by 3·5in will eventually prevail. Members are also asked to ensure that their outgoing cards are sorted alphabetically by prefix, since this is another cause of delay. Finally, cards must not be sent to the bureau under any circumstances on the few occasions during the year when it is closed.

In recognition of the prevailing need for economy, the bureau is saving money by modifying some of its packaging: postage is also being conserved by sending larger packages to certain foreign destinations at slightly longer intervals. Wherever possible, existing sub-managers are being asked to undertake additional responsibilities for new callsign series, which also has the effect of saving postage.

Many of the services provided to members come from a combination in varying degrees of volunteer and staff effort, and the Society wishes to thank all the volunteers who provide their invaluable assistance.

AND FINALLY . . .

There are over 500 volunteer members of the Society who contribute to the day-to-day working of our complex organization. No annual report would be complete without our sincere thanks to these volunteers and the staff of the Society, all of whom work so hard to benefit the future of amateur radio.

COMMITTEE REPORTS

Education

Committee: G2WS, G2CVV*, G3HB, G3FVC, G3LCK, G3SZJ, G6NZ, G8GPH, GI3USS, GM4FZH*, GM8BZX, GW4HWR

During the period under review the committee met on eight occassions. The lecture programme "Background to Amateur Radio" was presented at the Science Museum and at the RSGB Convention at the NEC. The change in date of the Science Museum lectures resulted in a much larger attendance, while at Birmingham the total attendance at the two sessions was over 100. The usual discussion with RAE tutors was both interesting and valuable. The Home Construction Competition was revived after many years; notice of this was rather short, but six entries were received.

Liaison with the Association of Science Education is increasing. A small stand at the ASE Convention at Keele University in January 1985 was manned by committee members. A lot of interest was shown and the Society and amateur radio gained much useful publicity. GB2ASE was activated.

A reprint of the *RAE Manual* and a new publication, *How to pass the RAE*, became available during the year.

Text for a new edition of the *RAE Manual* to meet the revised syllabus for 1986–8 is complete. Preparations for its publication by the start of the next academic year are well advanced.

G L Benbow, G3HB, chairman

EMC

Committee: G3AEZ, G3TDR, G3UFB, G4IWS, G5HD, G8KLH, G2FLB*, G3BLE*, G3GVM*, G3VWK*, GU3YIZ*, G4DXA*, G4FWM*, GM4IKT*, G4JXO*

The committee receives approximately five requests for assistance from members each week. There has been a significant increase in the number of amateurs who suffer from broadband "hash" generated by home computers and similar devices.

The committee has carried out a careful appraisal of two BSI standards published recently. BS905 covers television receivers, BS6527 covers electronic office equipment, computers, terminals and home computers. The parameters set by BS6527 are almost identical to those current in the USA; regretfully too lenient to help radio amateurs who "can only hear S7 fm".

The government minister responsible, Mr Pattie, stated in the House of Commons on 28 June 1985 that he would be making BS905 mandatory later this year. Most current production television receivers easily comply, EMC tests being made at 27MHz. Significantly, many models which are "bombproof" on hf, suffer severe breakthrough when subjected to 10W of 144MHz ssb.

Two leaflets are available, a booklet and the manuscript for the new EMC manual are near completion.

The committee recommended that the Society sales department stock various filter and ferrite products; this has been implemented.

Representation on other bodies: R Caine, G4IWS, is on the IERE EMC Committee; L Hawkyard is a full member of the RSGB planning panel.

L Hawkyard, G5HD, chairman

Exhibition & Rally

Committee: G5HD, G3MVV, G3SZJ, G3TDR, G3VPK, G4HHB

The committee met 11 times during the year. Organization of the third National Amateur Radio Convention at the National Exhibition Centre, Birmingham, occupied the main working time of the committee. Although very few letters are received from members about the convention, considerable attention is paid by the committee to the various points raised, in order to make the event more successful. With the 1985 attendance figure of over 10,000 again, it would appear to have the correct formula.

The National Rally at Woburn again saw an excellent attendance despite the usual thunderstorms and rain. Our thanks to the Dunstable Downs Radio Club for again providing excellent talk-in facilities at this event.

The VHF Convention trade exhibition at Sandown Park came under the committee's wing. Close co-operation with the VHF Committee made this another record-breaking event.

A thank you for several years' work to Gill Tong, G8ENO, who retired from the committee during the period under review.

Norman Miller, G3MVV, chairman

Finance & Staff

Committee: G3FKM, GW8HEZ, G3COR, G3RPE, G6JP, G3VPK, G2AMV, G3VPE

The committee met 10 times during the 12 months ended 30 June 1985 (compared with 11 times for the previous similar period). Following the appearance of a deficit in the 1983–4 accounts, much time has been spent in discussing the need and ways to effect economies. At the time of writing this report the first set of draft accounts indicate that some success has been achieved; the deficit being significantly down on the previous year's figure and also on the amount indicated in the original budget for 1984–5.

These discussions are continuing in the expectation that the shortfall will be eliminated by the next set of accounts. However, future results will very much depend on how many new books come off the production line in the immediate future—and, of course, how well they sell—and on the level of advertising in Society publications. Members will have noticed that much less space has been taken by advertisements during the last two years. This is probably the largest single reason underlying recent deficits.

An important achievement during the period has been the introduction of a staff pension scheme—or to give it its proper title "Retirement Benefits Plan". The scheme is optional, and contributory and most of the senior staff have enrolled. The matter of waived and reduced subscriptions was finally settled when those members who attended the egm last December voted to make appropriate changes in the Articles of Association. Similarly, an amendment was also agreed so that members of the Society's Council could be remunerated for "original literary work" —something that had been denied to them under the previous regulations.

Earlier optimism that a trust fund could be created to accept donations and legacies that could be used to assist the amateur radio activities of invalids and the under-privileged was found to be unjustified when the plan ran into legal difficulties. The provisions of the Companies Act are such that sums donated or bequeathed to (specifically) the Radio Society of Great Britain may not be used in this way without jeopardizing the privilege of omitting the word "incorporated" from the Society's title. This matter is currently with the Society's solicitors and it is hoped that a solution or an alternative can be found.

This summarizes the major matters handled by the committee during the period under review. Members will appreciate that, in addition, a large number of administrative and financial matters are also discussed by the committee at each of its meetings. As with other committees, the work load continues to be considerable. The chairman's appreciation is recorded for the co-operation of the general manager/secretary and his staff.

B O'Brien, G2AMV, chairman

HF

Committee: G3ZAY, G3GIQ, G3XTT, G3FKM, G3AAE, G3HCT, G3KMA, G3NKS, G3SJX, G4BUO, G6LX*, G3GVV*, G3GJW*, G3KDB*, G3DME*, G4DYO*, BRS25429

Close liaison with Operation Raleigh resulted in 12 Society members being recruited to serve on the expedition vessel as assistant communications officers for consecutive three-month tours-of-duty. Disappointingly, however, a dxpedition to South Georgia for young operators had to be cancelled at an advanced stage of planning when it was announced that the operation would not after all be visiting the South Atlantic.

Committee members manned a stand at the NEC Convention, where a cw pile-up copying competition proved to be a great success. The well attended programme of hf lectures featured Bob Treacher, BRS32525 on swling; Don Field, G3XTT, on lf dxing; Drew Givens, GM3YOR, on a dxpedition to Montserrat; and members of the G-QRP Club.

The Society's HF Awards programme was re-structured with the introduction of three distinct certificate families: Commonwealth, ITU Zones, and Islands on the Air. All have a relatively easy entry level, and a series of further steps leading to a Supreme Award representing outstanding achievement.

Other work included the preparation of standards for a limited 29MHz fm repeater experiment (in collaboration with the RMG), and the maintenance of headquarters country and commonwealth call-area check-sheets.

M J Atherton, G3ZAY, chairman

HF Contests

Committee: G3FKM, G3HCT, G3KDB, G3SJJ, G3SXW, G3TXF, G4BUO, G4DJX, G4RWW, G6LX, RS20249, RS32525, G3KKQ*, G3OZF*, G3RJV*, G3XDY*, G3ZAY*, G4JKS*, G6AGE*

In the year under review the committee met 11 times in full session and additionally there were a number of informal checking, adjudication and policy meetings at members' homes. The committee manned a contest information stand at the NEC Convention, and members have visited a number of clubs and societies to talk on contest matters.

The main task of the committee is to organize, adjudicate and report on the Society's hf contests, and to ensure that these are run according to the wishes of the membership. The number of entrants to these contests has continued to increase, and the committee has adjudicated some 2,500 logs in the past 12 months, and has answered or originated nearly 600 separate letters and other documents related to these activities.

We were glad to welcome G3SJJ, and to have back G3HCT, both as full members, and G4JKS who has joined us as a corresponding member. G3OZF has been forced to give up full membership because of his business activities, but remains as a corresponding member. We were sorry to hear of the illness of G6AGE, our df expert, and wish him a full recovery. The committee has direct links with other committees and with IARU Region 1 and other overseas societies.

The IARU proposal for a multi-mode field day to replace NFD continues to occupy the committee, and a good liaison has been established with the German and Swiss societies to maintain NFD and SSB FD as separate events. Other policy matters considered by the committee include contest awards, the restructuring of contest rules within a common format, the introduction of contest-free frequency segments, and the retiming of contests to reduce interference to non-competitors.

The chairman wishes to thank all the committee members for their dedication and the time and effort that they have freely given to the business of the committee.

Ron Glaisher, G6LX, chairman

IARU

Committee: G3GVV, G3FKM, G3ZNU, G3ZAY, G3HCT, G3BYW, G3RPE, G3WSN, G6LX, G4KGC, G3PSM, G5XB*, G8PB*, G3NKS*. Minutes secretary: Ms H M Norman†. G3ZAY and G3PSM joined the committee during the year

The committee met on five occasions: 19 July 1984, 20 September 1984, 22 November 1984, 31 January 1985, and 25 April 1985.

The work of the International Amateur Radio Union Committee can be summarized under four main headings.

1. The implementation of the recommendations of the Region 1 Conference, held at Cefalu, Sicily, in April 1984. These include: a propagation studies information exchange with other societies; liaison over CEPT common licence proposals; introduction of the new locator system; liaison with other committees and societies over common working frequencies at vhf/uhf and microwaves.

2. The preparation of proposals for new rules for election procedures and proxy votes at Region 1 conferences.

3. The review and production of suggested revisions to the new IARU Constitution; these aim at clarifying and simplifying apparent anomalies in this document.

4. The revitalization of the RSGB Intruder Watch System. The return of Colin Thomas, G3PSM, to this vital task is particularly welcome.

In order that the aims, objectives and functioning of the International Amateur Radio Union may be better known and understood, members of the committee (including G3GVV, G3BYW and G3PSM) have given talks at several affiliated societies' meetings.

R J Hughes, G3GVV, chairman

Licensing Advisory

Committee: G3FKM, G3ZNU, G3HCT, G3RPE, G3WSN, G3YGF, G3STG, G3VPK, G4FJN, G4DMP

Several developments in amateur licensing have taken place over the past year. The provision for Class B licensees to use morse for practice purposes was introduced for a one-year experimental period. Indications to date are that the facility has been well received and the experiment is successful.

The success of the 50MHz permits has been partly responsible for the announcement that the 50·0–50·5MHz band will be made available for amateur use. Details of this allocation, its date of issue, provisions and limitations have still to be announced. As reported at the December 1983 agm, despite the 50MHz permits being issued only to Class A licensees, the Society's official view is that we would wish the band to be available to both Class A and Class B licensees. The committee is making this point strongly to the DTI.

The situation of crossband and duplex working is likely to be given in a DTI press release in the near future.

Discussion continues with the DTI in regard to intruders, interference and general spectrum abuse on the amateur bands. The gross inadequacy of the Radio Investigation Service is constantly under review. Closer links between the Society's Observation Service and the RIS are being planned in an attempt to alleviate the situation. The subject of spectrum abuse receives continual attention by the committee and is a high priority.

It is hoped that the facility for special event stations to allow visitors to exchange greetings will be extended to some countries other than the UK. While liaison with the other countries is slow, we are hopeful that the facility can be extended in time for the Jamboree-on-the-air.

The committee has submitted draft proposals for a form of incentive licensing. A systematic approach has been adopted in formulating the proposals from the views expressed by committees, groups, societies and individuals. The proposals suggest a facility whereby the Intermediate Licence permit will provide a natural incentive for Class B licensees to

obtain a Class A licence, and at the same time provide an hf route to amateur radio for those not interested in vhf communication. The committee is extremely grateful to everyone who has sent in suggestions. The present Amateur Radio Licence is now being considered in detail with a view to a new licence being introduced in 1986.

D M Pratt, G4DMP, chairman

Membership & Representation

Committee: G2AMV, G3DOT. G3FKM, G3RPE, GI3USS, G3VPE, G3VPK, G3YGF, GM3YOR, G4CHH, G4DAX, GW4HWR, GM8BZX, GW8HEZ, Ms H M Norman†

A scheme put forward by HQ staff for assessing the suitability of new GB2RS newsreaders was agreed by the committee and it is now in operation. The new club affiliation procedure, introduced in 1984, has been monitored closely and is operating smoothly. The committee agreed a new guideline constitution for affiliated societies during the year, and this should be available when this report is published. The committee has recommended that a certificate, with appropriate wording, be awarded on a limited basis to selected volunteers in recognition of outstanding service to the Society.

Recommendations from the President's Advisory Group concerning the nomination procedure for candidates for Council elections were supported by the committee and have been implemented for the current elections.

The committee, in conjunction with the Education Committee, is considering the possibility of the Society providing further material for the study of the RAE.

An open meeting was arranged by the committee in Region 20 at Bristol in October 1984. For economy reasons, this was the only open meeting held in the financial year. The regional representatives conference was held in November 1984, and included guidance on HQ administration and the role of HQ staff. The committee recommended that the training of regional representatives in the next financial year should be limited, for financial reasons, to those regional representatives who had been appointed since the previous conference or who had been unable to attend that meeting.

I record my thanks to the members of the committee for their work, to Heather Norman for her secretarial duties and liaison with representatives, and to the general manager for his support. I wish every success to the executive vice-President, who will be the future chairman of this committee

Henry S Pinchin, G3VPE, chairman

Microwave

Committee: G8AGN, G4KNZ, G3PFR, G3PHO, G3RPE, G3YGF, G4FSG, G4FRE, G3WDG, G4KGC, G3JVL, G3ZNU*, G3JHM*, G3RWL* G3XDV*

The committee lost three members during the year: G4CNV, G8CIU and, in particular, G4FSG (the outgoing chairman) are thanked for their efforts on behalf of the committee and the Society. I would also like to thank Graham Murchie, G4FSG, for agreeing to continue in the role of corresponding member and microwave beacon co-ordinator.

The committee has continued to encourage, improve and maintain a growing microwave beacon service within the UK, and gratefully acknowledges the continuing work of the individual beacon keepers and groups responsible for this service.

The committee has actively supported Society activities in providing lectures for affiliated societies, organizing a number of microwave round tables, and participating in the lectures and working equipment demonstrations at both the VHF and National (NEC) conventions.

The Microwave component service has continued to fulfil its early promise in providing a much needed member's service, and the additional funding approved last year has been fully utilized in extending the range of the service. Further expansion is planned in the coming year.

The work of the former editors of the *Microwave Newsletter* (G3YGF, G4KNZ and G4CNV) is gratefully acknowledged. This service continues to provide up-to-date information, both technical and topical, under the new editors, G3PHO and G8AGN.

It is hoped that the work leading to reproducible, simple equipment for both the 10GHz and 47GHz bands, which has been continuing during this year, will be brought to a successful conclusion within the next few months, allowing committee members to formulate and explore new technical projects of wide appeal to all microwave operators. There appears to have been considerable revival in home construction of microwave equipment, particularly for the 10GHz band, and the committee continues to foster and encourage such activity via the newsletter, *Microwaves*, club/individual contacts and the organization of contests and operating awards in liaison with other society committees. In particular there has been increasing involvement with RMG as the growth of microwave repeater/beacons has continued.

M W Dixon, G3PFR, chairman

Propagation Studies

Committee: G2FKZ, G3BYW, G3DME, G3HTF, G3JVL, G3LTP, G4AQI, DJ5DT*, F8SH*, G2AHU*, G3GVV*, G3USF

The composition of the committee has remained unchanged over the period under review, each member being a specialist in at least one aspect of our propagation studies. There are cross-links with other committees where interests overlap.

The committee has continued to supply both the monthly f_0F2 ionospheric prediction tables for publication in *Radio Communication*, and the weekly summary of solar, geomagnetic and ionospheric data (including a forecast for the week to come) for the Sunday news broadcasts on GB2RS.

We manned stands at the VHF Convention and the National Convention at NEC, on both occasions finding that the customary interest in propagation matters has shown no sign of declining. We presented a paper on extreme-range statistics relating to seven amateur bands, 144–10,368MHz to the IEE Fourth International Conference on Antennas and Propagation (ICAP-85), which was subsequently used as the basis for a submission to CCIR Study Group 5.

Having been given the task of examining all the logs from 50MHz permit holders (who had been required to show evidence of experimental work as a condition of their authority to transmit on the band) the committee prepared a report for Council, which was later given wider circulation through the VHF Manager. Details of some interesting transmission paths, including instances of contacts with stations in the USA and Canada, were referred to professional colleagues for their information and comment.

The vhf sporadic-E project is continuing, and a fresh supply of report forms has been sent to every club and group affiliated to the RSGB, and to all the national societies belonging to Region 1 of the IARU. The committee would like to thank all who have sent in reports and comments on this, and on other aspects of our propagation studies.

Club secretaries may like to note that a new tape/slide lecture *Lights of the Earth from Satellites*, mainly about the aurora borealis, is now available. Another, dealing with Solar Cycle 21, is in preparation.

R G Flavell, G3LTP, chairman

Raynet

Committee: G3STG, G3TJP, G3VPE, G3YAC, G4KAR, G8CAC, G3FKM, G3WSN, G3RPE, G3KWU, G4FLQ; G6AJF*, G3KWI*, G4TWT*, G4AVV*, GW4YKL*, G4IWA*, G4MWO†, GI4NKD*, GM3RFA* (zonal representatives); G8CPH* (rtty); G8VYX* (BARTG); Jane Balestrini (supplies officer)

The activities of the year were sadly marred by the loss of Bill Colclough, G3XC. As well as being vice-chairman of the committee, and the zonal representative for the southwest, Bill was an active and hard working member of the Cornwall team, and he will be sadly missed by his colleagues.

The year has been one of steady progress for Raynet, the new computerized membership recording facility has shown that approximately seven per cent of all licensed amateurs in the UK are members, with 22 new groups registered contributing to the total of some 200 active groups around the UK. During the year 140 talkthrough permits were issued for operational use, and many live emergency services were rendered to the users, as well the usual quota of coverage of events providing safety and emergency cover at local and area level. Many groups are in fact now becoming so well appreciated by the user services that serious consideration is having to be given to the allocation of resources to stay within the limits imposed by the licensing authorities. In particular, special mention should be made of the operations relating to the Todmorden tunnel fire, the Admiral's Cup Race, and several search and rescue operations.

The zonal representation scheme has continued to work well through the year, providing good communications between the committee, groups and members. The beginning of 1985 saw the election procedures for the second period of the scheme being successfully completed, and all the representatives had a very useful discussion meeting with committee members during the following months.

Publication of a new guidance document for local authorities this year has recognized the useful part which can be played by all licensed radio amateurs at times of disaster, and greatly clarified the role of Raynet.

The use of rtty continues to be expanded in traffic from fixed stations, and the publication of a supplement to the *Raynet Manual* dealing with the

necessary procedures has been welcomed. A very impressive demonstration of rtty, packet and Amtor was shown at a major users conference weekend in the Midlands, and this has done much to encourage members developing these techniques for Raynet use. Phone operation, mainly on vhf and uhf, continues to be the major mode for portable operations however, with co-operative band planning between groups being encouraged as uhf usage increases.

The regular hf skeds on the National Emergency Listening Watch frequency continue, and the frequency change to comply with the Cefalu IARU resolution has been carried through with only minor disruption. In addition, means of encouraging inter-group and inter-county operation on both hf and vhf, with particular reference to rtty and Amtor, are being sought.

Raynet continues to provide the amateur with an important means of providing valuable public service to the community in times of need, and the committee has been strengthened by the appointment of Trevor Emery, G3KWU, whose role will be to assist busy Raynet members to present their activities and aims to the public at large and to the amateur population.

Jane Balestrini, our supplies officer, has continued to do a vital job in looking after membership supplies, while the assistance of HQ staff, and particularly Brett Rider, has once again proved invaluable.

The Raynet Committee looks forward to the coming year with a great deal of enthusiasm and confidence for further development and training.

G A Griffiths, G3STG, chairman

Repeater Management Group

Committee: G3LEQ*, G3ZNU*, GM8LBC, G3XDV, G4AFJ, G3WSN*, G6LMR, G8HVV*, GM8KPH*, G4FSG*, G8MFP, G4EFO, G3VZV, G3NRW*, G4CCC

The year was one of significant achievements and severe pressures. The committee held eight six-hour meetings plus open meetings in Humberside and the borders area of Scotland. Two new members were recruited to improve liaison with repeater groups in the Midlands and the North of England.

The latter half of the year was dominated by the co-channel interference between GB3VT and the Isle of Man repeater, GB3GD. A combination of an unusual and difficult rf problem, and unprecedented political and personality problems, meant that many months were spent on this to the exclusion of other work. A solution was found but, at the time of writing, this has, for reasons outside the control of the RMG, not yet been implemented. Particularly frustrating was the time spent in replying to a large number of letters instead of getting on with the job. Repeater users should note that deluging volunteers with letters and/or phone calls makes for very inefficient use of their skills and time, so it is often counter-productive. The RMG made the mistake of under-estimating the complexities of both the radio and political sides of the problem, but this was compounded by a lack of tolerance, patience and "amateur spirit" from some of those we dealt with, particularly newer licensees. This was perhaps the most depressing part of what should have been an interesting and challenging technical problem for all concerned.

Achievements included the publication of two new maps showing vhf service areas and 1·3GHz repeaters; an agreement to run the GB2RS news from three vhf and three uhf repeater sites; obtaining nine new licences from the DTI and applying for 13 more; putting on stands and lectures at the NEC and VHF conventions; and making a significant contribution towards planning a packet repeater network.

The operational network increased by 22 units to 201, including the world's first amateur pilot—ssb repeater. There was a reduction in the number of units temporarily off the air, and in the time taken for newly licensed repeaters to become operational. This was of course achieved in conjunction with the repeater groups without whom the networks would not exist, but the RMG has an important role in encouraging and cajoling groups to give a good service. Much technical and administrative advice was given to this end.

Work is almost complete on specifications for 29MHz repeaters and for adding 10GHz receivers to some 433MHz units. Progress was made on specifications for repeater linking.

An edition of *Repeater Report* was produced but could not be distributed to groups owing to HQ staff shortages.

It is to be hoped that next year will be less arduous and we can continue to improve and develop the repeater networks, but a reduced budget and a large backlog of work caused by the GB3VT/GB3GD problems will inevitably reduce the committee's effectiveness.

Mike Dennison, G3XDV, chairman

Technical & Publications.

Committee: G4FAW, G3YGF, G4GYO, G3SJX, G4SWX, G8ONH, Mr A W Hutchinson (editor, *Radio Communication*)†, Ms H M Norman†

Membership of the committee has remained unchanged throughout the year, although within the limited room for manoeuvre we are seeking further expertise, particularly in the hf area. The committee met nine times, the attendance level being 92 per cent of the maximum. Each of the evening meetings lasted typically three hours: however, most of the work necessarily has to be done outside committee meetings.

I am happy to report that the number of high-quality articles offered for publication continues to increase. However, we are less happy about the consequent delays in publication, and that good articles are now having to be turned down simply because it is unlikely that we will be able to use them within, say, a year. Currently, we are looking into increasing the number of pages available in *Radio Communication* for technical articles, soliciting articles which are reduced to the essentials, with details perhaps being in appendices having a higher print density, and publishing material in other forms. The situation with regard to articles for the newcomer continues to be a matter for great concern.

The first User Report questionnaires have been circulated. Their purpose is to obtain unique information on the experience of members with their radio equipment over a period of perhaps many years and under the often stringent conditions of amateur radio. The initial analysis of the first 900 replies should be available shortly.

As a result of the growing interest in the application of digital techniques in amateur radio, October 1984 saw the introduction of a new column on computing by GM4ANB. This appears to have been well received. During the year a working party was set up to examine the implications of packet radio.

The position with regards to book production is recovering after difficulties in continuity of staff book editors. With the increasing availability of good material in the form of *Radio Communication* articles and other sources, future prospects are good.

D S Evans, G3RPE, chairman

VHF

Committee: G3ZNU, G3COJ, G4ASR, G3XDV*, G5KW*, G3WSN, G4WHO, G8GOJ*, G3GVV*, G5UM*, G4KAR*, G3RWL*, GM4ANB, G4FSG*, G3XDY*, G3VZV*, G3FZL, G3RKL*, G8VR, G3UUT*, G4CCC

During the year the committee was sorry to lose G3VPK, who resigned following his election as executive vice-President, and G8GGP, whose work commitments kept him out of the country for much of the time.

The 50MHz experiment was expanded when the DTI granted a further 60 permits, making 100 in total. Interest in the band and the activity of the permit holders continued to be high, and the committee gratefully acknowledges the work of the Propagation Studies Committee in producing a comprehensive report. The committee liaised with the PSC in formulating a standard reporting form for 50MHz activity.

On 1 January IARU Region 1 officially adopted the "Maidenhead" locator system, amidst inevitable controversy. Reaction to the locator has been mixed, although it is worth noting how reluctant the UK was to adopt the old QRA locator some years before. The introduction of the locator has meant a slight change to the rules for the "Squares Award", and the opportunity was taken to revise the awards certificates.

The VHF Convention at Sandown Park continued its popularity, with attendance increasing again this year. The committee took note of a number of comments from the previous year, and this year received very few adverse criticisms. The committee again participated in the National Convention at the NEC with a lecture programme and a committee stand. The committee agreed to participate in the RSGB Midlands VHF Convention to be held in October 1985, recognizing the need to support the smaller specialist events as well as the larger, more general ones.

The committee decided to adopt as its theme for the year the promotion of the 432MHz band. At all of the exhibitions, 432MHz equipment was featured extensively. In addition, the committee introduced activity periods on Monday evenings, and devised a unique award, the Monday Night Award, to give operators a goal for the year.

The *VHF/UHF Newsletter*, introduced in July 1984, has gained several hundred subscriptions during the year, and thanks are due to G4ASR for his dedication to the job of compiler. Thanks are also due to G8VR, as *4-2-70* compiler to G5UM for his continued service as vhf awards manager, and to the many volunteers throughout the country who help to keep the vhf and uhf bands an exciting field of interest.

Malcolm Appleby, G3ZNU, chairman

VHF Contests

Committee: G3XDY, G4JLG, G3LCH, G4HWA, G4NBS, GM8MJV, G3FZL, G2HIF, G4KGC, G8TFI, G6LX*, G3ZNU*, G3WDG*, BRS32525*

The committee has organized 25 contests on all bands from 70MHz to 24GHz for this year. The number of entries range from about 10 up to about 150, with 144MHz events always the most popular. The committee attempts to encourage activity on the higher bands, and microwave activity is much greater during contests than for the rest of the year put together.

Each year the committee makes a few changes to the contests calendar to enhance the appeal of events, and to take account of new developments. The 144MHz and 432MHz Low Power contests held in August 1984 used a county multiplier scheme for the first time, and proved popular and more challenging than other contests. A locator square multiplier scheme was used in the 144MHz contest held in May 1985. A new contest was introduced in August 1984—a 1,296 and 2,320MHz event. Increasing activity on 2·3GHz now justifies more attention in contests, and this first event was well received. The 1·3GHz Cumulative Contest is extended to include 2·3GHz this year.

The new IARU locator system has been introduced, following the IARU Region 1 Cefalu conference. All contests since January 1985 use the new system, and it has been adopted rapidly.

A considerable amount of committee effort has been involved in adjudication of the IARU Region 1 VHF/UHF/SHF Contest, held in September and October 1984. A total of 2,271 logs was received for this event, containing 277,381 QSOs on 144MHz, and 47,354 QSOs on the bands from 432MHz to 24GHz. A team of six committee members plus outside assistance from six other amateurs undertook the cross-checking of the contest. It is estimated that nearly 1,000 manhours was involved in checking and tabulating the results. The results will be published shortly, and entrants will receive a special QSL with details of their result.

*Corresponding members
†Staff member

REPORTS FROM THE . . .

. . . Amateur Radio Observation Service organizes

Many reports continue to be received from observers, and from other amateurs, direct or through the RSGB. Complaints range from the minor, but unacceptable operating malpractice, to the serious licence infringement.

Fortunately there have not been too many of the latter, but there are more which go unreported to the AROS, or which have been the subject of local action but not effectively dealt with by the authorities. With insufficient restriction, too many unlicensed operators continue to plague the bands, too many operators have doubtful credentials, and too many instances of amateurs allowing either the unlicensed, or those not qualified for the band in use, to use their stations illegally.

Very sadly there are a number of licensed amateurs, often with callsign concealed, whose on-air behaviour is appalling, to put it mildly. The tracing and removal of such offenders presents a particular local challenge, the co-ordinator can advise on the most effective and preferable techniques, technical and personal.

A large proportion of the minor irritations reported have been due to often deliberate and persistent divergence from the accepted IARU and UK band plans, when the genuine user has been unable to work the frequency with the priority expected, and a current QSO unwilling to QSY. The end result is unpleasantness on the air, and in written complaints.

Such exchanges can lead to serious licence offences, and most certainly will be unpleasant to all. To some extent, but in a different way, this will apply to the many reports about those regular nets which traditionally occupy a certain frequency, operating local or dx, when unpleasantness has developed because of demand for space, for any use, on a busy band.

Plans are under way for the AROS to acquire more "teeth" in its operations, to be achieved by, among other things, a closer liaison with the Radio Investigation Service of the DTI. There would be many benefits from such a move, especially towards an effective follow-up to reports of serious misdemeanours, so as to ensure that proper action was taken by the authorities when obviously required. An important aspect to be given close attention will be the best methods of reporting and recording matters concerning the licensing authorities.

The AROS remains, however, a friendly advisory organization, with its prime object the improvement of operating conditions for all legitimate users of the amateur bands, and the effective disposal of all rubbish in the way of spectrum abuse.

R J Osborne, G4FJN

. . . Audio/Visual Library co-ordinator

The library is as active as ever, particularly in the winter when very early booking is imperative. There are now 52 titles available for hire, mostly VHS system; 16mm films having been withdrawn. New titles include *W5LFL Lecture, W5LFL Space Shuttle, VU7 Dx-pedition, VP8ANT* and others. A complete list is available from G2PA, QTHR. About two-fifths of associated clubs and societies take advantage of the service for whom it is primarily intended. Non-associated bodies and individuals cannot participate.

The accounts are stable despite a low hire fee and a nominal postage charge.

The co-ordinator would like to hear from anyone who can donate a cassette of amateur radio interest to the library.

R G Auckland, G2PA

. . . HF awards manager

Analysis of hf awards issued during the year

During the period under review, the number of certificates issued showed a significant increase on last year's figure, but rather disappointingly the certificates issued to our own membership fell slightly. We are still waiting to issue the first 28MHz Counties Award. This is surprising, since the HF Contests Committee runs a series of cumulative contests on this band to encourage "inter-G" working. As this will be the last year that the awards programme will contain some of the Commonwealth-based awards in their present form, members are advised to chase those last few outstanding cards and submit their claims as soon as possible.

	G	EU	North America	South America	Asia	Africa	Oceania	Total
WBC	40	147	3	1	46	—	9	246
COXC	6	9	1	1	6	1	1	25
IARU	80	144	3	3	22	2	2	256
DXLCA	3	49	—	—	13	—	—	65
BCRTA	6	60	2	2	15	—	3	88
BCRRA	—	25	—	—	8	—	—	33
WAC	73	—	—	—	—	—	—	73
Totals	208	434	9	7	110	3	15	786

May I finally remind applicants when submitting claims for our awards, to always send a stamped, self-addressed envelope for return of cards, and always send proof of RSGB membership. The address of the hf awards manager is: PO Box 73, Lichfield, Staffs WS13 6UJ, to whom all applications should be sent.

P Miles, G3KDB

. . . HF manager

One of the more difficult problems concerning the hf bands during the year was that of trying to convince and persuade 10MHz users that the use of telephony is not a good idea. Unlike some administrations, the DTI has been liberal in its approach to this band, and telephony is not forbidden as in some other countries. The vast majority saw the sense in behaving in a way which can be seen as responsible by the primary users, and hopefully we can look towards better privileges after the next WARC.

Some problems have arisen following the Cefalu decision to recommend that 3,775–3,800kHz should be reserved for intercontinental working, but again and on the whole this has been respected, and I would like to thank the Raynet organization for changing its net frequency.

Proposals from Japan suggesting that a system of fm repeaters was to be constructed on the 28MHz band and allocated frequencies within the satellite sub-bands were reacted to, and it has now been said that only one frequency—outside the satellite bands—will be used for this purpose during a testing period. Interest in repeaters on 28MHz varies from the enthusiastic to the frankly hostile—unfortunately very often conditioned by some of the gross abuses of licensing conditions and bad behaviour which has been seen on some vhf repeaters from time to time.

The meeting of IARU Region 1 hf managers in April gave an opportunity for talks to be had with representatives of most of the major European societies as well as with SARL and ROARS. Minor changes to the hf band plan were agreed. A subject of considerable concern to many was the apparent proliferation of packet radio and mail boxes on the hf bands. There seems to be little or no control, and the present unofficial packet net frequency of 14,103kHz was condemned as it is causing many problems to other users of the band.

The position on 1·8MHz is somewhat unsatisfactory as there is no recommended band plan as yet. The Society is making proposals, and an interim plan should appear early next year. A severe problem has been the rather slow release of information by many countries on the allocations to be made to their amateurs. One point is obvious: when all the reassignments following WARC have taken place, the amateur exclusive band will probably be only 40kHz in width at most.

John Allaway, G3FKM

. . . Microwave manager

The year has not been distinguished by major events or of dramatic progress in any aspect. However, a new area of microwave interest could be in the packet radio field. Should this technique develop, the use would be in high capacity data links between packet radio 'repeaters', potentially to form the backbone of a UK-wide network.

Near to home, the disastrous withdrawal of microwave allocations in Belgium still causes great concern and illustrates how tenuous our allocations can turn out to be. The situation continues to be monitored. Indeed, there is an urgent need at the highest IARU level to provide a worldwide summary of frequency and power allocations, particularly at microwave frequencies, which can be used to influence individual administrations of the value of common working frequencies and reasonable power levels.

With the main role of the spectrum managers being concerned with the international level, the unusually long gap between the triennial meeting and the intermediate managers' meeting has meant minimal conference workloads. However, with the date for the latter meeting now set for April 1986, the preparation of papers can now begin in earnest, with perhaps the main emphasis being on the area referred to in the previous paragraph.

In noting that G4FSG found it necessary to resign as chairman of the Microwave Committee due to very high professional demands on his time, one's regrets are tinged by the observation of how lucky the Society is in being able to attract the services of persons of such calibre, albeit for a limited time.

D S Evans, G3RPE

. . . VHF manager

The year has seen a number of significant announcements by the DTI which have had an impact at vhf. We have seen cw for Class B licensees introduced for a trial 12-month period. Although this has still to be evaluated fully, the response was quite large in the initial stages. The general level of activity does seem to have dropped, but many talk of the advantage which being able to use cw "on air" gives them in their training.

50MHz has undoubtedly been the most rewarding achievement for the amateur service, with the most welcome announcement being made on 28 June. This is the result of much work within the Society over many years. Those of you who were disappointed at not receiving one of the 50MHz permits will, it is hoped, now feel that the time and effort put into the experiment has finally paid off in the result. Thanks must go to the permit holders for their valuable contributions.

The VHF Committee continues to deal with a large variety of items. Band planning is reviewed regularly to ensure that we are able to obtain the best possible return for our allocations. We have seen further additions to the UK beacon network, and thoughts are already on the next IARU Region 1 conference scheduled to take place in 1987. The VHF Committee theme for the year was announced at the VHF Convention. It is the promotion of the 432MHz band. This will continue through to next March.

The Repeater Management Group and VHF Contests Committee continue to deal with vast quantities of material, thanks to all the efforts of their respective committees.

A number of countries are experiencing problems over their allocations. We must not forget that all amateur allocations are subject to review, particularly with the increasing demand for spectrum by the many other users of the air waves. Good standards of operating, both in terms of equipment and operational procedures, are required if we are to continue to be recognized as a worthy "service" by the ITU. Regrettably there are a few areas of concern, but generally operators are conducting themselves in a correct manner. There have been a number of prosecutions for various offences under the Wireless Telegraphy Act during the past year.

Unfortunately we have not had a very good year for propagation at vhf, but the dedicated enthusiasts for the more specialist modes such as aurora and meteor scatter have continued to achieve very good results.

We are pleased, therefore, to look to the coming year with the opening up of an amateur allocation at 50MHz, the continued advancement in technical standards and training, and hopefully many hours of enjoyable operating on the vhf/uhf bands.

K A M Fisher, G3WSN

. . . VHF awards manager

Although it was introduced 24 years ago, the "Four Metres and Down" (countries and counties) award retains its popularity but is being steadily overhauled by the more recent (1979) Squares Award series, as the following analyses show:

Four Metres & Down certificates

(Last year's issues in parentheses)

Category	Number		Total issued
70MHz Standard Transmitting	5	(1)	149
70MHz Senior Transmitting	1	(1)	51
144MHz Transmitting	32	(30)	712
144MHz Senior Transmitting	24	(16)	237
144MHz Standard Receiving	0	(0)	39
144MHz Senior Receiving	1	(0)	6
432MHz Standard Transmitting	11	(9)	208
432MHz Senior Transmitting	12	(8)	109
432MHz Standard Receiving	1	(1)	10
432MHz Senior Receiving	1	(0)	2
1·3GHz Standard Transmitting	10	(12)	62
1·3GHz Senior Transmitting	3	(3)	12
1·3GHz Receiving	0	(0)	1
Supreme Award (qualification: three Senior or two Senior plus one 1·3GHz)	6	(9)	61
FMD Microwave Distance Awards for initial contact beyond specified QRB			
1·3GHz 600km	12	(23)	90
2·3GHz 500km	1	(7)	13
3·4GHz 400km	0	(1)	3
5·6GHz 300km	0	(1)	1
10GHz 150km	2	(7)	72

Total of Four Metres and Down certificates issued for the year: 122 (129)

QTH Squares awards

(Last year's issues in parentheses)

70MHz 20 squares and 4 countries certificates	2	(3)	10
70MHz 30 squares and 8 countries stickers	2	(0)	3
70MHz 35 squares and 10 countries stickers	1	(0)	2
144MHz 40 squares and 10 countries certificates	56	(43)	232
144MHz 60 squares and 15 countries stickers	23	(20)	98
144MHz 80/18 stickers	10	(18)	54
144MHz 100/20 stickers	18	(17)	67
144MHz 125/20stickers	6	(8)	19
144MHz 150/20stickers	5	(1)	12
144MHz 175/20sticker	1	(1)	6
144MHz 200/30 —	0	(2)	4
144MHz 250/35 —	0	(1)	1
144MHz Receiving: BRS32525 still stands at 125 squares and 20 countries.			
432MHz 30 squares and 6 countries certificates	14	(11)	35
432MHz 40/10 stickers	7	(10)	29
432MHz 50/13 stickers	3	(4)	15
432MHz 60/15 stickers	2	(7)	14
432MHz 70/15 stickers	4	(6)	12
432MHz 80/15 stickers	3	(2)	6

Total: 72 initial certificates issued (57) and 66 stickers (95)

Microwave Squares Award

1·3GHz 5-squares basic certificate	10	(15)	55
1·3GHz 10-squares stickers for above	11	(14)	46
1·3GHz 15-squares stickers	6	(6)	26
1·3GHz 20-squares stickers (4 + 1 initial claim)	5	(7)	21
1·3GHz 25-squares stickers	8	(2)	17
1·3GHz 30-squares stickers	1	(3)	10
1·3GHz 35-squares stickers	1	(3)	5
1·3GHz 40-squares stickers	2	(2)	8
1·3GHz 45-squares stickers	2	(1)	3
1·3GHz 50-squares sticker	0	(1)	2
1·3GHz 55-squares sticker	1	(0)	1
1·3GHz 60-squares sticker	0	(0)	1
1·3GHz 65-squares sticker	0	(0)	0
1·3GHz 70-squares sticker (G4KIY)	1	(0)	1
2·3GHz 5-squares sticker	1	(2)	8
2·3GHz 10-squares stickers	1	(0)	3
2·3GHz 15-squares stickers	1	(1)	2
2·3GHz 20-squares stickers	0	(1)	2
2·3GHz 25-squares stickers	1	(1)	2
2·3GHz 30-squares stickers	2	(0)	2
3·4GHz 5-squares stickers	1	(1)	2
3·4GHz 10-squares stickers	0	(1)	1
10GHz 5-squares stickers	2	(1)	23

Total: 57 microwave squares awards and stickers is slightly down on the previous year's total of 63.

Judged by the large number of requests received during the year from members for copies of the current claim forms, it is evident that at any one time very many operators are collecting cards with a view to submitting award claims. There has been a significant increase in complaints about the slowness with which QSL cards are received. Even to QSL direct with ircs (or sae) appears to effect little improvement.

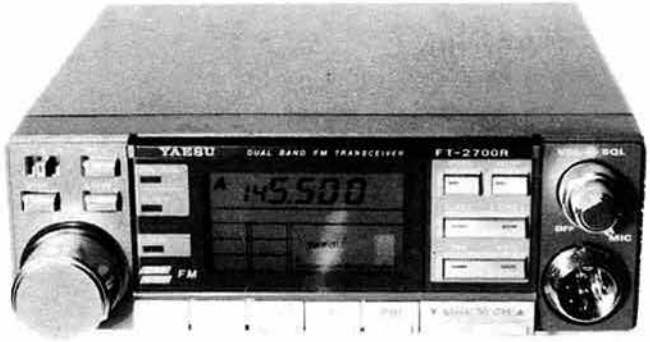
In addition to processing members' claims, the vhf/uhf awards manager has issued contest awards to winners and runners-up in RSGB vhf/uhf contests upon instructions from the Society's VHF Contests Committee.

Jack Hum, G5UM

YAESU

NEW MOBILES

AUTHORISED YAESU



2M & 70cm FULL DUPLEX FT2700RH

The FT2700R, virtually two transceivers in one case, is designed to be the ultimate in convenience, for FM mobile or base station operation, on the 144 *and* 430MHz bands. Using Yaesu's new one piece die-cast aluminium chassis concept, the FT2700R provides 25 Watts continuous output on either band, for full duplex (or simplex!) operation whilst obtaining optimum circuit shielding and efficient heat dissipation.

SCANNING
Two 4-bit CPU's provide convenient control together with simple operation of the dual VFO's, 10 channel memory with back up and two calling frequencies.

Dual, receiver front ends, local synthesisers, IF's and transmitter RF stages make this the first mobile transceiver capable of *true* full duplex cross-band operation.

PRIORITY
Comprehensive scanning features include "PMS" (programmable memory scan) which permits continuous or skip-scanning between two memory channels in the same band. A MHz 'stepping' switch is fitted for quick transition from one band to another. Priority channel monitoring is available whilst on the same or another band!

CROSS BAND
Independently programmable transmit and receive frequencies, standard repeater shifts (with reverse facility), offers total freedom of operation.

READOUT
The large green back-lit dimmable LCD offers an aesthetically pleasing and easy to read display of the complete operating status of the transceiver, including memory and reverse repeater indications at a glance. The PO/S meter incorporated in the main display is a distinctive graphical two colour type. (Optional Voice Synthesiser available, see FT270R/RH text.)

GENERAL SPECIFICATIONS

Mode	: FM (F3, G3E)	Antenna	: 50ohms, unbalanced
Supply	: 13.8V ± 15%	Modulation	: Variable reactance
Circuit	: Double Conversion	Deviation	: ± 5KHz
	: 21.6MHz, 455KHz	Tone Burst	: 1,750Hz
Sensitivity	: 0.2μV @ 12dB Sinad	Spurious	: −60dB (or better)
	: 1.0μV @ 30dB Sinad	Maximum BW	: 16KHz
Selectivity	: 14KHz −6dB	Microphone	: 600ohms, nominal
	: 28KHz −60dB	Temperature	: −10°C + 60°C
Image	: −60dB (or better)		
Audio	: 4 to 16ohms	**OPTIONS**	
	: 2W in 8ohms (10% THD)	FVS-1, MF-1B3B, SP55, YH1, SB10	

The FT270R/RH is constructed on a unique massive diecast aluminium ducted heatsink which enables significantly larger output powers to be obtained from a transceiver substantially smaller than any similar radio to date. The FT270RH, with fan assisted cooling provides 45W RF output whilst the conventional R version offers 25W. Both FT270R and RH are fitted with a "low" power switch which provides around 10% of full output.

DISPLAY
The FT270R/RH uses a high visibility back-lit LCD, with large 5mm digits, providing a readout of frequency and all important transceiver functions. Pleasant green illumination and newly developed wide angle LCD ensure easy visibility day or night from most angles.

MICROPROCESSORS
The dual 4-bit microprocessors of the FT270R/RH provide maximum ease of use combined with an extremely wide range of operating functions. Dual VFO's, ten memories and programmable band scan limits are all easily selectable from the front panel.

MEMORIES
The FT270R/RH can memorise a number of scanning parameters for maximising performance. Upper and lower limits may be set (for quick scanning of the band). The ten memories may be scanned for a busy channel or for monitoring a priority channel. The scanning can be either manually or carrier controlled.

VOICE SYNTHESISER
For easier and safer 'eyes on the road' mobile operation an optional voice synthesiser (FVS-1) is available to give an audible indication of frequency, memory channels and VFO selections at the touch of a convenient microphone mounted button. The FVS-1 is of course ideal for those with impaired vision.

45 WATTS OUTPUT FT270RH

FT2700RH		FT270R/RH	
Frequency	: 144-146MHz : 430-440MHz	Frequency	: 144-146MHz
Power out	: 2m 25/3W : 70cm 25/3W	Power out	: RH; 45W/5W : R; 25W/3W
Supply	: 7A (25W Tx) : 3A (3W Tx) : 0.6A (Sq Rx)	Supply	: RH; 9A/3.5A Tx : R; 6A/2.5A Tx : 0.6A (Sq Rx) R/RH
Stability	: 2M ± 10ppm, −5 +50°C : 70cm ± 5ppm, −5 +50°C	Stability	: ± 10ppm (−5 +50°C)
DIMENSIONS (Ex/Inc Projections) 150W, 50H, 130/185D mm, 1.6Kg		DIMENSIONS: (Ex/Inc Projections) 140W, 40H, 143/175D mm, 1.25Kg	

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